

Exhibit 155

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NORTH CAROLINA
SOUTHERN DIVISION
No. 7:23-CV-00897

IN RE:

CAMP LEJEUNE WATER LITIGATION

This Document Relates to:

ALL CASES

EXPERT VIDEO-RECORDED DEPOSITION OF
STEPHEN H. CULP, MD, PHD

Thursday, May 8, 2025

10:00 AM EASTERN TIME

Reported by: Denise Dobner Vickery, CRR, RMR
JOB NO.: 7330193

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Thursday, May 8, 2025

10:00 AM EASTERN TIME

Video-Recorded Expert Deposition of
STEPHEN H. CULP, MD, PHD, at the offices of:

ALLEN ALLEN ALLEN & ALLEN PC
946 Grady Avenue, Suite 201
Charlottesville, VA 22903

Pursuant to notice, before Denise
Dobner Vickery, Certified Realtime Reporter,
Registered Merit Reporter, and Notary Public in
and for the Commonwealth of Virginia.

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8 Jenna Butler, Esq. - Ward & Smith

9 Zina Bash, Esq. - Keller Postman

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P R O C E E D I N G S

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THE VIDEOGRAPHER: We are now
on the record.

My name is Gordon Thomas and
I'm a videographer for Golkow. Today's
date is May 8, 2025, and the time is
10:00 AM.

This video deposition is being
held at 946 Grady Avenue, Suite 201,
Charlottesville, Virginia 22903, in the
matter of In re: Camp Lejeune Water
Litigation for the United States District
Court for the Eastern District of North
Carolina.

The deponent is Dr. Stephen
Culp.

Will counsel please identify
themselves.

MS. KONSTANTOPOULOS: Melanie
Konstantopoulos on behalf of the United
States.

MS. KLIMEK: Amy Klimek on
behalf of the United States.

1 MR. WALLACE: Pat Wallace of
2 the PLG and Milberg law firm appearing
3 with my co-counsel and associate, Amanda
4 Memmer on behalf of the PLG and Milberg.

5 THE VIDEOGRAPHER: And Zoom
6 participates will be noted on the
7 stenographic record.

8 And the court reporter is
9 Denise Vickery, who will now swear in the
10 witness.

11 - - -

12 STEPHEN H. CULP, MD, PHD
13 called for examination, and, after having been
14 duly sworn, was examined and testified as
15 follows:

16 - - -

17 EXAMINATION

18 - - -

19 BY MS. KONSTANTOPOULOS:

20 Q. Good morning again, Dr. Culp. I
21 know I already introduced myself, but for the
22 record, my name is Melanie Konstantopoulos. I
23 represent the United States. Thank you for being
24 here today.

1 Can you please state your full name
2 for the record.

3 A. Stephen Culp.

4 Q. What is your current business
5 address?

6 A. Good question.

7 My -- my home address is for this
8 purposes is 6 Queens Anne Court, Palmyra, Virginia
9 22963.

10 Q. And are you using your home address
11 as your business address?

12 A. For my consulting, yes.

13 Q. For your consulting work in this
14 case?

15 A. Yes.

16 Q. As an expert --

17 A. Yes.

18 Q. -- in this matter?

19 I'd like to go over some preliminary
20 deposition matters to ensure we are all on the
21 same page.

22 First and foremost, do you
23 understand that a few minutes ago you took an oath
24 to tell the truth?

1 A. Yes.

2 Q. And do you understand that this is
3 the same oath that you would take in a court
4 subject to the same penalties of perjury?

5 A. Yes.

6 Q. I will ask questions and please
7 answer them to the best of your ability. If you
8 do not understand a question, please let me know
9 and I will try to clarify. If you do not ask for
10 clarification, I will assume you understood the
11 question.

12 Is that fair?

13 A. Yes.

14 Q. During the deposition, the court
15 reporter, as you can see, will record and
16 transcribe everything we say here today.

17 To make sure her job is easier and
18 to make sure that we have a clear record, when
19 answering the question, please verbalize your
20 answers so that the court reporter can accurately
21 transcribe them. If the answer is yes or no,
22 please say yes or no. They cannot transcribe
23 uh-huh or huh-uh, and they cannot see or
24 transcribe whether you nod your head, shaking in

1 the affirmative or negative.

2 A. Correct.

3 Q. Okay. In a normal conversation,
4 it's typical that you may anticipate what I am
5 asking before I complete the question and want to
6 answer before I finish, but for the record and for
7 the court reporter, I ask that you let me finish
8 my question completely before answering. The
9 court reporter cannot accurately transcribe if
10 we're talking over each other.

11 A. Understood.

12 Q. And I will -- and I will, of course,
13 extend the same courtesy. Maybe not right there,
14 but I will do it later.

15 Please talk at a reasonable pace,
16 like the pace I am speaking now, so the court
17 reporter can record everything.

18 During the deposition, you may hear
19 other attorneys say "objection." Unless your
20 attorney instructs you specifically not to answer
21 the question, please answer the question after --
22 after the objection has been made.

23 Do you understand?

24 A. Yes.

1 Q. We can take breaks from time to
2 time. If you need to take a break, please let me
3 know. I simply ask that you answer my question,
4 if that question is still pending, before we take
5 the break.

6 Do you understand?

7 A. Yes.

8 Q. Is there any reason why you are
9 unable to give your most truthful and
10 accurate -- accurate testimony here today?

11 A. No.

12 Q. Is there any reason your memory
13 might be impaired today?

14 A. No.

15 Q. Is there any reason your memory --
16 oh, are you currently taking any medication that
17 might impair you?

18 A. No.

19 Q. Did you do anything in preparation
20 for today's deposition?

21 A. I did.

22 Q. What was that?

23 A. I reviewed my report that I
24 submitted, I met with counsel yesterday, and I

1 reviewed any articles that stood out in my report.

2 Q. You said you met with counsel
3 yesterday.

4 How long did that meeting last?

5 A. Three hours.

6 Q. Was anyone else present in those
7 meetings?

8 A. No.

9 Q. Did you also meet with counsel prior
10 to today's deposition today?

11 A. Yes.

12 Q. And how long did that meeting last?

13 A. I mean, I met with them not
14 necessarily about the deposition but meeting
15 them -- with them regarding drafting, you know,
16 the report and things like that.

17 Q. Are you referring to meeting with
18 them to draft a report this morning?

19 A. No.

20 Q. Okay. Earlier you indicated that in
21 preparation for today's deposition, you reviewed
22 some of the studies from your report.

23 Which studies did you review?

24 A. Mainly the Bove studies.

1 MS. KONSTANTOPOULOS: I'm
2 going to show you what I'm marking as
3 Exhibit 1, which is the subpoena that was
4 sent to you, and notice of deposition.

5 (Document marked for
6 identification as Culp Exhibit 1.)

7 BY MS. KONSTANTOPOULOS:

8 Q. Do you recognize this as your
9 subpoena and notice of a deposition for today?

10 A. Yes.

11 Q. If you turn to Attachment A near the
12 end of the document, this is the request for
13 production of documents attached to your
14 deposition notice that you received; is that
15 correct?

16 A. Yes.

17 Q. Did you review this request for
18 production of documents?

19 A. Yes.

20 Q. I'm going to go through these
21 questions.

22 Do you have any responsive documents
23 to Attachment A that you would like to share here
24 today?

1 A. No.

2 Q. Okay. I'm going to go through
3 Attachment A. Number 1. The request specifically
4 asks for: All e-mails, letters, correspondence,
5 text messages, conversations, chats, voicemails,
6 data, technical files, or other communications
7 pertaining to Camp Lejeune sent or received prior
8 to your retention as an expert in this matter,
9 including to, from, or with Morris Maslia or David
10 Savitz.

11 Do you have -- did you have any
12 communications with either prior to your retention
13 as an expert in this matter?

14 A. No.

15 Q. For number 2. All e-mails, letters,
16 correspondence, text messages, conversations,
17 chats, voicemails, data, technical files, or other
18 communications pertaining to Camp Lejeune,
19 including, from, or with: Robert Faye, Jason
20 Sautner, Rene Suarez-Soto, Susan Martel, Scott
21 Williams, Frank Bove, Mike Partain, Jerry
22 Ensminger, Lori Freshwater, and Paul Rosenfeld.

23 Did you have any such
24 communications?

1 A. No.

2 Q. For number 3 we requested: All
3 e-mails, letters, correspondence, text messages,
4 conversations, chats, voicemails, or other
5 communications to, from, or with any individual
6 who has filed a claim with the Department of the
7 Navy or the Eastern District of North Carolina
8 pursuant to the Camp Lejeune Justice Act of 2022.

9 Do you have any such correspondence?

10 A. No.

11 Q. Have you had any such
12 correspondence?

13 A. No.

14 Q. And the 4th is for bills, invoices,
15 or other documents reflecting compensation paid by
16 you -- excuse me -- to you related to this
17 litigation.

18 I know counsel has provided a copy
19 of invoices prior to today's deposition.

20 Are there any additional invoices
21 that you intend to produce?

22 A. No.

23 Q. How did you first learn about this
24 matter?

1 A. I was -- I work with the Medical
2 Science Associates, who requested if I was
3 interested in lending help as an expert witness in
4 this matter.

5 Q. Who is Medical Science Associates?

6 A. It's a company I've worked with for
7 a decade now on various projects, namely, expert
8 opinions, things like that, who help facilitate,
9 you know, the administrative support for me to
10 work directly with clients.

11 Q. What do you mean by "administrative
12 support"?

13 A. Mainly just scheduling, any sort
14 of -- at my direction and approval, any sort of
15 pulling different manuscripts, papers, studies,
16 that I can then review in a cost-effective manner.

17 Q. Does anyone employed by Medical
18 Associates, other than yourself, review any of the
19 documents that you indicated that they pull for
20 you?

21 A. Not to my knowledge.

22 Q. And approximately when were you
23 first contacted by Medical Science Associates
24 about this case? Approximately what date?

1 A. I don't know exactly, but I believe
2 it was about two years ago.

3 Q. And do you have the ability to
4 potentially turn down any request for your expert
5 services when Medical Science Associates reaches
6 out to you regarding a potential case?

7 A. Yes, and I have in the past.

8 Q. Okay. When were you retained in
9 this litigation?

10 A. I do not know the exact date.

11 Q. Was it in 2023?

12 A. Yes.

13 Q. Do you recall approximately what
14 month you were retained?

15 A. I'm going to say it was around
16 May/June, but I'm not sure.

17 Q. Do you have a retainer agreement?

18 A. Yes.

19 Q. Do you have a copy of that retainer
20 agreement here with you today?

21 A. Not with me today, no.

22 Q. Okay. Did you perform any work in
23 connection with this matter prior to executing a
24 retainer agreement?

1 A. No.

2 Q. When you were first retained, what
3 information were you provided with at the time?

4 A. The first information I was provided
5 with that was two ATSDR reports and the -- the
6 mandate of what was expected of expert witnesses
7 at the time.

8 Q. What was that mandate?

9 A. To review in my capacity the
10 available literature, the available studies, and
11 assess whether or not it is my opinion that there
12 was a causal -- a causal association between
13 contaminated water at Camp Lejeune and, for me
14 specifically, bladder cancer.

15 Q. And just to make sure, were you
16 retained by Medical Science Associates or by
17 plaintiffs' counsel in this case?

18 A. Plaintiffs' counsel.

19 Q. Okay. Are you a contractor that
20 works for Medical Science Associates or are you an
21 employee?

22 A. I'm not an employee. More of a
23 consultant.

24 Q. And who provided you with the ATSDR

1 Camp Lejeune studies? Was it plaintiffs' counsel
2 or was it Medical Science Associates?

3 A. Plaintiffs' counsel.

4 Q. Is it your understanding that you
5 may testify as an expert in any other part of this
6 litigation aside from the content that's contained
7 in the expert report that you're being deposed
8 about today?

9 A. Please clarify.

10 Q. Sure.

11 You have submitted a general
12 causation expert report in this case; correct?

13 A. Correct.

14 Q. Do you anticipate testifying in this
15 case for -- in any other capacity besides the
16 opinion you made -- you had made in the general
17 causation report?

18 A. No.

19 Q. Have you been a treating provider
20 for anyone who has claimed injury in this lawsuit?

21 A. Not to my knowledge.

22 Q. Before we go any further, I'd like
23 to establish a few abbreviations that I'll use
24 throughout this deposition that I hope we can

1 agree to.

2 I will list them all, and if you
3 have any objection, please let me know.

4 When I say TCE, I am referring to
5 trichloroethylene -- trichloro?

6 A. Ethylene.

7 Q. Ethylene, yes.

8 Do you agree?

9 A. Yes.

10 Q. Okay. When I say PCE, I'm referring
11 to tetrachloroethylene -- chloro --

12 A. Ethylene.

13 Q. Tetrachloroethylene.

14 A. PCE. Agree.

15 Q. Or -- or perchloroethylene? (Laugh).

16 A. I agree.

17 Q. Okay. Thank you. This is why we
18 have abbreviations.

19 When I say --

20 MR. WALLACE: I'm just going
21 to -- when you -- that last abbreviation
22 you or statement you said
23 perchloroethylene. Did you mean to say
24 perchloroethylene?

1 THE WITNESS: Yes.

2 MS. KONSTANTOPOULOS: Yes, I
3 did.

4 MR. WALLACE: All right. Just
5 to make sure. Because the very last
6 thing you said was thylene. Okay. Thank
7 you.

8 MS. KONSTANTOPOULOS: Thank
9 you, counsel.

10 MR. WALLACE: Good.

11 BY MS. KONSTANTOPOULOS:

12 Q. When I say IARC, I'm referring to
13 the International Agency for Research on Cancer.

14 A. Agree.

15 Q. When I say EPA, I'm referring to the
16 United States Environmental Protection Agency.

17 A. Agree.

18 Q. When I'm referring to ATSDR, I'm
19 referring to the Agency for Toxic Substances and
20 Disease Registry.

21 A. Agree.

22 Q. Okay. Are you familiar with the
23 terms I just listed?

24 A. Yes.

1 Q. And you can pronounce them much
2 better than me.

3 A. Maybe.

4 MS. KONSTANTOPOULOS: You
5 filed an expert report in this matter
6 that I'm going to mark as Exhibit 2,
7 which is entitled "Rule 26 Report of
8 Stephen H. Culp, MD PhD."

9 (Document marked for
10 identification as Culp Exhibit 2.)

11 BY MS. KONSTANTOPOULOS:

12 Q. Please turn to page 46 of your
13 report.

14 That's your signature page; correct?

15 A. Yes.

16 Q. And there were two exhibits included
17 with your expert report; correct?

18 A. Yes.

19 Q. Okay. Exhibit A is a copy of your
20 curriculum vitae, or CV?

21 A. Correct.

22 Q. And Exhibit B is a copy of your fee
23 schedule?

24 A. Let me confirm.

1 Yes. (Laugh).

2 Q. Wonderful.

3 On page 1 of your expert report, you
4 reference Materials Considered List as Exhibit C
5 and indicate that this will follow; is that
6 correct?

7 A. Correct. That's not here.

8 Q. Correct.

9 And counsel later provided something
10 called "reliance files" --

11 A. Correct.

12 Q. -- in lieu of Exhibit C; is that
13 correct?

14 A. Correct.

15 Q. Okay. We can go over that later.

16 All right. I'm going to go -- I'm
17 going to direct your attention to Exhibit 2,
18 specifically Exhibit A of Exhibit 2 of your expert
19 report, which is your CV.

20 Have there been any changes to your
21 CV since you filed your expert report in December
22 2024?

23 A. No major changes, other than there's
24 been a few manuscript submissions and acceptance

1 since then unrelated to this matter.

2 Q. According to your expert report, you
3 are a physician and surgeon licensed to practice
4 medicine in the Commonwealth of Virginia; correct?

5 A. Correct.

6 Q. Your CV states that you devote 80
7 percent of your professional time to your active
8 clinical practice and instruction at the UVA
9 School of Medicine; correct?

10 A. Correct.

11 Q. What is the remaining 20 percent of
12 your practice devoted to?

13 A. Admin, research, participation in
14 didactic conferences for residents and medical
15 students. That's pretty much it.

16 Q. You obtained your medical license in
17 the State of Virginia in 2011 and are still
18 currently licensed; is that correct?

19 A. Correct.

20 Q. You were previously licensed in
21 Texas and Washington, however, those licenses
22 expired; is that correct?

23 A. Correct.

24 Q. You became board-certified in

1 urology by the American Board of Urology in 2013
2 and this was renewed in 2023; correct?

3 A. Correct.

4 Q. According to your CV, this is the
5 only certification that you have.

6 Is that still correct?

7 A. Correct.

8 Q. You underwent your resident training
9 in urology at the University of Washington in
10 Seattle in 2008; correct?

11 A. Correct.

12 Q. During that time, you also obtained
13 a Master of Science in epidemiology in 2006?

14 A. Correct.

15 Q. You have been practicing urology --
16 in urology and urologic oncology at UVA since
17 August of 2011; is that right?

18 A. Yes.

19 Q. And you're currently a full
20 professor with tenure in the Department of Urology
21 at UVA correct?

22 A. Correct.

23 Q. As a practicing urologic oncologist,
24 would you agree that you manage patients and

1 operate on genitourinary cancer, including kidney,
2 bladder, and prostate cancer?

3 A. Correct.

4 Q. You listed your specialties in the
5 field of medicine in your expert report; isn't
6 that correct?

7 A. Correct.

8 Q. And just pointing your attention to
9 the last paragraph on page 1 of your expert
10 report, you indicated that you specialized --
11 expert report, Exhibit 2.

12 You indicated that you specialize in
13 open radical nephrectomy and complete partial
14 nephrectomy, radical cystectomy with urinary
15 diversion, open prostatectomy, retroperitoneal
16 lymph node dissection, and penectomy with inguinal
17 lymph node dissection for penile cancer.

18 So far is that correct?

19 A. Yes.

20 Q. And on page -- the next page, you
21 also indicated that you specialize in the
22 endoscopic management of urothelial carcinoma;
23 correct?

24 A. Correct.

1 Q. You didn't list any other specific
2 specialties in your expert report; is that fair?

3 A. Fair, yes.

4 Q. In your CV, which is Exhibit 2,
5 Exhibit A on pages 4 to 5, you listed your
6 clinical areas of research interest which includes
7 bladder cancer; correct?

8 A. Correct.

9 Q. Under the heading for Bladder
10 Cancer, you specified that you were interested in
11 predictors of high versus low risk muscle-invasive
12 disease and need for neoadjuvant chemotherapy
13 prior to radical cystectomy, and the role of TMT
14 in treatment of patients with muscle-invasive
15 bladder cancer; correct?

16 A. Correct.

17 Q. You would agree that your clinical
18 research related to bladder cancer is focused on
19 the treatment of bladder cancer; correct?

20 A. For the most part, yes.

21 Q. You would agree that your Honors and
22 Awards listed on page 3 of your CV are focused on
23 your work in urology; correct?

24 A. Besides the one, the awards in

1 medical school, yes, they're all urologic related.

2 Q. What is the other one related to?

3 A. I mean, prior to my residency, the
4 Alpha Omega Alpha is the society within medical
5 school. Anybody, doesn't have to be urologic
6 specific, as well as the scholarship was awarded.
7 Those were medical school related, not necessarily
8 urology.

9 Q. Understood.

10 And that's not in a specific
11 specialty --

12 A. No.

13 Q. -- is that correct?

14 Okay. You do not currently hold any
15 certifications in the field of epidemiology;
16 correct?

17 A. No.

18 Q. You do not currently hold any
19 certifications in the field of toxicology;
20 correct?

21 A. Correct.

22 Q. You do not hold a professorship in
23 the field of epidemiology; correct?

24 A. Correct.

1 Q. You do not hold a professorship in
2 the field of toxicology; correct?

3 A. Correct.

4 Q. You indicated on page 2 of Exhibit 2
5 of your expert report that "I have authored
6 multiple manuscripts on population-based
7 epidemiological studies."

8 What do you mean by "manuscripts"?

9 A. Manuscripts are papers that are
10 studies that are written up, submitted to a
11 specific journal, and accepted for publication.

12 Q. Are those studies peer reviewed?

13 A. Yes.

14 Q. You would agree that your CV
15 includes a number of publications that you have
16 authored; correct?

17 A. Correct.

18 Q. Can you point out which of those
19 publications are manuscripts based on population
20 -- can you identify which of those publications
21 are manuscripts on population-based
22 epidemiological studies?

23 A. (Reviews document.)

24 Number 9. Number 13. Number 21.

1 Number 22. Number 23. Number 39. Those are the
2 manuscripts.

3 You want me to go through the
4 abstracts as well.

5 Q. Are there additional abstracts that
6 you would qualify as manuscripts?

7 A. Potentially, yeah.

8 Q. Yes, please.

9 A. (Reviews document.)

10 Number 13 in the abstracts. That
11 also is correlated with one of the manuscripts,
12 but just for completeness.

13 Q. What page are you looking at?

14 A. 27.

15 Q. Thank you.

16 A. Number 16.

17 Q. Are you referring to number 16 on
18 page 27?

19 A. Yes.

20 Number 20 on page 27. Number 24 on
21 page 28. Number 25 on page 28.

22 (Reviews document.)

23 Number 54 on page 30. Number 57 on
24 page 31. Number 58 on page 31. Number 59 on page

1 41. Number 60 on page 31. And that's it.

2 Q. Thank you for going through those.

3 Of those manuscripts that you
4 pointed out, is number 13 the only
5 population-based study that dealt specifically
6 with bladder cancer?

7 A. That was actually dealt with upper
8 tract urothelial carcinoma. So not bladder, but
9 upper like kidney and ureter.

10 Q. Did any of the studies --
11 population-based studies that you just listed
12 specifically address bladder cancer?

13 A. No, not the population-based.

14 Q. Okay. Thank you.

15 You would agree you've never
16 published peer-reviewed articles specifically
17 addressing the association between PCE and bladder
18 cancer; correct?

19 A. Correct.

20 Q. You would agree you've never
21 published peer-reviewed articles specifically
22 addressing the association between TCE and bladder
23 cancer; correct?

24 A. Correct.

1 Q. You would agree you have never
2 published peer-reviewed articles specifically
3 addressing the association between benzene and
4 bladder cancer; correct?

5 A. Correct.

6 Q. And you would agree that none of the
7 publications you have authored analyze the
8 effects -- the effect of environmental
9 contaminants such as PCE, TCE, and benzene on
10 bladder cancer; correct?

11 A. Correct.

12 Q. Okay. Moving on. In your expert
13 report, Exhibit 2 page 1, you stated:

14 "I have not provided an expert
15 opinion -- expert opinion testimony in deposition
16 or at trial in the last four years."

17 A. Correct.

18 Q. Is that correct?

19 A. Yes.

20 Q. And you have never testified as an
21 expert in the field of epidemiology; correct?

22 A. Correct.

23 Q. And you have never testified in the
24 field -- as an expert in the field of toxicology;

1 correct?

2 A. Correct.

3 Q. Have you ever served as an expert
4 witness in a toxic tort case?

5 A. No.

6 Q. Have you ever testified as an expert
7 in the field of urology?

8 A. Please clarify.

9 Q. Testify. Have you ever testified as
10 an expert in the field of urology at a dep -- in a
11 court?

12 MR. WALLACE: Objection.

13 THE WITNESS: I have worked
14 on a malpractice case as -- one
15 malpractice case, literally my only other
16 trial, dealing with penile cancer as an
17 expert for the plaintiff.

18 BY MS. KONSTANTOPOULOS:

19 Q. And did you testify in court in that
20 malpractice case that you just referenced?

21 A. I did.

22 Q. And were you admitted as an expert
23 in the field of urology related -- relating to
24 penile cancer?

1 A. I -- yes. I mean, I assume so. I
2 mean, that's why I was retained.

3 Q. Were you deposed in that case?

4 A. Yes.

5 Q. Have you ever been deposed in
6 connection with your work as an expert witness
7 other than that case?

8 A. No.

9 Q. The malpractice case that you're
10 referring to, was that a case in Tennessee from
11 2019 entitled Lyle versus McDaniel?

12 A. Yes.

13 Q. Have you ever been retained as an
14 expert in any other cases?

15 A. No.

16 Q. Prior to this case, have you ever
17 worked for Bell Law Group?

18 A. No.

19 Q. Keller Postman?

20 A. No.

21 Q. Lieff Cabraser Heimann & Bernstein?

22 A. No.

23 Q. The Dowling law firm?

24 A. No.

1 Q. Weitz & Luxenberg?

2 A. No.

3 Q. Wallace & Graham?

4 A. No.

5 Q. Motley Rice?

6 A. No.

7 MS. KONSTANTOPOULOS: Okay. I
8 would like to mark as Exhibit 3
9 Plaintiffs' Designation of Phase II
10 Expert Witnesses with Respect to Bladder
11 Cancer Stephen H. Culp's Reliance Files.

12 (Document marked for
13 identification as Culp Exhibit 3.)

14 BY MS. KONSTANTOPOULOS:

15 Q. Are you familiar with this document?

16 A. Yes.

17 Q. Did you provide a list of
18 publications or reliance files with the
19 designation?

20 A. Please clarify.

21 Q. This document includes a list of the
22 documents that you relied upon in forming your
23 expert opinions in this case; correct?

24 A. Correct.

1 Q. Okay. Did the reliance files list
2 include all of the materials, facts, and data you
3 considered in forming your opinions?

4 A. Yes.

5 Q. And if something is not included,
6 then you didn't consider it; is that fair?

7 A. Correct. And I would add, the only
8 addition, we made one addition. The manuscript by
9 Dr. Yu, Y-u. That's -- I don't know if that's --
10 I don't think that's listed on here, but that's an
11 additional one that came after the report that I
12 reviewed and considered.

13 Q. What is the name of that study?

14 A. It looked at low level -- levels of
15 benzene using the UK database -- I don't know
16 the -- I think we provided that as a late
17 submission -- in a population-based study out of
18 the UK that was published in March of this year.

19 MS. KONSTANTOPOULOS: Okay.

20 Counsel, have you provided a copy of that
21 report?

22 MR. WALLACE: I believe we
23 have.

24 MS. KONSTANTOPOULOS: Or

1 amended?

2 Do you have a copy of that
3 report here today?

4 MR. WALLACE: I don't have it
5 with me right now, no.

6 MS. KONSTANTOPOULOS: Okay.
7 Thank you.

8 BY MS. KONSTANTOPOULOS:

9 Q. Now, earlier in your -- in your
10 expert report in Exhibit 2, you mentioned
11 Exhibit C, which you referenced as a Materials
12 Considered List; is that correct?

13 A. Correct.

14 Q. But this document uses the term
15 "reliance files"; correct?

16 And by "this document" I'm referring
17 to Exhibit 3.

18 A. (Reviews document.)

19 Correct. It says "reliance files."

20 Q. Is there any difference between the
21 term "materials considered" and "reliance files"?

22 A. I mean, this is a complete list of
23 everything I reviewed or at least --

24 Q. By "this" you're referring to

1 Exhibit 3?

2 A. Yes.

3 Q. Okay.

4 A. This is a complete list of
5 everything I pulled and reviewed, at least
6 initially. My reliance, though, was obviously
7 heavy on certain studies as opposed to other.
8 This is mainly for completeness that this is what
9 I pulled initially to review. Some of these
10 studies were not relevant in my opinion, and I did
11 not rely on them.

12 Q. Thank you.

13 In your reliance files, you
14 indicated that you have reviewed reports from the
15 following experts: Benjamin Hatten, Laura
16 Plunkett, Morris Maslia, Kathleen Gilbert, Stephen
17 Bird?

18 A. Correct.

19 Q. And that would be towards the end of
20 the reliance files.

21 A. Correct.

22 Q. Exhibit 3.

23 Have there been any other reports
24 that you reviewed from any other experts since you

1 filed Exhibit 3 -- since Exhibit 3 was filed?

2 MR. WALLACE: Objection.

3 THE WITNESS: Dr. Shields and
4 Dr. Goodman. I reviewed their reports.

5 BY MS. KONSTANTOPOULOS:

6 Q. In addition, Exhibit 3 indicates
7 that you reviewed the prior deposition of Frank
8 Bove and Morris Maslia; is that correct?

9 A. Correct.

10 Q. Have you reviewed any other
11 depositions?

12 A. Not to my knowledge.

13 Q. Since you prepared your expert
14 report, have you read any other -- any of the
15 other plaintiffs' expert reports?

16 MR. WALLACE: Objection.

17 THE WITNESS: Not unless
18 they're listed, no.

19 BY MS. KONSTANTOPOULOS:

20 Q. All right. I'm looking at Exhibit 2
21 page 2 of your expert report under the section
22 entitled "Mandate." There you stated:

23 "I was asked to review the published
24 epidemiological literature and other relevant

1 publications to determine whether there is a
2 causal relationship between bladder cancer and
3 exposure to PCE, TCE, benzene and the contaminated
4 water at Camp Lejeune" related to this lawsuit.

5 Did I read that correctly?

6 A. Yes.

7 Q. You did not opine on whether a
8 causal relationship exists for vinyl chloride and
9 bladder cancer; correct?

10 A. Correct.

11 Q. To identify relevant literature in
12 support of your mandate, you performed a
13 literature search on PubMed; correct?

14 A. Correct.

15 Q. PubMed is the National Library of
16 Medicine through the National Institute of Health;
17 correct?

18 A. Correct.

19 Q. You used the following search terms:
20 bladder cancer, urothelial cancer, PCE, TCE,
21 benzene, and dry cleaning; is that correct?

22 A. Correct.

23 Q. Are there any other search terms
24 that you used?

1 A. Not to my knowledge.

2 Q. How did you come up with your search
3 terms?

4 A. I tried to be as exact as possible
5 but yet generalizable enough to capture as many
6 studies as possible. Obviously I wanted to,
7 number one, see what studies were out there that
8 specifically examined these chemicals and their
9 relationship with bladder cancer, if there was a
10 relationship, or had -- if those studies had been
11 done, and to try to best match the cohort of Camp
12 Lejeune as to exposure through contaminated water,
13 dry cleaning.

14 And I tried to -- because most
15 studies -- the value of a study in this situation,
16 whether or not it's a good study or a bad study,
17 if it can't be generalized to the group of
18 interest, then it's not really applicable. So I
19 wanted to be as specific as possible, but yet have
20 some generalities to it.

21 Q. Along those lines, why did you use
22 the occupation of dry cleaning as a search term as
23 opposed to any other occupation?

24 A. Dry cleaning mainly because of the

1 report, ATSDR report, looking at the contamination
2 by the dry cleaning business at Camp Lejeune.

3 Q. And you used the search terms
4 bladder cancer and urothelial cancer.

5 You agree that urothelial --
6 urothelial cancer is the most common type of
7 bladder cancer; correct?

8 A. Correct.

9 Q. And you are not opining on the
10 effect of PCE, TCE, or benzene on the effect of
11 squamous cell carcinoma or adenocarcinoma; is that
12 correct?

13 A. Correct.

14 Q. And as a part of your analysis in
15 your expert report, which is marked as Exhibit 2,
16 you didn't rely on analyzing -- you didn't analyze
17 plaintiffs' medical records in order to form your
18 opinion; correct?

19 A. Correct.

20 Q. And in your report, Exhibit 2, you
21 did not opine on the exposure levels of PCE, TCE,
22 or benzene necessary to cause bladder cancer;
23 correct?

24 A. Correct.

1 Q. Looking again at Exhibit 2 on
2 page 2, you stated:

3 "The standard of proof for my review
4 is determined by the Camp Lejeune Justice Act of
5 2022, which states: BURDENS AND STANDARD OF PROOF
6 - (1) IN GENERAL - The burden of proof shall be on
7 the party filing the action to show one or more
8 relationships between the water at Camp Lejeune
9 and the harm. (2) STANDARDS - To meet the burden
10 of proof described in paragraph (1), a party shall
11 produce evidence showing that the relationship
12 between exposure to the water at Camp Lejeune and
13 the harm is - (A) sufficient to conclude that a
14 causal relationship exists; or (B) sufficient to
15 conclude that a causal relationship is at least as
16 likely as not."

17 Did I read that correctly?

18 A. Yes.

19 Q. Did the plaintiffs' attorneys
20 provide you with the BURDENS AND STANDARD OF PROOF
21 section of the Camp Lejeune Justice Act?

22 A. They did.

23 Q. And that occurred when you were
24 first retained?

1 A. Yes.

2 Q. Did the plaintiffs' attorney tell
3 you to rely on that association -- that section in
4 your analysis?

5 MR. WALLACE: Objection. I'm
6 going to ask the witness to refrain from
7 disclosing any communications he's had
8 with counsel.

9 THE WITNESS: I accept
10 plaintiffs' attorney's recommendation and
11 respectfully won't answer.

12 MS. KONSTANTOPOULOS: For the
13 record, Federal Rule of Civil Procedure
14 26(b)(4)(C)(iii) allows inquiries into
15 attorney expert communications concerning
16 assumptions relied upon.

17 BY MS. KONSTANTOPOULOS:

18 Q. In your reliance -- in Exhibit 3,
19 which I'm referring to as your reliance files, you
20 list the court's opinion of June 5, 2024, and this
21 is on page 8 number 132.

22 A. Uh-huh.

23 Q. Did you review that order?

24 A. I was provided it, but I reviewed

1 it, but it did not -- I did not -- I'm not a
2 lawyer. I don't -- didn't understand much of it.
3 So I did not rely on it. Or it did not form any
4 basis of my opinion.

5 Q. And is it fair to say you don't have
6 legal training to evaluate that court order or
7 legal standard?

8 A. My legal training is limited. So
9 I -- very limited since I didn't go to law school.
10 So I would -- I would err on the side of not
11 trying to understand or read into it.

12 Q. So you would agree you don't have
13 legal training to opine on whether burden of proof
14 used to evaluate evidence in a legal case is the
15 same as the standard that scientists use to
16 evaluate epidemiologic findings?

17 MR. WALLACE: Objection.

18 THE WITNESS: Please clarify.

19 BY MS. KONSTANTOPOULOS:

20 Q. Sure.

21 You would agree you don't have any
22 legal training to opine on whether a burden of
23 proof used to evaluate evidence in a legal case is
24 the same as a scientific standard?

1 MR. WALLACE: Same objection.

2 THE WITNESS: I don't agree.

3 BY MS. KONSTANTOPOULOS:

4 Q. Why don't you agree?

5 A. I believe I'm sufficiently trained
6 to evaluate literature in epidemiology and bladder
7 cancer to form opinion, regardless of the legal
8 implications but to, you know, based on the
9 mandate, I believe I am able to do that.

10 Q. Is it fair to say, though, that you
11 agree you don't have legal training to opine on a
12 legal burden of proof -- the meaning of a legal
13 burden of proof?

14 MR. WALLACE: Objection.

15 THE WITNESS: I would -- I
16 would disagree.

17 BY MS. KONSTANTOPOULOS:

18 Q. You do have legal training?

19 A. No, I don't have legal training per
20 se, but I have enough to understand the mandate.
21 I do feel I am sufficiently capable of
22 understanding the mandate that was presented.

23 Q. Going back to Exhibit 2 page 2 of
24 your expert report, you go on to state:

1 "This legal standard is consistent
2 with the 'equipoise and above' classification of
3 the evidence described in the scientific
4 literature. Using this standard, my report will
5 examine whether the published epidemiological
6 literature on exposure to PCE, TCE, benzene, and
7 the contaminated water at Camp Lejeune provides
8 sufficient evidence to conclude that exposure to
9 the same causes or is as likely as not a cause of
10 bladder cancer."

11 Did I read that correctly?

12 A. Yes.

13 Q. In this section, you mention the "at
14 least as likely as not" language from the Camp
15 Lejeune Justice Act; correct?

16 A. Yes.

17 Q. For purposes of your expert report,
18 do you equate equipoise and above with at least as
19 likely as not?

20 A. I don't routinely use equipoise --
21 the word "equipoise" since it's a nonmedical term
22 in my day-to-day life. I rely more on the "as
23 likely as not."

24 Q. Is as likely as not a scientific

1 term?

2 A. It can be.

3 Q. In what context?

4 A. There are certain situations
5 clinically that, you know, for instance, with
6 bladder cancer, when I resect a bladder tumor out
7 of the bladder, I usually tell the patient there's
8 a 50 percent chance of there being a new tumor in
9 the future.

10 So even though that's not a
11 statistical study, it's as likely as not that
12 they're going to develop a new tumor in the
13 future.

14 Q. So you use the term "as likely as
15 not" to describe a patient's chances of recovery
16 so that they can understand it; correct?

17 A. Correct.

18 MR. WALLACE: Objection.

19 BY MS. KONSTANTOPOULOS:

20 Q. But it is not a scientific standard
21 that has been peer reviewed; is that fair?

22 MR. WALLACE: Objection.

23 THE WITNESS: I mean, I've
24 seen it in the literature but not -- when

1 a study is performed, it is not uncommon
2 for the authors to elaborate on other
3 findings in a study that necessarily were
4 not part of that hypothesis, and I've
5 seen that used before.

6 BY MS. KONSTANTOPOULOS:

7 Q. Do you know where the ATSDR
8 Assessment of Evidence from 2017 got the
9 "equipoise and above" standard from?

10 A. If I remember correctly, I think it
11 was based on the available studies that they
12 reviewed and determined that they -- these studies
13 showed a possible or probable association, but I'm
14 not exactly sure. I can't remember exactly.

15 Q. And you have reviewed Frank Bove's
16 deposition; isn't that correct?

17 A. Yes.

18 Q. Okay. Are you aware that Frank Bove
19 testified in his deposition that ATSDR picked this
20 classification scheme due to time constraints and
21 to add diseases to the VA Presumptive List?

22 MR. WALLACE: Objection.

23 THE WITNESS: Yes.

24 BY MS. KONSTANTOPOULOS:

1 Q. Would you agree that the equipoise
2 -- that equipoise can be used in clinical research
3 to refer to a situation where there is uncertainty
4 and not a balance of opinions?

5 MR. WALLACE: Objection.

6 THE WITNESS: I would not
7 agree that it's uncertainty as much as it
8 is a difference of opinion.

9 BY MS. KONSTANTOPOULOS:

10 Q. Would you agree equipoise and above
11 gives the veteran a benefit of the doubt?

12 MR. WALLACE: Objection.

13 THE WITNESS: I -- I have no
14 opinion on that, really.

15 BY MS. KONSTANTOPOULOS:

16 Q. Okay. And you recall that Dr. Bove
17 in his deposition stated that "the equipoise and
18 above standard" gives the veteran the benefit of
19 the doubt, don't you?

20 MR. WALLACE: Objection.

21 THE WITNESS: I don't
22 remember that specifically.

23 BY MS. KONSTANTOPOULOS:

24 Q. Would a copy of his deposition

1 refresh your recollection?

2 A. Sure.

3 MS. KONSTANTOPOULOS: I am
4 going to mark Frank Bove's deposition
5 transcript as Exhibit 4.

6 (Document marked for
7 identification as Culp Exhibit 4.)

8 BY MS. KONSTANTOPOULOS:

9 Q. I'm going to point your attention to
10 page 277 line 2.

11 Question: "And how does this
12 classification scheme, in your view, give the
13 veteran the benefit of the doubt?"

14 Answer: "Well, having an equipoise
15 and above does that. And I think that's what
16 I -- what the IOM thought."

17 And to be clear, I have marked the
18 videotaped and videoconferenced deposition of
19 Dr. Frank J. Bove taken Thursday, October 17, 2024
20 as Exhibit 4.

21 Does that help refresh your
22 recollection?

23 A. Yeah. I mean, he stated it.

24 Q. Fair enough.

1 In your scientific or medical
2 manuscripts or research, have you ever arrived at
3 a conclusion by giving a subject the benefit of
4 the doubt?

5 A. No.

6 Q. Do scientists in your field arrive
7 at conclusions by giving one study group the
8 benefit of the doubt over another?

9 A. No.

10 Q. Is there an empirical metric that
11 you're aware of for benefit of the doubt?

12 A. Not from a scientific viewpoint, no.

13 Q. Okay. Going back to Exhibit 2 of
14 your expert report on page 3, you describe your
15 methodology and the Bradford Hill criteria; is
16 that correct?

17 A. Correct.

18 Q. And on page 5 you explain the
19 urinary system and bladder cancer generally,
20 correct, including treatment, outcomes and
21 latency?

22 A. Correct.

23 Q. You agree that bladder cancer is the
24 fourth most common cancer amongst men; correct?

1 A. In the U.S., correct.

2 Q. And is it the sixth most
3 diagnosed -- diagnosed cancer generally?

4 A. Based on the American Cancer
5 Society, yes.

6 Q. Okay. You would agree that the
7 median age of diagnosis for men with bladder
8 cancer is 69 years old; is that right?

9 A. I know the average age is 73.
10 Average age is 73. I'm not -- I can't say the
11 median age. I don't have it here.

12 Q. You would agree that the most common
13 risk factor for bladder cancer is smoking;
14 correct?

15 A. That has been shown, that has been
16 explored, but I believe that bladder cancer is --
17 my -- my -- my personal opinion is that bladder
18 cancer is a very exposure-related disease. There
19 are no genetic syndromes associated with bladder
20 cancer. There's no genetic deficiencies that have
21 been shown to initiate bladder cancer.

22 And it's my opinion that it's fully
23 an exposure-related urothelial, not squamous or
24 adenocarcinoma, but urothelial is an

1 exposure-related disease and, yes, smoking has
2 been shown as a definite risk factor for the
3 development of bladder cancer.

4 Q. What are the well-established risk
5 factors for bladder cancer?

6 A. Age, smoking, occupational exposure
7 for urothelial would be the main, major ones.

8 Q. Okay.

9 A. And, well, gender, male versus
10 female, but that could be related to exposure.

11 Q. You would agree that exposure to
12 PCE, TCE, or benzene is not a well-established
13 risk factor that urologists would typically
14 consider in their everyday practice; correct?

15 MR. WALLACE: Objection.

16 THE WITNESS: Urologists
17 would -- urologic oncologists typically
18 would use occupational exposure as a risk
19 factor, not necessarily going down to
20 specific chemicals.

21 BY MS. KONSTANTOPOULOS:

22 Q. Moving on to page 4 of your expert
23 report, which is Exhibit 2, you indicated:

24 "In its 2017 assessment of the Camp

1 Lejeune water contamination, ATSDR applied the 'at
2 least as likely as not' standard (ATSDR, 2017).
3 In doing so, it announced that it did not use
4 confidence intervals to establish statistical
5 significance, explaining that there are
6 limitations of using statistical significance
7 testing and that the failure to achieve
8 statistical significance does not indicate lack of
9 evidence for a causal association."

10 Did I read that correctly?

11 A. Yes.

12 Q. You then went on in your expert
13 report in Exhibit 2 to state that the same ATSDR
14 standard governs your analysis and that you agree
15 with the ATSDR's approach and employ the same in
16 your review; is that correct?

17 A. Correct.

18 MS. KONSTANTOPOULOS: We will
19 now be marking the ATSDR Assessment of
20 Evidence from 2017 as Exhibit 5.

21 (Document marked for
22 identification as Culp Exhibit 5.)

23 BY MS. KONSTANTOPOULOS:

24 Q. Dr. Frank Bove performed ATSDR

1 systematic review of four chemicals and 16 health
2 outcomes as a part of Exhibit 5 of the ATSDR
3 Assessment of the Evidence report; correct?

4 A. Correct.

5 Q. And he completed this report by
6 himself; isn't that true?

7 A. I -- I am not sure. I don't know.

8 Q. Can you check to see if he's listed
9 as the only author?

10 A. You know where that is? (Laugh).

11 Q. Yeah.

12 A. I mean, if he listed himself and
13 said he did it, I have to defer to his -- him.
14 I'm not -- I don't have any knowledge of whether
15 he did this alone or by -- with other people. So.

16 Q. You agree that the 2007 ATSDR
17 assessment, Exhibit 5, did not use significance
18 testing to assess evidence for causality; correct?

19 A. Correct.

20 Q. Instead, it looked at the ratio of
21 the upper end of the confidence interval to the
22 lower end.

23 Is that your understanding?

24 A. That's my understanding.

1 Q. Have you used this confidence
2 interval ratio concept in your published studies
3 before?

4 A. As part of my published studies,
5 there have been conclusions made, again, not
6 necessarily on the primary hypothesis, but on
7 other factors that were discovered in the study,
8 where a finding was not significant, but there was
9 a positive or negative association that I
10 concluded that could be real.

11 Q. Okay. And what you have used in
12 your publications, is it fair to say that you're
13 referring to confidence intervals?

14 A. Correct. Not -- well, not -- not
15 significant based on a P-value and confidence
16 intervals would be, you know, obviously crossing
17 the null hypothesis with a 1, 1.0.

18 Q. Have you ever used a confidence --
19 something called a confidence interval ratio in
20 your publications in the past?

21 A. I have not.

22 Q. In the ATR Assessment of Evidence,
23 it states that a confidence interval ratio equal
24 to or less than 2 indicates good precision; is

1 that correct? Is that your recollection?

2 A. Yes.

3 MR. WALLACE: Objection.

4 BY MS. KONSTANTOPOULOS:

5 Q. And I'm referring to page 8 of the
6 report if you'd like to refresh your recollection.
7 And by "the report" I mean Exhibit 5.

8 A. (Reviews document.)

9 Q. The ATSDR Assessment of the Evidence
10 uses equipoise and above to describe the state of
11 the evidence with respect to the relationship
12 between some chemicals and diseases; correct?

13 A. Correct.

14 Q. In the past, you've never used that
15 phrase to describe scientific evidence in an
16 article that you published; correct?

17 A. I have not.

18 Q. Have you ever used the category
19 -- categorization scheme sufficient evidence for
20 causation, equipoise and above evidence for
21 causation, and below equipoise evidence for
22 causation in any specific article that you've
23 written?

24 A. No.

1 MR. WALLACE: Objection.

2 BY MS. KONSTANTOPOULOS:

3 Q. Other than the 2017 ATSDR Assessment
4 of the Evidence and the other studies authored by
5 Frank Bove listed in your expert report, was the
6 "equipoise and above" standard used in any of the
7 other epidemiological literature that you reviewed
8 in your expert report?

9 A. To my knowledge, no.

10 Q. Are you familiar with the National
11 Research Council of the National Academics,
12 otherwise known as NRC?

13 A. Vaguely.

14 Q. Are you familiar with David Savitz,
15 Dr. David Savitz, an epidemiologist?

16 A. I -- I've read some, you know,
17 not -- not specific, but I know he's involved in
18 the case.

19 Q. Would you agree that Dr. Savitz is a
20 highly respected -- highly respected in the field
21 of epidemiology?

22 MR. WALLACE: Objection.

23 THE WITNESS: I would assume.

24 BY MS. KONSTANTOPOULOS:

1 Q. Would you agree that statistical
2 significance is a factor that you look at in
3 evaluating a study?

4 A. It's one of the factors.

5 Q. And you performed statistical
6 significance testing in your published works;
7 correct?

8 A. Yes.

9 Q. And it's also important to analyze
10 standard incidence rate -- standard incidence
11 rate; correct?

12 MR. WALLACE: Objection.

13 THE WITNESS: It depends on
14 the study.

15 BY MS. KONSTANTOPOULOS:

16 Q. What is a risk ratio?

17 A. A risk ratio is a ratio of
18 development of a disease in those that are exposed
19 over those that are not exposed. So if an
20 exposure is related to development of that
21 disease, then the risk ratio will be greater
22 than 1. If it is directly protective, then it
23 would be less than 1.

24 Q. Okay. Is risk ratio the same as

1 odds ratio?

2 A. No.

3 Q. What's the difference?

4 A. So risk ratio relative risk is
5 usually with a prospective cohort, going forward
6 in time. So you have two groups, one exposed, one
7 not exposed. You evaluate them, look for the
8 outcome, and then at the end you could say the
9 risk of development of this disease is X over Y
10 for exposed versus not exposed.

11 Odds ratio is typically used for
12 retrospective studies. So you look at the
13 outcome, like case control, and you say, well,
14 these -- these you have bladder cancer versus no
15 bladder cancer. You look at what they were
16 exposed in the past.

17 So the -- if you want to be very
18 correct, what the prospective study is you are
19 exposed to X. Therefore, your risk of developing
20 this disease is Y. For an odds ratio, it's you
21 developed the disease. The odds that you were
22 exposed to X was this.

23 Q. Thank you.

24 What level of increased risk

1 reflects a modest association?

2 A. I tend not to use adjectives when I
3 look at point values. I use exact numbers. So
4 let's say a relative risk of 1.1. I say there's a
5 10 percent -- well, the point estimate is 1.1, not
6 necessarily the true point -- true point, but it's
7 the point estimate. I say there's a 10 percent
8 increased risk of developing the disease based on
9 this exposure.

10 Mild versus moderate versus
11 significant or severe, that's an adjective that I
12 leave up to the individual.

13 Q. And by "the individual," who are you
14 referring to?

15 A. Whoever wants to -- that's
16 interpreting this study. I mean, for me, a 10
17 percent risk increase is significant but may not
18 be for somebody else.

19 Q. And by "somebody else" you mean
20 another epidemiologist who's reviewing --

21 A. Another --

22 Q. -- the same results?

23 A. Another epidemiologist, another
24 doctor, whoever.

1 Q. Is there any published literature
2 that you're aware of that indicates that a risk
3 ratio of 1.1 establishes a significant
4 association?

5 A. Well, it depends on the -- the --I
6 mean, if it's significant, it's significant.
7 You're 95 percent sure based on your confidence
8 intervals that your true estimate is above 1. So
9 there is increased risk. Whether or not it's 10
10 percent, 20 percent, you're not sure, but that
11 depends on your confidence interval.

12 The only thing you can say for sure
13 is you can be 95 percent sure that the true
14 estimate is above 1 and it's within that
15 confidence interval. You don't know exactly what
16 it is. You never will. But then there's
17 obviously a 5 percent chance you're wrong as well.

18 Q. Are you aware that the EPA has
19 categorized an odds ratio between 1.0 and 1.3 as
20 evidence of a slight positive association?

21 MR. WALLACE: Objection.

22 THE WITNESS: I'm aware they
23 did that, yes.

24 BY MS. KONSTANTOPOULOS:

1 Q. But you don't agree with that
2 categorization?

3 A. Again, I don't like the use of
4 adjectives. I like exact reliance on the data and
5 what the data tells you.

6 Q. You're familiar with confidence
7 intervals; correct?

8 A. Yes.

9 Q. Have you published studies that
10 include a confidence interval to measure the
11 precise -- the precision of results?

12 A. They're included in all my studies
13 as one of the factors, including the P-value.

14 Q. Do you consistently use the same
15 confidence intervals in your research
16 applications?

17 MR. WALLACE: Objection.

18 BY MS. KONSTANTOPOULOS:

19 Q. Let me rephrase.

20 Do you consistently use the same
21 confidence intervals in your research
22 publications?

23 MR. WALLACE: Objection.

24 THE WITNESS: I always use 95

1 percent confidence interval, yes.

2 BY MS. KONSTANTOPOULOS:

3 Q. When the confidence interval
4 includes a value of 1, you agree that increased
5 risk results are not statistically significant;
6 correct?

7 A. If -- if the study is set up to use
8 a P-value of .05 and it's a double-sided, it's a
9 two-sided system with an appropriate bell curve
10 population. If it crosses 1, then it's like --
11 it's like not significant from a P-value, but that
12 doesn't necessarily mean that the true estimate is
13 above 1.

14 Q. Would you --

15 A. You just can't say with 95 percent
16 confidence that it is above 1.

17 Q. Would you agree that a wider
18 confidence interval weakens confidence that the
19 risk estimate is accurate?

20 A. Risk estimate is always going to be
21 within the confidence interval from a 95 percent
22 standpoint. Whether or not you just -- it just
23 could be further out to the right or further out
24 to the left, the confidence intervals are tight,

1 but it doesn't change the validity of the risk
2 estimate.

3 Q. So you would agree that the tighter
4 the confidence interval, the more precision there
5 is?

6 A. At knowing the true point estimate.
7 Correct.

8 Q. Would you agree that a confidence
9 interval of 0.9 to 1.1 is precise?

10 A. I wouldn't use the word "precise."
11 I wouldn't even put an adjective on it, to be
12 honest.

13 Q. Why not?

14 A. I mean, what is precise? I mean,
15 it's tighter, I mean, as opposed to what? .8 to
16 1.2, it's tighter. I can say that.

17 Q. In comparison, you would agree that
18 a confidence interval of 0.1 to 10.0 is more
19 imprecise; correct?

20 A. Again, I wouldn't use the word
21 "precise." I would -- I mean, your true estimate
22 is still there. It's just that it could be
23 further along to the right, further along to the
24 left.

1 Q. What terminology would you use in
2 evaluating the strength of a confidence interval?

3 A. I don't -- I don't use any
4 adjective, really. I mean, the confidence
5 interval is a confidence interval. It is what it
6 is.

7 Q. Do you consider confidence intervals
8 in determining what studies you relied upon in
9 your report?

10 A. Yeah. I mean, confidence intervals
11 are important because, again, it -- it shows the
12 power of the study, number one. So the more power
13 the study has, the less the confidence interval
14 will be. The less power you have, the wider the
15 confidence interval is.

16 So, yeah, you look at confidence
17 intervals and you know -- I mean, your point
18 estimate is your point estimate, but you know that
19 doesn't -- that's not the real estimate. Well,
20 that's not the real number. It's just an estimate
21 based on the confidence interval.

22 Q. Would you agree that when the odds
23 ratio increases as exposure increases, we can be
24 more confident that an association is present?

1 MR. WALLACE: Objection.

2 THE WITNESS: If the odds
3 ratio -- yes, I mean, that's strength of
4 association. So a higher an odds ratio a
5 relative risk is, the more confident you
6 could be that causal association exists.

7 BY MS. KONSTANTOPOULOS:

8 Q. Is what I just described called a
9 monotonic dose-response?

10 A. Monotonic dose-response means that
11 there is a -- based on dose-response levels of
12 exposure, that there's a not necessarily linear --
13 it can be curvilinear -- more positive response to
14 the exposure.

15 Q. And you'd agree that we would
16 typically expect to see a dose-response if there
17 is causation; correct?

18 A. It depends. If the exposure is
19 binary -- I was exposed, I was not, it doesn't
20 matter what level -- I wouldn't expect to see a
21 monotonic relationship. If -- but then, again,
22 with a chemical where more exposure leads to more
23 disease occurrence, then, yes, I would expect a
24 dose-response of some sort.

1 Q. Moving on, according to your report,
2 you summarize studies you deem to be relevant in
3 determining whether PCE, TCE, or benzene had a
4 causal relationship to bladder cancer; correct?

5 A. Correct.

6 Q. And you included a brief discussion
7 of those studies' strengths and weaknesses;
8 correct?

9 A. Correct.

10 Q. And then to determine whether there
11 was a causal relationship between bladder cancer
12 and these chemicals, you reviewed the literature
13 to determine whether there was an association
14 between bladder cancer and exposure; is that
15 correct?

16 A. Yes.

17 Q. And once you confirmed an
18 association, you used Bradford Hill factors to
19 determine whether a causal relationship exists; is
20 that right?

21 A. Correct.

22 Q. You indicate on page 4 of your
23 expert report, Exhibit 2, that:

24 "Toxicology studies are particularly

1 relevant to certain of the Bradford Hill factors.
2 As such, my review of those factors relies on the
3 general causation reports submitted by the bladder
4 cancer toxicology experts which I have reviewed as
5 referenced in my Bradford Hill analysis."

6 Did I read that correctly?

7 A. Yes.

8 Q. So is it fair to say you did not
9 analyze all of the Bradford Hill factors to make
10 your determination, that some Bradford Hill
11 factors -- let me rephrase.

12 You relied on other expert witnesses
13 to analyze other Bradford Hill factors -- some of
14 the Bradford Hill factors; correct?

15 MR. WALLACE: Objection.

16 THE WITNESS: I treated the
17 Bradford Hill as a tool, a melting pot of
18 sorts. So my interpretation of the
19 Bradford Hill analysis was that each one
20 of these 9 factors contributes to the
21 overall kind of melting pot conclusion.

22 In terms of the toxicologists,
23 since I do -- I am not an expert in
24 toxicology, I relied on their reports and

1 their analysis to support coherence
2 within the Bradford Hill analysis to give
3 support that there is a causal
4 relationship between exposure to these
5 chemicals and bladder cancer, but not as
6 a replacement of my own opinion. It was
7 mainly as support for that one and the
8 plausibility as well.

9 BY MS. KONSTANTOPOULOS:

10 Q. Thank you for the clarification.
11 So you relied upon the toxicology
12 -- plaintiffs' toxicology experts' reports to
13 establish coherence and -- what was the other one?

14 A. Plausibility.

15 Q. Plausibility.

16 Is that correct?

17 A. Correct.

18 Q. Moving on to Part D of your expert
19 report, Exhibit 2, page 41.

20 You include section D entitled
21 "PEOPLE WHO WORKED AND/OR LIVED AT MCB CAMP
22 LEJEUNE BETWEEN 1953 AND 1987 WERE EXPOSED TO
23 CONTAMINATED WATER THAT IS A CAUSE OF BLADDER
24 CANCER."

1 Did I read that correctly?

2 A. I'm sorry. I'm trying to find.

3 Page 41. Could you repeat the sentence?

4 Q. Sure.

5 This would be the title of
6 section D. "PEOPLE WHO WORKED AND/OR LIVED --

7 A. Oh, yeah.

8 Q. -- AT MCB CAMP LEJEUNE --

9 A. Sorry.

10 Q. -- BETWEEN 1953 AND 1987 WERE
11 EXPOSED TO CONTAMINATED WATER THAT IS A CAUSE OF
12 BLADDER CANCER."

13 A. Correct.

14 Q. Thank you.

15 The first study you discuss under
16 this section is the 2014 Bove study entitled
17 "Evaluation of mortality among marines and navy
18 personnel exposed to contaminated drinking water
19 at USMC base Camp Lejeune: a retrospective cohort
20 study"; correct?

21 A. Correct.

22 Q. Moving forward, I'm going to refer
23 to this study as the 2014 Bove Marine study.

24 A. Agree.

1 Q. Do you understand?

2 A. Agree.

3 Q. Okay. Because it's a mouthful.

4 The 2014 Bove Marine study was a
5 retrospective cohort mortality study of Navy and
6 Marine Corps personnel who began military service
7 between April 1975 and December 1985 that were
8 stationed at Camp Lejeune or Camp Pendleton during
9 that period; is that correct?

10 A. Yes.

11 Q. You agree that you stated in your
12 report that the 2014 Bove Marine study concluded
13 that the Camp Lejeune cohort did not have an
14 excess risk of bladder cancer mortality; correct?

15 A. Correct.

16 Q. The second study you cited to in
17 section D of Exhibit 2 was the 2014 study
18 entitled -- by Bove entitled "Mortality study of
19 civilian employees exposed to contaminated
20 drinking water at UMC Base Camp Lejeune: a
21 retrospective cohort study."

22 Did I read that correctly?

23 A. Yes.

24 Q. Moving forward, I'm going to refer

1 to the study as the 2014 Bove civilian study.

2 Do you understand?

3 A. Agree.

4 Q. This was a retrospective mortality
5 study of full-time civilian employees at Camp
6 Lejeune and Camp Pendleton; correct?

7 A. Correct.

8 Q. And you agree that the 2014 Bove
9 civilian study concluded that the Camp Lejeune
10 cohort did not have an excess risk of bladder
11 cancer mortality; correct?

12 A. Correct.

13 Q. The third study you cited to in
14 section D of your expert report in Exhibit 2 was
15 the 2018 Bove study entitled "ATSDR, Morbidity
16 Study of Former Marines, Employees, and Dependents
17 Potentially Exposed to Contaminated Drinking Water
18 At U.S. Marine Corps Base Camp Lejeune, April
19 2018."

20 Did I read that correctly?

21 A. Yes.

22 Q. I'm going to refer to the study
23 moving forward as the 2018 ATSDR morbidity study.

24 Do you understand?

1 A. Yes.

2 Q. In your analysis of this study on
3 your expert report on page 42, you stated that in
4 2018, ATSDR conducted a retrospective cohort
5 morbidity study of Camp Lejeune Marines and
6 civilian employees and Camp Pendleton Marines and
7 civilian employees.

8 Is that right so far?

9 A. Yes.

10 Q. You indicated in your report that:
11 "Water distribution system models
12 and ground water contamination fate and transport
13 models were used to determine individual
14 contaminant exposure."

15 Correct?

16 A. Correct.

17 Q. You would agree that you are not an
18 expert in water modeling; correct?

19 A. I would agree.

20 Q. Okay. The 2018 ATSDR morbidity
21 study focused on the effect of PCE or TCE on
22 bladder cancer; correct?

23 MR. WALLACE: Objection.

24 THE WITNESS: Is that the

1 2018? To my knowledge, yes.

2 BY MS. KONSTANTOPOULOS:

3 Q. It did not -- the 2018 ATSDR
4 morbidity study did not address benzene; isn't
5 that true?

6 A. To my knowledge, correct.

7 Q. You indicated in your report that
8 the 2018 ATSDR morbidity study did not find an
9 excess risk of bladder morbidity in Camp Lejeune
10 civilians relevant to Camp Pendleton civilians for
11 either PCE or TCE; isn't that correct?

12 A. Correct.

13 Q. However, you indicated that Marines
14 from Camp Lejeune had an excess risk of bladder
15 cancer morbidity when compared to Camp Pendleton
16 Marines; is that correct?

17 A. Yes.

18 Q. You indicated that Marines had an
19 odds ratio equal to 1.64; is that right?

20 A. Yes.

21 Q. You would agree that this value
22 only -- strike that.

23 MS. KONSTANTOPOULOS: I am
24 going to mark the 2018 ATSDR morbidity

1 study as Exhibit 6.

2 (Document marked for
3 identification as Culp Exhibit 6.)

4 BY MS. KONSTANTOPOULOS:

5 Q. I'm going to point your attention to
6 page 80 of Exhibit 6.

7 I'm referring to Table 10 entitled
8 "Odds ratios for internal analyses of cumulative
9 exposure to TC" -- I'm sorry.

10 A. Table 9. Page 80.

11 Q. Oh.

12 So in Exhibit 6 page 82, Table 10.

13 A. Okay.

14 Q. I'd like to point your attention to
15 the table entitled "Odd ratios for internal
16 analyses of cumulative exposure to PCE among Camp
17 Lejeune Marines."

18 You would agree that the bladder
19 cancer -- that the bladder odds ratio for medium
20 PCE exposure is 0.99; is that correct?

21 A. Yes.

22 Q. And for high exposure in Table 10,
23 the odds ratio is 1.54; is that correct?

24 A. Correct.

1 Q. Now I'm going to ask you to go to
2 page 80 Table 9 of Exhibit 6 entitled "Odds ratios
3 for internal analyses of cumulative exposure to
4 TCE among Camp Lejeune Marines."

5 MR. WALLACE: I'm sorry,
6 counsel. You're on Table 9?

7 MS. KONSTANTOPOULOS: Correct.

8 MR. WALLACE: Thank you.

9 BY MS. KONSTANTOPOULOS:

10 Q. So in Exhibit 6, page 80, Table 9
11 entitled "Odds ratios for internal analyses of
12 cumulative exposure to TCE among Camp Lejeune
13 Marines," you would agree that the bladder cancer
14 odds ratio for high TCE exposure is 0.74; correct?

15 A. Correct.

16 Q. And you would, therefore, agree that
17 there was no excess risk of bladder cancer
18 morbidity found for civilian personnel related to
19 TCE; correct?

20 A. That's -- this is looking at
21 Marines.

22 Q. Correct.

23 But based on the odds ratio value
24 for TCE exposure of 0.74, you would agree that

1 there was no excess risk of bladder cancer
2 morbidity related to TCE?

3 A. For Marines on this table.

4 MR. WALLACE: Objection.

5 BY MS. KONSTANTOPOULOS:

6 Q. Okay.

7 A. Yes. Based on these numbers, yes.

8 Q. Okay.

9 A. Or association was not found.

10 Q. Okay. You're aware that selection
11 bias was a significant limitation of this 2018
12 ATSDR morbidity study; correct?

13 A. Please clarify.

14 Q. You're aware that selection bias was
15 a limitation of this study because those at Camp
16 Lejeune with health problems would be more likely
17 to return a survey due to the publicity around the
18 Camp Lejeune water contamination than those at
19 Camp Pendleton with health problems; is that
20 correct?

21 A. If that is true, then, yes,
22 selection bias could exist.

23 Q. Okay. All right. Moving on, the
24 next study that you reviewed in your expert report

1 in section D was the 2024 ATSDR mortality study
2 for Camp Lejeune that you reference in your expert
3 report; is that correct?

4 A. Correct.

5 Q. And you're familiar with this study?

6 A. This is a Bove study?

7 Q. The 2024 --

8 A. 2024.

9 Q. -- ATSDR mortality study for Camp
10 Lejeune, which I will mark as Exhibit 7.

11 (Document marked for
12 identification as Culp Exhibit 7.)

13 THE WITNESS: Yes.

14 BY MS. KONSTANTOPOULOS:

15 Q. Exhibit 7 compares the standard
16 mortality rates of disease in the Camp Lejeune and
17 Camp Pendleton populations adjusted for sex, race,
18 and age in five-year increments; is that correct?

19 A. Correct.

20 Q. For urinary bladder cancer, you
21 agree that the standard mortality ratio for the
22 Camp Lejeune cohort was 0.97; is that correct?

23 A. Yes.

24 Q. And the result shows that adjusted

1 for sex, race, and age, there is a 3 percent --
2 there are 3 percent fewer deaths from bladder
3 cancer in the Camp Lejeune cohort than the cohort
4 for Camp Pendleton; correct?

5 A. Correct.

6 Q. And I want you to please flip to
7 Table S6 entitled "Supplemental Materials" in
8 Exhibit 6.

9 A. 6 or 7?

10 Q. It would be Table S6 of Exhibit 7.
11 So Exhibit 7.

12 A. What page?

13 Q. There is no page numbers, but it
14 should be the --

15 A. Table --

16 Q. -- the document after the -- do you
17 see the tables at the back?

18 A. Yeah.

19 Q. Okay.

20 A. Table which one?

21 Q. So directing your attention to Table
22 S6.

23 A. S6. Okay.

24 Okay.

1 Q. For bladder cancer, you would agree
2 there is not a monotonic dose-response
3 relationship, is there?

4 MR. WALLACE: Objection.

5 THE WITNESS:

6 (Reviews document.)

7 Based on this data, it does
8 not appear that way.

9 MS. KONSTANTOPOULOS: Thank
10 you.

11 I am now marking the Bove 2024
12 Cancer Incidence Study preprint as
13 Exhibit 8.

14 (Document marked for
15 identification as Culp Exhibit 8.)

16 BY MS. KONSTANTOPOULOS:

17 Q. Are you familiar with the Bove 2024
18 Cancer Incidence Study preprint -- preprint?

19 A. Yes.

20 Q. Are you aware that the preprint
21 study did not show -- thank you.

22 I want to direct your attention to
23 Table 2 of Exhibit 8.

24 You are familiar with this document.

1 So you've seen it before; correct?

2 A. Correct.

3 MR. WALLACE: Counsel, are you
4 referring to the page with the last three
5 Bates number digits of 148 in the bottom
6 right-hand corner?

7 MS. KONSTANTOPOULOS: That's
8 correct.

9 BY MS. KONSTANTOPOULOS:

10 Q. This table, Table 2 of Exhibit 8,
11 shows the standard incidence rates and Poisson
12 regression table for various diseases; correct?

13 A. Correct.

14 Q. And this compares the standard
15 incidence rates of disease in the Camp Lejeune and
16 Camp Pendleton populations adjusted for sex, race,
17 and age in five-year increments; is that correct?

18 A. Correct.

19 Q. Okay. You would agree that for
20 urinary bladder cancer -- excuse me.

21 You would agree for urinary bladder
22 cancer, the standard incidence rate for the Camp
23 Lejeune cohort is 0.90; is that correct?

24 A. Correct.

1 Q. This result shows that adjusted for
2 sex, race, and age, there are 10 percent fewer
3 bladder cancers in the Camp Lejeune cohort than
4 the Camp Pendleton cohort; is that correct?

5 MR. WALLACE: Objection.

6 THE WITNESS: Based on the
7 numbers, yes.

8 BY MS. KONSTANTOPOULOS:

9 Q. Would you agree that the confidence
10 interval here is narrow?

11 A. Is I'm sorry?

12 Q. Would you agree that in this table
13 that the confidence -- in Table 2 of Exhibit 8
14 that the confidence interval noted for bladder
15 cancer is narrow?

16 A. I would say the confidence interval
17 is .82 to .99. Again, I don't use adjectives.

18 Q. Thank you.

19 The result in Table 2 does not
20 reflect a strong association between exposure to
21 contaminants at Camp Lejeune and bladder cancer;
22 correct?

23 MR. WALLACE: Objection.

24 THE WITNESS: Relative risk

1 based on if there's no significant
2 association seen, but it doesn't -- there
3 is a positive. And when they look at
4 relative risk, it is a positive
5 association, but it's not statistically
6 significant.

7 BY MS. KONSTANTOPOULOS:

8 Q. Okay. I will now move on to the
9 2024 ATSDR mortality study for Camp Lejeune, which
10 we will be marking as Exhibit 9.

11 You're familiar with the study;
12 correct?

13 A. Yes.

14 Q. Do you recall the findings of the
15 2024 ATSDR mortality study for Camp Lejeune?

16 A. I'd like to see it to refresh my
17 memories.

18 MS. KONSTANTOPOULOS: Fair
19 enough.

20 Perhaps right now is a good
21 time for a break. Counsel, is that all
22 right?

23 MR. WALLACE: This is a good
24 time.

1 MS. KONSTANTOPOULOS: Thank
2 you.

3 THE VIDEOGRAPHER: The time is
4 11:34 AM. We're going off the record.

5 (A recess was taken.)

6 (Zina Bash entered Zoom.)

7 THE VIDEOGRAPHER: The time is
8 11:52 AM. We're going back on the
9 record. Please proceed, counsel.

10 MS. KONSTANTOPOULOS: Thank
11 you.

12 To clarify, I referenced the
13 Bove 2014 mortality study. That's
14 already been marked as Exhibit Number
15 7 -- 6. Excuse me.

16 MR. WALLACE: I'm sorry. When
17 you say you referenced it, you already
18 -- you -- can you explain what you mean?

19 MS. KONSTANTOPOULOS: Before
20 the break --

21 MR. WALLACE: Okay.

22 MS. KONSTANTOPOULOS: -- I
23 referenced marking Bove's 2024 mortality
24 study as a new exhibit.

1 MR. WALLACE: Okay.

2 MS. KONSTANTOPOULOS: It was
3 already marked as an exhibit --

4 MR. WALLACE: Got you.

5 MS. KONSTANTOPOULOS: -- and
6 that was Exhibit 6.

7 THE WITNESS: 7.

8 MR. WALLACE: 6? 6 is the
9 2018 morbidity study.

10 MS. KONSTANTOPOULOS: Okay.
11 Exhibit 7.

12 MR. WALLACE: Okay. 7 is the
13 mortality table. That was the preprint.
14 I'm sorry. Sorry. Exhibit 8 is the
15 preprint. 7 is the 2024 mortality.
16 Okay. Go ahead.

17 MS. KONSTANTOPOULOS: That is
18 correct. Thank you.

19 MR. WALLACE: All right.

20 BY MS. KONSTANTOPOULOS:

21 Q. All right. I'm going to direct your
22 attention back to Exhibit 6, the Bove ATSDR 2018
23 morbidity study, and I'm going to direct your
24 attention again to page 82, Table 10 entitled

1 "Odds ratios for internal analyses of cumulative
2 exposure to PCE among Camp Lejeune Marines."

3 Under bladder cancer, you would
4 agree that there is a confidence interval for high
5 exposure of 0.99 to 2.41; correct?

6 A. Yes.

7 Q. And you would agree that is not a
8 statistically significant -- significant
9 confidence interval; correct?

10 A. Correct.

11 MS. KONSTANTOPOULOS: Now,
12 moving on, I am marking as Exhibit 9 the
13 2024 Bove Cancer Incidence Study.

14 (Document marked for
15 identification as Culp Exhibit 9.)

16 BY MS. KONSTANTOPOULOS:

17 Q. This is a follow-up incidence study
18 to the 2018 ATSDR study we previously discussed;
19 correct?

20 A. Correct.

21 Q. You agree that follow-up studies are
22 generally more accurate because of the ability to
23 study a population for a greater length of time;
24 correct?

1 A. With -- yes, with certain diseases.
2 Correct.

3 Q. And that's especially true for
4 bladder cancer because of the latency period
5 associated with it; correct?

6 A. Correct.

7 Q. And indeed you stated on Exhibit 2,
8 your expert report, page 11 that:

9 "Bladder cancer typically develops
10 decades after risk exposure. For example, some
11 researchers have observed a latency period of up
12 to 40 years between carcinogen exposure and cancer
13 diagnosis."

14 Does that sound correct?

15 A. Yes.

16 Q. Going back to Exhibit 9, the 2024
17 Bove Cancer Incidence Study, I would ask that you
18 turn to Table 6.

19 Do you see urinary bladder listed?

20 A. Yes.

21 Q. You would agree that for urinary
22 bladder cancer, there is not a monotonic
23 dose-response relationship; correct?

24 A. Not based on these numbers, no.

1 Q. Would you agree that
2 exposure-response analysis does not support an
3 inference of causation between Camp Lejeune water
4 contamination and urinary bladder cancer, does it?

5 MR. WALLACE: Objection.

6 THE WITNESS: Please rephrase
7 the question or repeat the question.

8 BY MS. KONSTANTOPOULOS:

9 Q. Okay. That the findings in Table 6
10 of Exhibit 9 do not support an inference of
11 increased incidence of bladder cancer in the Camp
12 Lejeune cohort; correct?

13 MR. WALLACE: Objection.

14 THE WITNESS: There is --
15 based on the numbers, there is a positive
16 association. Although not significant,
17 there is a positive association in the
18 different types. Or the codes they used
19 to identify bladder cancer in the
20 population, there is a positive
21 association.

22 BY MS. KONSTANTOPOULOS:

23 Q. I'm going to point your attention
24 back to your expert report, Exhibit 2, on page 44.

1 You indicated that the 2024 Bove
2 incidence study did not yield statistically
3 significant results; isn't that correct?

4 A. Correct.

5 Q. In your Bradford Hill analysis of
6 Bove's cohort studies under section D of your
7 report in Exhibit 2 on page 44, you also indicate:
8 "Epidemiological studies support an
9 association between bladder cancer risk and
10 exposure to PCE, TCE, and/or benzene."

11 Did I read that correctly?

12 A. Yes.

13 Q. You would agree that this is a typo,
14 though, because benzene was not evaluated in these
15 studies, only PCE and TCE; isn't that correct?

16 MR. WALLACE: Objection.

17 THE WITNESS: In the -- in
18 the other studies besides the Bove study.
19 Is that what you're asking?

20 BY MS. KONSTANTOPOULOS:

21 Q. In the studies listed in section D
22 of your expert report in Exhibit 2, you would
23 agree those studies focused only on PCE and TCE;
24 isn't that correct?

1 A. I don't understand the question.

2 The Bove studies are not or is
3 looking at the exposure -- is it the Bove studies
4 or the other studies?

5 Q. So I'm referring -- and I can list
6 the studies for you in section D.

7 In section D of your expert report
8 entitled "PEOPLE WHO WORKED AND/OR LIVED AT MCB
9 CAMP LEJEUNE BETWEEN 1953 AND 1997 WERE EXPOSED TO
10 CONTAMINATED WATER THAT IS A CAUSE OF BLADDER
11 CANCER."

12 You listed a number of studies in
13 this specific section and those studies were
14 studies by Frank Bove. The first being the 2024
15 Bove mortality study among Marines. The 2024
16 mortality study for civilian employees on page 42.

17 So far is that correct?

18 A. Yes.

19 Q. And in addition, in section D of
20 your expert report, Exhibit 2, you analyzed the
21 2018 ATSDR morbidity study; correct?

22 A. Correct.

23 Q. You also analyzed on page 42 the
24 2024 evaluation of mortality among Navy personnel

1 and civilian workers; correct?

2 A. Correct.

3 So the exposure in all these studies
4 was the exposure to the contaminated water. That
5 could include PCE, TCE, as well as benzene.
6 There's no way to go down to individual chemicals.
7 You're exposed to the water. Whatever
8 concentrations are in the water of each element
9 you can't know.

10 So I would disagree with that. That
11 benzene can be included if it was a contaminant in
12 the water.

13 Q. You would agree, though, that the
14 table attached, for example, to the 2024 incidence
15 study in Exhibit 9 only analyzed specifically PCE,
16 TCE, or cumulative exposure; correct?

17 MR. WALLACE: I'm sorry. What
18 page?

19 THE WITNESS: I don't see
20 that. I don't see where that is
21 mentioned.

22 They're looking at exposure at
23 Camp Lejeune versus exposure or no
24 exposure at Camp Pendleton, but it

1 doesn't highlight specific chemicals.

2 BY MS. KONSTANTOPOULOS:

3 Q. Would you agree that the studies you
4 referenced in section D of your expert report,
5 Exhibit 2, does not specifically analyze
6 confidence intervals and odds ratios or risk
7 ratios related specifically to benzene?

8 A. I agree that it's not specific to
9 benzene. It's specific to exposure to
10 contaminated water. You can't -- I can't tell
11 you. It's a combination of chemicals.

12 Q. All right. Moving on, earlier you
13 indicated that you are familiar with IARC;
14 correct?

15 A. Yes.

16 Q. Okay. In your expert report,
17 Exhibit 2, on pages 11 to 12, you indicated that
18 "PCE has been found to be probably carcinogenic to
19 humans by IARC Group 2A"; isn't that correct?

20 A. Correct.

21 Q. And you cited to IARC 2014; is that
22 right?

23 A. Correct.

24 Q. And you would agree that one of

1 IARC's primary roles is to conduct and coordinate
2 international cancer research; is that correct?

3 A. As they state, yes.

4 Q. Yeah. You're familiar with their
5 work, as you stated; correct?

6 A. Yes.

7 Q. IARC convenes interdisciplinary
8 working groups of expert scientists,
9 toxicologists, epidemiologists, who survey the
10 scientific literature for published data to assess
11 the strength of evidence linking an agent to
12 cancer risk; is that right?

13 A. Correct.

14 Q. IARC publishes monographs which
15 classify agents into different groups based on
16 their potential to cause cancer; is that right?

17 A. Yes.

18 Q. In 2014, IARC published a monograph
19 on the evaluation of PCE, TCE, and other
20 chlorinated agents; is that correct?

21 A. To my knowledge, yes.

22 Q. Although IARC -- the IARC report
23 found a positive association for bladder cancer,
24 it did not find sufficient evidence for causation

1 of bladder cancer in humans; is that correct?

2 As opposed to animals.

3 MR. WALLACE: Objection.

4 THE WITNESS: Of PCE?

5 BY MS. KONSTANTOPOULOS:

6 Q. Correct.

7 A. It was a meta-analysis that they
8 used as their -- meta-analysis that they used was
9 listed on page 12 that supported a probable causal
10 relationship with PCE and bladder cancer in
11 humans. The meta-analysis was performed on a
12 human population, not an animal population.

13 Q. You would agree, though, that there
14 was only limited evidence in humans for an excess
15 of cancer of the urinary bladder in dry-cleaning
16 workers that IARC focused on; is that correct?

17 A. That meta-analysis is part of their
18 study or their review, yes, that was one
19 meta-analysis.

20 MS. KONSTANTOPOULOS: Thank
21 you for your patience.

22 I will be handing you what I
23 will mark as Exhibit 10, which is a
24 printout for the -- from the IARC website

1 titled "List of classifications by cancer
2 sites with sufficient or limited evidence
3 in humans, IARC Monographs Volumes
4 1-138a."

5 (Document marked for
6 identification as Culp Exhibit 10.)

7 BY MS. KONSTANTOPOULOS:

8 Q. And earlier you stated that you are
9 familiar with IARC monograms; correct?

10 A. That they exist, yes.

11 Q. I'm going to point your attention to
12 page 9.

13 This is the table for bladder
14 cancer; correct?

15 MR. WALLACE: Objection.

16 THE WITNESS: Correct.

17 BY MS. KONSTANTOPOULOS:

18 Q. You see that PCE is not listed among
19 the "agents with sufficient evidence in humans"
20 for bladder cancer; correct?

21 A. It's not listed in this table.
22 Correct.

23 Q. You see that PCE is listed in the
24 category of "Agents with limited evidence in

1 humans"; correct?

2 A. It is not listed in this table.

3 Correct.

4 Q. Moving on, in your expert report,
5 Exhibit 2, on page 12, you indicated that PCE has
6 been found to be likely carcinogenic in humans by
7 all routes of exposure by the EPA, and you cited
8 to EPA 2011 in your report; is that correct?

9 A. Yes.

10 Q. Okay. I'd like to point your
11 attention back to Exhibit 3, which was your
12 reliance files.

13 Pointing your attention to page 8,
14 you agree that you are citing -- we'll wait till
15 you get there.

16 You agree that you are citing to an
17 old EPA study regarding PCE; isn't that correct?

18 EPA 2011 is an old study regarding
19 PCE?

20 MR. WALLACE: Objection.

21 THE WITNESS: It's before.

22 Yes, I mean, it's published in 2011.

23 BY MS. KONSTANTOPOULOS:

24 Q. There is a more current version

1 available from December 2020 that you cite to in
2 your reliance files in Exhibit 3; correct?

3 A. Correct.

4 Q. And that's entitled "Risk Evaluation
5 for PCE" using the acronym; isn't that correct?

6 A. Correct.

7 Q. You would agree that more recent
8 studies cited in the 2020 EPA risk evaluation
9 indicate that new studies provide little support
10 for an association between bladder cancer and PCE
11 exposure; correct?

12 A. Do you have a copy I can review?

13 Q. Yes. That would help refresh your
14 recollection, of course.

15 MS. KONSTANTOPOULOS: I'm
16 going to mark as Exhibit 11 the EPA 2020
17 Risk Evaluation for PCE.

18 (Document marked for
19 identification as Culp Exhibit 11.)

20 BY MS. KONSTANTOPOULOS:

21 Q. And I will point your attention to
22 page 665.

23 MR. WALLACE: And just for the
24 record, I'd like to reflect -- say that

1 Exhibit 11 is not a 714-page document.

2 Is that correct?

3 MS. KONSTANTOPOULOS: Correct.

4 MR. WALLACE: Okay. All
5 right. So Exhibit 11 just has excerpts
6 of the 2020 Risk Evaluation for
7 Perchloroethylene?

8 MS. KONSTANTOPOULOS: Yes. To
9 be clear, the Exhibit 11 includes the
10 cover page, the Table of Contents up
11 until page 33, and then it also includes
12 page 665 and 666.

13 BY MS. KONSTANTOPOULOS:

14 Q. Pointing your attention back to
15 Exhibit 11, you would agree that under the second
16 paragraph under bladder, it states that:

17 "More recent studies provide little
18 support for an association between bladder cancer
19 and PCE exposure."

20 Isn't that correct?

21 A. That's what it says, yes.

22 Q. Thank you.

23 Moving on to the Bradford Hill
24 factors, you would agree that before one can

1 analyze the Bradford Hill criteria, the
2 association must be more than merely observed, it
3 must be clear-cut; correct?

4 A. It needs to be a positive
5 association, yes.

6 Q. And in your Strength of association
7 analysis for PCE in Exhibit 2, your expert report,
8 on page 21, you indicated that a significant
9 association between PCE and bladder cancer was
10 found in multiple studies?

11 A. Correct.

12 Q. And you cited specific studies in
13 your Bradford Hill analysis in your expert report
14 to demonstrate strength of association; correct?

15 A. Correct.

16 Q. Directing your attention to page 14
17 of your expert report, Exhibit 2, I'm going to go
18 over the first study that you cited in your
19 Strength of association analysis for PCE.

20 That was the case of Brown and
21 Kaplan from 1987; isn't that correct?

22 A. Correct.

23 Q. And in describing the Brown and
24 Kaplan study, you indicated on page 14 of

1 Exhibit 2:

2 This is a cohort -- excuse me. This
3 is a cohort study --

4 "This cohort study was conducted of
5 1,690 dry-cleaning workers exposed to PCE" and
6 other chemicals "at least one year prior to 1960
7 and no known previous occupational exposure.
8 Mortality was investigated through 1982. A
9 sub-cohort was also designated to account for
10 those workers who were knowingly only exposed to
11 PCE."

12 Did I read that correctly?

13 A. Yes.

14 Q. In the second to last sentence of
15 your analysis of the Brown and Kaplan study in
16 your expert report, Exhibit 2, isn't it true that
17 you admitted "when the PCE-only sub-cohort was
18 reviewed, there was no excess risk in bladder
19 cancer mortality"; correct?

20 A. No -- no excess risk was found when
21 the sub-cohort was reviewed, but that could be due
22 to less power to determine an association.

23 Q. And the results that you cited from
24 this study to demonstrate strength of association

1 was limited only to the PCE-plus cohort; isn't
2 that correct?

3 A. Correct.

4 Q. Workers from the PCE-plus sub-cohort
5 worked in shops where PCE was confirmed but also
6 in shops where solvents were a known; isn't that
7 fair to say?

8 A. It's fair to say.

9 Q. The specific chemical exposure in
10 the PCE-plus cohort here was unknown; is that
11 true?

12 MR. WALLACE: Objection.

13 THE WITNESS: The totality --
14 I mean, that's true as far as it included
15 everything, I mean, that they were
16 exposed to.

17 BY MS. KONSTANTOPOULOS:

18 Q. The PCE-plus sub-cohort could have
19 been exposed to PCE and another solvent or some
20 mixture of multiple solvents; correct?

21 A. Correct.

22 Q. You would agree that the PCE
23 sub-cohort had a wide confidence interval between
24 1.28 to 5.86?

1 A. That's the confidence interval, 1.28
2 to 5.86.

3 Q. You would agree that's a wide
4 confidence interval?

5 A. No, I wouldn't. I wouldn't ascribe
6 an adjective to a confidence interval.

7 Q. Okay. The second study that you
8 cited to demonstrate strength of association
9 between PCE and bladder cancer was the 1994 Ruder
10 study on page 14 Exhibit 2 of your expert report;
11 correct?

12 A. Correct.

13 Q. The Ruder study -- the 1994 Ruder
14 study was an update to the 1987 Brown and Kaplan
15 study we just discussed; correct?

16 A. Correct.

17 Q. In your strength of analysis --
18 Strength of association analysis, you again cited
19 only to the PCE-plus cohort from the study;
20 correct?

21 A. Correct.

22 Q. You would agree that there was no
23 excess risk in bladder cancer mortality found in
24 the PCE-only sub-cohort; correct?

1 A. No association was found. Correct.

2 Q. Would you agree that the PCE sub
3 -- PCE-plus sub-cohort had a wide confidence
4 interval between 1.61 to 6.68?

5 A. I would agree that there's 95
6 percent confidence that the true estimate lay
7 between 1.61 to 6.68.

8 Q. Okay. Moving on to the 2001 Ruder
9 study. This is the third study that you cited in
10 Exhibit 2 page 14 to demonstrate strength of
11 association between PCE and bladder cancer, which
12 was an update to the 1994 Ruder study; correct?

13 A. Correct.

14 Q. I'm going to refer to the study as
15 the Ruder update moving forward.

16 Do you understand?

17 A. Agree.

18 Q. Okay. Do you understand which --

19 Okay. In your Strength of
20 association analysis, you again cited only to the
21 PCE-plus sub-cohort from the Ruder -- in the Ruder
22 update; correct?

23 A. Correct.

24 Q. You would agree that the Ruder

1 update did not find an excess risk in bladder
2 cancer mortality in the PCE-only sub-cohort;
3 correct?

4 A. Correct.

5 Q. Now, the fourth study that you cited
6 to demonstrate strength of association between PCE
7 and bladder cancer was the 2011 Calvert study
8 entitled "Mortality and end-stage renal disease
9 incidence among dry cleaning workers"; is that
10 correct?

11 A. Yes.

12 Q. That is another follow-up to the
13 Brown and Kaplan 1987 study; correct?

14 A. Correct.

15 Q. You indicated on page 21 of
16 Exhibit 2 of your expert report that the Calvert
17 study "found increased mortality for bladder
18 cancer in those who worked in one or more
19 dry-cleaning shops using PCE and those shops
20 were -- where primary solvent could not be
21 identified but likely was PCE"; is that correct?

22 A. Correct.

23 MS. KONSTANTOPOULOS: At this
24 time I am marking the Calvert 2011 study

1 as Exhibit 12.

2 (Document marked for
3 identification as Culp Exhibit 12.)

4 BY MS. KONSTANTOPOULOS:

5 Q. I'm going to ask you to turn to page
6 711 and look at Table 2 of Exhibit 12. Please
7 then go to the second column, first paragraph.

8 You would agree that the Calvert
9 study states:

10 "For several types of cancer,
11 mortality was not significantly elevated" --

12 MR. WALLACE: I'm sorry,
13 counsel, we're looking at Table 2, but
14 you're reading from something. Where are
15 you reading from?

16 MS. KONSTANTOPOULOS: Above --
17 in column 2 above Table 1 in the
18 second -- the first full paragraph.

19 MR. WALLACE: First full.
20 Beginning with "For several types"?

21 MS. KONSTANTOPOULOS: Exactly.

22 MR. WALLACE: Okay.

23 MS. KONSTANTOPOULOS: On page
24 711.

1 MR. WALLACE: Okay. I just
2 want to make sure I'm reading the same
3 thing you are. Go ahead.

4 MS. KONSTANTOPOULOS: Thank
5 you.

6 BY MS. KONSTANTOPOULOS:

7 Q. You would agree that the Calvert
8 study -- the authors of the Calvert study state:
9 "For several types of cancer,
10 mortality was not significantly elevated in the
11 overall cohort but was elevated in the PCE-plus
12 subcohort."

13 That was the case in the study,
14 correct, for bladder cancer?

15 A. Yes. I mean, that's what's stated,
16 yes.

17 Q. There was no excess risk of bladder
18 cancer mortality found in the PCE-only sub-cohort
19 in the Calvert study; correct?

20 A. Correct.

21 Q. In your expert report on page 15,
22 you noted several limitations of the Calvert study
23 in Exhibit 2 of your expert report.

24 You stated:

1 "Because many work histories were
2 unavailable after 1982, duration of exposure could
3 be underestimated for some workers. Additionally,
4 without job titles and personal exposure limits,
5 underestimates of exposure duration and lack of
6 data on exposure intensity may have biased the
7 findings."

8 Did I read that correctly?

9 A. Yes.

10 Q. Another limitation you acknowledge
11 in your expert report, Exhibit 2, on page 15 was
12 that the Calvert study was unable to control for
13 potential confounding from smoking or alcohol;
14 correct?

15 A. Correct.

16 Q. You noted that because the author --
17 that the original authors of the 1987 study deemed
18 this unlikely to confound, though; isn't that
19 correct?

20 A. Correct.

21 Q. You would agree, though, that
22 perhaps smoking might not have been a confounding
23 factor back in 1987, smoking is a confounding
24 factor when we are looking at a study today;

1 correct?

2 MR. WALLACE: Objection.

3 THE WITNESS: No. The only
4 way it could be a confounding factor is
5 if it's associated with either the
6 exposure or the outcome separately.

7 If it is -- if there is no
8 reason to think that one group is more
9 likely to smoke than the other group,
10 then it's nondifferential
11 misclassification, which by definition
12 leads to results towards the null. It
13 does not inflate the point estimate.

14 BY MS. KONSTANTOPOULOS:

15 Q. Wouldn't it be a confounding factor
16 in a study dealing with bladder cancer given that
17 smoking is the biggest risk factor for bladder
18 cancer?

19 A. No.

20 Q. Isn't it true that over 50 percent
21 of bladder cancer deaths are attributable to
22 smoking?

23 A. I'm not aware of that.

24 Q. The authors of the Calvert study

1 reported some additional limitations in the
2 Calvert report, which was previously marked as
3 Exhibit 12. If I can point your attention back to
4 that study, page 714.

5 Under the heading entitled
6 "Strengths and Limitations," you agree that the
7 third limitation noted on page 714 of Exhibit 12
8 states:

9 "Third, some members of the PCE-plus
10 subcohort were exposed to other dry cleaning
11 solvents in addition to PCE. The identity of
12 these solvents is unknown but they are thought
13 most often to have been Stoddard solvents."

14 Did I read that correctly?

15 A. Yes.

16 Q. You agree that the authors of the
17 Calvert study indicated that this was an
18 additional limitation; correct?

19 A. Correct.

20 Q. Why do you think that was a
21 limitation?

22 A. It's a limitation as far as their
23 ability to -- I mean, again, when you're dealing
24 with occupational exposure, it's more likely

1 you're going to be exposed to elements in addition
2 to -- it's hard to tease out specific exposures.
3 Not that you can't in some situations, but in this
4 case they weren't able to do that. So it limited
5 their ability to provide a stronger association
6 between PCE itself and bladder cancer.

7 Q. You would agree that the highest
8 quality evidence to assess an association between
9 PCE and bladder cancer would come from studies
10 that conducted a quantitative assessment of
11 exposure to PCE only; correct?

12 MR. WALLACE: Objection.

13 THE WITNESS: In theory, yes,
14 but the reality is it's very difficult to
15 exclude -- I mean, based on the ability
16 to -- I mean, you get into exposure
17 misclassification because a lot of these
18 studies have exposure misclassification.

19 And, again, when you have
20 exposure misclassification, this likely
21 leads to the null and lessens your
22 ability to strengthen the association
23 between PCE itself and bladder cancer.

24 BY MS. KONSTANTOPOULOS:

1 Q. Another study you cited to support
2 strength of association for PCE was the Vlaanderen
3 study entitled "PCE Exposure and Bladder Cancer
4 Risk: A Meta-Analysis of Dry-Cleaning Worker
5 Studies"; correct?

6 A. Correct.

7 MS. KONSTANTOPOULOS: I am
8 marking the Vlaanderen study as Exhibit
9 Number 13.

10 (Document marked for
11 identification as Culp Exhibit 13.)

12 BY MS. KONSTANTOPOULOS:

13 Q. The Vlaanderen study is a cohort
14 study; correct?

15 A. It's a meta-analysis.

16 Q. You would agree that the authors
17 examined cohorts and other studies that examine
18 risks among occupational groups rather than by
19 levels of PCE; correct?

20 A. (Reviews document.)

21 Correct.

22 Q. You would also agree that after
23 reviewing occupational exposure to PCE only, the
24 Vlaanderen study did not find that exposure to PCE

1 resulted in increased risk of cancer; correct?

2 A. (Reviews document.)

3 MR. WALLACE: Objection.

4 THE WITNESS: They
5 acknowledge that PCE was likely the
6 primary solvent, but there could be other
7 solvents involved.

8 BY MS. KONSTANTOPOULOS:

9 Q. I'm going to draw your attention to
10 page 665 of Exhibit 13. The third sentence after
11 the heading "Discussion."

12 You would agree that it states:

13 "However, we identified only three
14 studies that estimated exposure to PCE
15 specifically (Christensen et al. 2013; Lipworth et
16 al. 2011; Pesch et al. 2000), none of which
17 reported estimates of risk per unit of exposure to
18 PCE."

19 Did I read that correctly?

20 A. Yes.

21 Q. Now moving on to another study for
22 PCE that you included under dose-response, the
23 Bradford Hill factor for dose-response.

24 You would agree that you noted the

1 2019 Callahan study in your expert report in
2 Exhibit 2; correct?

3 A. Correct.

4 Q. This was also a study based on
5 employment in a specific occupation, dry cleaners
6 in St. Louis; correct?

7 A. Yes.

8 Q. And there was no measured dose data
9 in this study, was there?

10 A. Not to my knowledge.

11 Q. And the authors observed an increase
12 in bladder cancer mortality among dry-cleaning
13 workers with PCE exposure; is that correct?

14 A. Correct.

15 Q. You would agree, though, that this
16 was estimated based on only three deaths; correct?

17 A. If that's -- yeah, that's the number
18 of deaths, yes.

19 Q. What convinced you that the
20 association between PCE and bladder cancer was
21 sufficiently clear-cut -- clear-cut to perform a
22 Bradford Hill analysis here for PCE?

23 A. I wouldn't use the word "clear-cut."
24 I just put the evidence into each factor for the

1 Bradford Hill analysis and based my opinion on
2 that.

3 Q. For the Consistency factor on page
4 22 of Exhibit -- Exhibit 2, your expert report,
5 you conclude:

6 "A significant association between
7 PCE and bladder cancer was observed among multiple
8 studies with unique cohorts."

9 Correct?

10 A. Correct.

11 Q. No studies are cited here under the
12 Consistency factor in your expert report; correct?

13 A. Not -- not under Consistency, no.

14 Q. You would agree that there were
15 numerous inconsistent studies that you reference
16 in your PCE analysis generally; correct?

17 A. Not from the standpoint of
18 consistently showing a positive association.

19 Q. I'm going to refer back to your
20 expert report, Exhibit 2, looking at page 16,
21 which is where you analyze the Boice 1999 study
22 entitled "Mortality among aircraft manufacturing
23 workers."

24 You stated in your expert report

1 that:

2 "This study did not find an
3 increased risk of death from bladder cancer in
4 workers at the aircraft manufacturing facility
5 from exposure to PCE or other solvents used to
6 dissolve grease and oil."

7 Did I read that correctly?

8 A. Correct. Yes.

9 Q. Now, you also analyzed the 2011 case
10 of Lipworth on page 16 of your expert report in
11 Exhibit 2; correct?

12 A. Correct.

13 Q. This study extends the Boice study
14 and is entitled "Cancer mortality among aircraft
15 manufacturing workers: an extended follow-up";
16 correct?

17 A. Correct.

18 Q. And in your analysis, you stated on
19 page 16 of Exhibit 2:

20 "PCE-exposed employees did not
21 experience an increased risk of bladder cancer
22 mortality."

23 Correct?

24 A. Not based on their study and

1 results, correct.

2 Q. Okay. Moving on to page 17 of your
3 expert report, Exhibit 2, you analyzed the 2014
4 Silver study entitled "Retrospective Cohort Study
5 of a Microelectronics and Business Machine
6 Facility."

7 A. Correct.

8 Q. On page 17 of your expert report,
9 Exhibit 2, under the analysis for the Silver
10 study, you stated that:

11 "This study did not show an
12 increased risk of bladder cancer with exposure to
13 PCE."

14 Correct?

15 A. Correct.

16 Q. Still on page 17, you analyzed the
17 case authored by -- the study authored by Selden
18 entitled "Cancer morbidity in Swedish dry-cleaners
19 and laundry workers; historically retrospective
20 cohort study" -- excuse me.

21 A. Prospective.

22 Q. Yes. Let me rephrase.

23 You cited the Selden study in 2011
24 entitled "Cancer morbidity in Swedish dry-cleaners

1 and laundry workers"; correct?

2 A. Correct.

3 Q. And you indicated that there was no
4 significant increased risk of bladder -- there was
5 no significant increased risk of bladder cancer;
6 correct?

7 A. This study did not show an increased
8 risk -- significant increased risk of bladder
9 cancer. Correct.

10 Q. And on page 19, you analyzed the
11 2013 case authored by Christensen entitled "Risk
12 of selective cancers due to occupational exposure
13 to chlorinated solvents in a case-control study in
14 Montreal."

15 Correct?

16 A. Correct.

17 Q. And in your report, you stated:

18 "The study found that neither
19 substantial exposure nor any exposure to PCE
20 resulted in an excess risk of bladder cancer when
21 compared to populate -- population and cancer
22 controls."

23 Correct?

24 A. The study did not show an

1 association. Correct.

2 Q. Okay. And on page 21, you also
3 analyzed the 2014 Xie study entitled "Occupational
4 exposure to organic solvents and risk of bladder
5 cancer."

6 Correct?

7 A. Yes, correct.

8 Q. And you indicated that the study did
9 not find an increased risk associated with
10 whatever exposure of PCE and bladder cancer;
11 correct?

12 A. Correct. Their analysis did not
13 find an association.

14 Q. Under your analysis on page 22 of
15 your expert report, Exhibit, 2 you state:

16 "While -- while specificity may
17 support a finding of causal association, a lack of
18 specificity does not negate it."

19 A. Correct.

20 Q. Other than stating this in your
21 expert report, would you agree that there was no
22 further analysis regarding specificity?

23 A. Please elaborate.

24 Q. That was the only analysis included

1 under the Bradford Hill factor Specificity in your
2 expert report on page 22; correct?

3 A. Correct.

4 Q. Moving on to the Bradford Hill
5 factor dose-response.

6 You cited to two studies here. The
7 Calvert study and the Callahan study; is that
8 correct?

9 A. Correct.

10 Q. Why did you choose these two
11 studies?

12 A. These studies showed that
13 dose-response did show basically the risk of a
14 bladder cancer was increased in those who were
15 exposed for longer.

16 Q. Did you find any studies that did
17 not support dose-response and, if so, how did you
18 justify not including them here in this
19 discussion?

20 MR. WALLACE: Objection.

21 BY MS. KONSTANTOPOULOS:

22 Q. Let's start with the first question.

23 Did you find any studies that did
24 not support dose-response?

1 A. There were studies that did not show
2 a dose-response.

3 Q. And how did you justify not
4 including them here in your discussion of
5 dose-response in your expert report in Exhibit 2?

6 A. Because the studies did not show a
7 significant on the counter -- on the reverse, they
8 did not show a decreased dose that would counter a
9 dose -- positive dose-response.

10 Q. In your PCE analysis, you cited to
11 the study of the 2000 study of Pesch; isn't that
12 correct?

13 A. Pesch?
14 (Reviews document.)

15 Yes.

16 Q. Okay. You would agree that the
17 results of this study showed gender differences
18 where women had the highest risk in the lowest
19 exposure category, while men were borderline risk
20 in the higher exposure group; correct?

21 A. I would have to review that study
22 again.

23 (Reviews document.)

24 In my review, I noted that males

1 assessed according to the job task exposure matrix
2 who were exposed to substantial PCE had a
3 statistically significant odds ratio of 1.8 of
4 urothelial cancer after adjusting for smoking,
5 study center, and age.

6 Q. And did you report the findings of
7 the women from that study in your analysis?

8 A. Not in my report, no.

9 Q. And both the Calvert and Callahan
10 studies that you relied upon to demonstrate
11 dose-response, those were both occupational
12 studies; correct?

13 A. Correct.

14 Q. Those were studies based on
15 occupational exposure; correct?

16 A. Correct.

17 Q. And you would agree that the
18 Callahan study, that you noted that the Callahan
19 study on page 22 of your expert report, Exhibit 2,
20 indicates a confidence interval of 1.1 to 76.7?

21 A. Correct.

22 Q. You would agree that that's a wide
23 confidence interval; correct?

24 A. It's wider.

1 Q. And the wider the confidence
2 interval, the more unreliable the result is; isn't
3 that correct?

4 A. No. All you could say for this is
5 that the point estimate is 9.1 and you're 95
6 percent confident that the true estimate is
7 between 1.1 and 76.7. It could be anywhere in
8 there and then your 5 percent chance you don't
9 have it right at all.

10 Q. Moving on to the Biological
11 Plausibility standard for PCE that you reviewed
12 for PCE in your expert report, Exhibit 2.

13 You indicated that the factor was
14 satisfied by your review of general causation
15 toxicology reports; is that correct?

16 A. Correct.

17 Q. So you didn't perform an independent
18 analysis of this factor; correct?

19 A. No.

20 Q. Okay. Moving on to the Coherence
21 factor under your Bradford Hill PCE analysis, you
22 indicated:

23 "Based on epidemiology literature
24 discussed herein and my review of the general

1 causation toxicology reports" you find it
2 satisfied.

3 Correct?

4 A. Correct.

5 Q. And you did provide any further
6 analysis on the Bradford Hill factor of Coherence
7 in your expert report; correct?

8 A. Correct.

9 Q. Under Experimental Experience under
10 Bradford Hill factors for PCE, you indicated that:

11 "Human experimental evidence is
12 unavailable due to ethical considerations and
13 animal experimental evidence is limited as it
14 relates to this chemical exposure and bladder
15 cancer."

16 Correct?

17 A. Correct.

18 Q. And there was no further analysis in
19 your expert report in Exhibit 2 related to
20 experimental evidence for PCE; is that correct?

21 A. Correct.

22 Q. You did not include an assessment of
23 how you weigh the evidence or weigh these Bradford
24 Hill factors; isn't that correct, in your expert

1 report?

2 MR. WALLACE: Objection.

3 THE WITNESS: As mentioned, I
4 used kind of like a gestalt of the entire
5 Bradford Hill analysis, not relying on
6 one specific of these 9 factors. So
7 that's how I came to my conclusions in my
8 opinion.

9 BY MS. KONSTANTOPOULOS:

10 Q. Did you weigh the Hill
11 considerations relative to each other?

12 MR. WALLACE: Objection.

13 THE WITNESS: Not -- not --
14 if -- if one was stronger than the other,
15 if there was more data or more data
16 behind strengthening one over the other,
17 that -- that could be true, but it did
18 not -- again, it was all taken into
19 account, all 9 factors, and then my
20 opinion based on that.

21 BY MS. KONSTANTOPOULOS:

22 Q. You would agree, though, that you
23 did not include an assessment of how you weighed
24 the evidence specifically in your expert report;

1 correct?

2 MR. WALLACE: Objection.

3 THE WITNESS: I mean, I
4 weighed the evidence as a totality of all
5 9 factors.

6 BY MS. KONSTANTOPOULOS:

7 Q. You agree that on page 23 of your
8 expert report, Exhibit 2, after going through the
9 various Bradford Hill factors, you stated:

10 "Based on the review of the Bradford
11 Hill factors above, I am satisfied to a reasonable
12 degree of scientific certainty that a causal
13 relationship between PCE exposure and bladder
14 cancer exists and that PCE can be a cause for
15 bladder cancer."

16 A. Correct.

17 Q. Correct?

18 And there was no other analysis
19 contained in this section discussing how you
20 weighed these factors; correct?

21 A. No. I mean, it was my review of the
22 factors as all 9 factors.

23 MS. KONSTANTOPOULOS: Counsel,
24 is right now a good time to take a break

1 for lunch?

2 MR. WALLACE: Yeah. Yes.

3 MS. KONSTANTOPOULOS: Okay.

4 Thank you.

5 THE VIDEOGRAPHER: The time is
6 12:42 PM. We're going off the record.

7 (Whereupon, at 12:42 PM, a
8 luncheon recess was taken.)

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AFTERNOON SESSION

(1:35 PM)

STEPHEN H. CULP, MD, PHD

called for continued examination and, having been previously duly sworn, was examined and testified further as follows:

EXAMINATION (CONTINUED).

THE VIDEOGRAPHER: The time is

1:35 PM. We are going back on the

record. Please proceed, counsel.

BY MS. KONSTANTOPOULOS:

Q. Going back to your expert report, Exhibit 2, section B, page 23, you agree that you indicate that "TCE EXPOSURE IS A CAUSE OF BLADDER CANCER IN HUMANS"; is that right?

A. I would agree that it can be a cause. Correct.

Q. And in your report, you state that: "TCE has been determined to be carcinogenic to humans by IARC and carcinogenic in humans by all routes of exposure by the EPA 2011 and IARC 2014."

Is that correct?

A. Correct.

1 Q. Isn't it true that IARC classified
2 TCE has being carcinogenic to humans based on
3 sufficient epidemiological evidence for cancer of
4 the kidney?

5 A. To my knowledge, correct. Yes.

6 Q. And the classification of TCE as
7 carcinogenic to humans was not based on a finding
8 of sufficient epidemiological evidence for bladder
9 cancer; correct?

10 MR. WALLACE: Objection.

11 THE WITNESS: Not sufficient
12 enough, correct, for bladder.

13 BY MS. KONSTANTOPOULOS:

14 Q. You further state on page 23 of your
15 report that the EPA found TCE to be likely
16 carcinogenic in humans by all routes of exposure;
17 correct?

18 A. Correct.

19 Q. And you cite to the USEPA 2011
20 report?

21 A. Correct.

22 Q. Would you agree that the EPA's
23 decision to characterize TCE as carcinogenic in
24 humans by all routes of exposure was based on its

1 finding of evidence of causal association between
2 TCE exposure in humans and kidney cancer?

3 A. I believe that's what it was related
4 to. Correct.

5 Q. And let's go through the studies
6 that you allege show a significant association
7 between TCE and bladder cancer.

8 In section B of your expert report,
9 Exhibit 2, under Strength of association, you
10 include the study Morgan et al. from 1998 entitled
11 "Mortality of aerospace workers exposed to TCE,"
12 which you claim found a significant increased risk
13 of bladder cancer in the high cumulative exposure
14 sub-cohort that you analyzed on page 26; is that
15 correct?

16 A. Correct.

17 Q. This was a meta-analysis study;
18 correct?

19 A. Correct.

20 Q. And the study includes a cohort of
21 aerospace workers where approximately 23 percent
22 of them were exposed to TCE; correct?

23 A. Correct.

24 Q. And this exposure to TCE was

1 estimated based on occupation; correct?

2 A. Correct.

3 Q. The study didn't calculate how much
4 each individual was exposed to TCE; isn't that
5 true?

6 A. That is true.

7 Q. And you agree that there were
8 limitations in the study, which included limited
9 follow-up time, small number of cancer mortality
10 in the exposed and unexposed cohorts, lack of data
11 on individual exposure and confounders, and no
12 direct measure of individual solvent exposure?

13 A. Correct.

14 Q. Is that correct?

15 A. Yes.

16 Q. A major limitation in the study was
17 that they did not adjust for smoking; isn't that
18 true?

19 A. Correct.

20 Q. You also include the study from
21 Hadkhale entitled "Occupational exposure to
22 solvents and bladder cancer: A population-based
23 control study in Nordic countries."

24 In your Strength of association

1 analysis under section B of Exhibit 2, you
2 indicated that this case-control study on page 32
3 of Exhibit 2 found that high TCE exposure exposed
4 subjects were -- you indicated that this
5 case-control study found that high TCE-exposed
6 subjects had an increased risk of bladder cancer;
7 is that correct?

8 A. Correct.

9 Q. And that was based on a hazard ratio
10 of 1.23?

11 A. Correct.

12 Q. The Hadkhale study did not control
13 for smoking; isn't that true?

14 A. To my -- I don't mention it here, I
15 don't believe, but to my knowledge, they did not.

16 Q. Okay. And the Hadkhale study
17 assesses -- assessed the relationship between
18 occupational exposure and multiple solvents, not
19 just TCE; isn't that true?

20 A. That's true.

21 Q. And job exposure matrices for TCE
22 exposure were used in this study; is that correct?

23 A. (Reviews document.)

24 Let me go back and see. To my

1 knowledge, yes, but let me look just check here.

2 (Reviews document.)

3 Quantitatively estimated based on
4 the link between occupational codes and
5 NOCCA-JEM -- N-O-C-C-A - J-E-M -- which was
6 developed from the Finish job exposure metric.
7 Correct.

8 Q. And the next study that you listed
9 under your Strength of association analysis for
10 TCE in section B of Exhibit 2, your expert report,
11 was the 2019 Sciannameo case entitled "New
12 insights on occupational exposure and bladder
13 cancer risk: a pooled analysis of two Italian
14 case-control studies"; is that correct?

15 A. Correct.

16 Q. You indicated that this study showed
17 a non-statistical increased risk of bladder
18 cancer; correct?

19 A. Correct.

20 Q. What does that mean?

21 A. It means there was a positive
22 association, but there was -- the 95 percent or
23 the statistical significance was not reached but,
24 nonetheless, a positive association was noted.

1 Q. And this study also used a job
2 exposure matrix to assign exposures to the study
3 population; correct?

4 A. Occupational carcinogenicity
5 exposure, correct.

6 Q. Isn't it true that those that were
7 considered to be highly exposed had slightly
8 excess risk, but those with low TCE exposure had
9 the greatest risk in this study; correct?

10 A. Based on the results, correct, but
11 that could be due to, you know, misclassification
12 or the number. I don't know the number of
13 subjects in each of the groups, but if the highly
14 exposed persons -- I don't know if you have a copy
15 of that study -- was the lower number, then they
16 might have had a lower power to evaluate that.

17 Q. The highly exposed persons in this
18 study had an odds ratio of only 1.08; isn't that
19 correct?

20 A. That is correct.

21 Q. The next study that you cite to for
22 strength of association for TCE in section B of
23 your expert report, Exhibit 2, was the case
24 authored by Mallin entitled "Investigation of a

1 bladder cancer cluster in northwestern Illinois";
2 is that correct?

3 A. Correct.

4 Q. And was this an ecological study?

5 A. Let me find it in my report here.

6 Let's see.

7 Thank you for your patience.

8 Q. Thank you for your patience.

9 A. (Reviews document).

10 Q. Would you like me to point where you
11 discuss --

12 A. Yeah, I can't find it.

13 Q. -- it in your expert report?

14 A. Yeah, that would be great. Thank
15 you.

16 Q. It appears that you discuss Mallin
17 in the PCE section, not the TCE section.

18 A. It could be a formatting issue. I
19 apologize.

20 Yes.

21 Q. On page 15 of your expert report,
22 Exhibit 2?

23 A. Correct.

24 Yeah. So this is obviously looking

1 at -- the study looking at when they were
2 evaluating overall cancer incidence found that
3 there was an unexpected elevation of cancer within
4 this community. So they looked at 8 counties
5 within the area relying on zip codes and that
6 showed elevated bladder cancer incidence.

7 And they found that both
8 tetrachloroethylene and trichloroethylene were
9 present into the wells located within these zip
10 codes.

11 Q. In addition to PCE and TCE being
12 found in two wells located within about a half a
13 mile of a landfill, there were also demonstrated
14 traces of other multiple solvents; isn't that
15 correct?

16 A. Correct.

17 Q. Is there a known dose relationship
18 -- excuse me.

19 Is there a known dose-response
20 relationship found in the study?

21 A. Not to my knowledge.

22 Q. And there's no information in the
23 study about individual exposure levels -- levels?

24 A. No.

1 Q. And since this was an ecological
2 study, there was no assessment of confounding
3 variables; correct?

4 A. Correct.

5 Q. You're aware that the authors of
6 this study wrote that a more detailed study would
7 need to be done, including personal interviews;
8 right?

9 A. Correct.

10 Q. Are you aware of any subsequent
11 publications?

12 A. Not to my knowledge.

13 Q. Okay. For Consistency, on page 32
14 of your expert report, Exhibit 2 -- 30 -- Exhibit
15 2, you stated:

16 "Multiple studies with unique
17 cohorts found an increased but not significant
18 risk of bladder cancer in those exposed to TCE."

19 Did I read that correctly?

20 A. Correct.

21 Q. And this differs from your opinion
22 of TCE; isn't that correct, slightly?

23 MR. WALLACE: Objection.

24 THE WITNESS: PCE. Should be

1 PCE or TCE?

2 BY MS. KONSTANTOPOULOS:

3 Q. Let me restate that. Thank you.

4 A. (Laugh).

5 Q. You would agree that your conclusion
6 on page 32 for TCE, which states that "Multiple
7 studies with unique cohorts found an increased but
8 not significant risk of bladder cancer in those
9 exposed to TCE," is slightly different than your
10 conclusion for PCE; correct?

11 A. Correct.

12 Q. You would also agree that there were
13 cases that you analyzed that did not demonstrate
14 strength of association between TCE and bladder
15 cancer that you said in your report; correct?

16 A. Correct.

17 Q. And I'll point your attention to
18 page 24 to page 25 of your expert report,
19 Exhibit 2.

20 Here you cite to the Blair study
21 from 1998 entitled "Mortality and cancer incidence
22 of aircraft maintenance workers exposed to TCE and
23 other organic solvents and chemicals"; is that
24 correct?

1 A. Correct.

2 Q. On page 25, you indicated that:

3 "The female subcohort had only one
4 bladder cancer death and two bladder cancer
5 diagnoses, leaving the study underpowered to
6 detect an association between occupational TCE
7 exposure and risk of bladder cancer in women";
8 correct?

9 A. Correct.

10 Q. You also cited to the 1991 Radican
11 study entitled "Mortality of aircraft maintenance
12 workers exposed to TCE and other hydrocarbons and
13 chemicals: extended follow-up"; correct?

14 A. Correct.

15 Q. And on page 25 of Exhibit 2, under
16 the analysis for that report, you indicated that
17 TCE exposure does not result in excess bladder
18 cancer mortality; correct?

19 A. Correct.

20 Q. You also cited to the Axelson --
21 Axelson 1994 study entitled "Updated and expanded
22 Swedish cohort study on TCE and cancer risk";
23 correct?

24 A. Correct.

1 Q. And on page 25 of Exhibit 2 of your
2 expert report under the analysis of the Axelson
3 study, you stated that "TCE exposure did not
4 result in a significant increase in bladder cancer
5 morbidity"; correct?

6 A. Correct.

7 Q. You also studied -- cited to the
8 1999 Boice study entitled "Mortality among
9 aircraft manufacturing workers" on page 27 of your
10 expert report, Exhibit 2; correct?

11 A. Correct.

12 Q. And on page 27 of your expert report
13 in Exhibit 2, you stated:

14 "Those routinely exposed to TCE did
15 not experience an excess of bladder cancer
16 mortality."

17 Correct?

18 A. Based on the results, they did not
19 find an increased risk --

20 Q. Okay.

21 A. -- for mortality.

22 Q. On page 27 of your expert report,
23 Exhibit 2, you cited to the 2011 Lipworth study
24 entitled "Cancer mortality among aircraft

1 manufacturing workers: an extended follow-up";
2 correct?

3 A. Correct.

4 Q. And you stated under the analysis
5 that:

6 "Employees routinely and
7 intermittently exposed to TCE did not have an
8 excess risk of bladder cancer mortality."

9 Correct?

10 A. This study did not show an
11 association between bladder cancer mortality and
12 TCE. Correct.

13 Q. And on page 28 of your expert report
14 in section B, you cited to the 2003 study by
15 Raaschou-Nielsen entitled "Cancer risk among
16 workers at Danish companies using TCE: a cohort
17 study"; correct?

18 A. Correct.

19 Q. On page 28 in your analysis of that
20 study, you indicated:

21 "Men who were occupationally exposed
22 to TCE did not show an excess bladder cancer
23 incidence."

24 Correct?

1 A. Correct.

2 Q. And on page 29 of your expert
3 report, Exhibit 2, you cited to the 2004 Silver
4 study entitled "Retrospective cohort study of a
5 microelectronics and business machine facility";
6 correct?

7 A. Correct.

8 Q. On page 29 in your analysis of the
9 Silver study, you indicated that:

10 Investigators found a .04 hazard
11 ratio for TCE exposed workers.

12 Correct?

13 A. Correct.

14 Q. And you would -- you would agree
15 that this study did not show an increased
16 incidence of bladder cancer; correct?

17 A. Correct.

18 Q. On page 30 of your expert report,
19 Exhibit 2, you cited to the 2016 Buhagen study
20 entitled "Association Between Kidney Cancer and
21 Occupational Exposure to TCE"; correct?

22 A. Yes.

23 Q. And on page 30 of your expert
24 report, Exhibit 2, under your analysis of the

1 Buhagen study, you stated:

2 "The author -- the authors provided
3 Standardized Incidence Ratios for cancer overall
4 and for individual cancer sites, including bladder
5 cancer, which showed no excess risk."

6 Is that correct?

7 A. That is correct.

8 Q. In addition, on page 30 of your
9 expert report, Exhibit 2, you cited to the 1994
10 Greenland study entitled "A case-control study of
11 cancer mortality at a transformer-assembly
12 facility"; correct?

13 A. Correct.

14 Q. And on page 30 of your analysis of
15 the Greenland study in Exhibit 2, you stated:

16 Employees occasionally -- excuse me.

17 "Employees occupationally exposed to
18 TCE did not have an excess risk of bladder cancer
19 mortality in this study."

20 Is that correct?

21 A. Correct.

22 Q. And on page 30 of your expert
23 report, Exhibit 2, you also cited to the 2013
24 study authored by Christensen entitled "Risk of

1 selected cancers due to occupational exposure to
2 chlorinated solvents in a case-control study in
3 Montreal"; correct?

4 A. Correct.

5 Q. And on page 30 in your analysis of
6 the Christensen -- Christensen study, you stated:

7 "Authors found that neither
8 substantial exposure nor any exposure to TCE
9 resulted in an excess risk of cancer when compared
10 to population and cancer controls."

11 Correct?

12 A. Correct.

13 Q. Given the majority of the cases that
14 you've analyzed in your expert report for TCE did
15 not find a positive association, would you agree
16 that that Bradford Hill factor of Specificity has
17 not been met --

18 A. No.

19 Q. -- for TCE?

20 A. Depends on the study in question. A
21 lot of these studies -- I mean, for instance, the
22 one by Christensen, a case-control study had 3,730
23 cancer cases but only 533 population controls.

24 A study -- a case-control study you

1 typically want at least 3 to 1. 3 controls per
2 case, ideally up to 5 to 1. This was completely
3 opposite. So this study really wasn't powered
4 enough to detect an association if an association
5 were to exist.

6 Further, I would say that, you know,
7 unless there is -- just because a certain study
8 doesn't show an association does not mean that a
9 study that does show positive association is still
10 not valid and supportive of evidence of causal
11 relationship.

12 Q. If you were to find two studies --
13 if you were to review two studies that support a
14 positive association between TCE and bladder
15 cancer and two studies that do not show an
16 association between TCE and bladder cancer, would
17 you choose the studies that show a positive
18 association to make your conclusion in this case?

19 A. Again, it depends on the studies.
20 Depends on the power of the studies. There's
21 specific work examined and how they interpreted
22 their results.

23 Q. What if they were similar studies of
24 equal merit: Two show a positive association.

1 Two show no association.

2 Would you agree that there would not
3 be specificity?

4 A. Actually, I would -- I mean, a study
5 that shows no association does not -- simply shows
6 no association. It does not show that an
7 association doesn't exist.

8 Whereas, a study that shows a
9 positive association, especially if it does
10 approach statistical significance, is more
11 supportive of a positive association.

12 But in a negative study or a study
13 that does not show an association, then that does
14 not necessarily rule out association.

15 So I would actually, if
16 hypothetically if they were similar, I would
17 gather myself towards the more positive
18 association based on that.

19 Q. So is it fair to say that if there
20 is no association found in your analysis that that
21 you don't consider those studies when determining
22 the Bradford Hill factor of Specificity?

23 MR. WALLACE: Objection.

24 THE WITNESS: Not for

1 supporting the -- the causal
2 relationship, no, but a positive -- a
3 study that shows a positive association I
4 would consider as supporting the Bradford
5 Hill criteria.

6 And, again, ultimately you're
7 weighing all the evidence, all the
8 factors of the Bradford Hill criteria in
9 forming the basis of my opinion.

10 BY MS. KONSTANTOPOULOS:

11 Q. Moving on to the Bradford Hill
12 factor of Temporality on page 32 of your expert
13 report, Exhibit 2, you simply state in your
14 analysis that:

15 "In studies finding a
16 statistical" -- I'm sorry.

17 "In studies finding a significant
18 association between TCE and bladder cancer, all
19 cases were" -- strike that.

20 You would agree that in your
21 analysis on page 32 of Temporality, you don't
22 specifically cite to any cases there; correct?

23 A. They're all -- so temporality,
24 that's basically a no-brainer, in my opinion,

1 within the Bradford Hill. Obviously, if you get
2 the disease before any exposure, it's not going to
3 be related.

4 All the studies that we consider,
5 regardless of age and the exposure, happened
6 before the outcome. So that is satisfied. I
7 didn't find any studies that were trying to look
8 at exposure after the fact.

9 So, yeah, that's kind of a
10 no-brainer, in my opinion, that the exposure in
11 all the studies examined theoretically happened
12 before the outcome of bladder cancer.

13 Q. Would that then be true for
14 basically all of the studies that you reviewed
15 under TCE? Is that -- would that be your
16 analysis --

17 A. Yeah.

18 Q. -- regarding temporality?

19 A. Correct.

20 Q. So all of the cases that -- so it's
21 your testimony that all of the cases that you
22 reviewed for in your TCE analysis demonstrate
23 temporality?

24 A. Yes. The exposure occurred before

1 an outcome.

2 Q. On page 33 of your expert report,
3 Exhibit 2, you analyzed dose-response; correct?

4 A. Correct.

5 Q. And on page 33, you cite to the
6 Hadkhale study; correct?

7 A. Correct.

8 Q. Why did you choose this study?

9 A. (Reviews document.)

10 Well, it did show a dose-response in
11 that moderate -- people with moderate exposure
12 groups based on their criteria. I don't
13 understand their criteria, but that's what they
14 labeled as moderate.

15 Had a hazard ratio of 1.07, which
16 was statistically significant, and then the high
17 exposure groups, again based on their cut-off,
18 whatever that means, had a hazard ratio of 1.23,
19 which is, again, statistically significant.

20 So that did show a dose-response.

21 Q. How do you reconcile the author's
22 note from the Hadkhale case which indicated the
23 concurrent effects from other solvents could not
24 be discounted? Does that affect dose-response?

1 A. Anything can affect dose-response,
2 but that specifically? I mean, yeah. I mean,
3 that's a part of the limitation. They could -- if
4 you are looking at -- you're aiming to try to
5 center in on one particular chemical, but one
6 limitation of any occupational exposure is that
7 there could be other exposures as well. That's
8 reality.

9 Q. Okay. You would agree that in your
10 analysis of TCE studies that there were studies
11 that do not support a dose-response relationship;
12 correct?

13 A. Correct.

14 Q. Why did -- how do you justify not
15 including them here in this discussion of
16 dose-response in your Bradford Hill analysis?

17 A. The way I looked at Bradford Hill is
18 like which, what was supported. If you did not
19 find a dose-response, there obviously is no
20 support for a dose-response based on that study,
21 but it doesn't eliminate the -- that a
22 dose-response may exist.

23 Again, there were no studies that
24 showed the more TCE you were exposed to, the

1 better outcomes you had. So -- significant
2 outcomes you had. So that's why I did not include
3 the negative studies.

4 Q. Okay. One of those negative studies
5 would have been the Sciannameo case that showed
6 non-statistical overall risk of bladder cancer;
7 correct?

8 A. Correct. That, again, it would
9 depend on the numbers of who -- what the total
10 numbers of subjects were in the highly exposed
11 versus the low exposure group.

12 Q. And you had the same analysis for
13 biological plausibility, coherence, experimental
14 evidence, and analogy as you did in the PCE
15 Bradford Hill analysis; correct?

16 A. Correct.

17 Q. Okay. Now, did you weigh the
18 Bradford Hill considerations relative to each
19 other after you analyzed all these factors?

20 MR. WALLACE: Objection.

21 THE WITNESS: One factor
22 versus the other?

23 BY MS. KONSTANTOPOULOS:

24 Q. How did you weigh the Bradford Hill

1 considerations in this for TCE?

2 A. Again, I used them all in as a
3 totality how much support each one contributed.
4 Obviously, some contributed more support, but
5 ultimately it was all 9 factors that came in
6 forming the basis of my opinion.

7 Q. All right. I'm going to ask you to
8 refer back to Exhibit 10, which is the IARC 2024
9 exhibit.

10 I'm going to point your -- I'm going
11 to direct your attention to page 9 entitled "List
12 of classifications by cancer sites with sufficient
13 or limited evidence in humans, IARC
14 Monograph -- Monographs Volumes 1 through 138a."

15 A. Correct.

16 Q. Do you see that page?

17 Okay. You would agree that TCE is
18 not listed among the "agents with sufficient
19 evidence in humans" for bladder cancer; correct?

20 A. Correct. It's not listed.

21 Q. You can also see that TCE is not
22 listed among the "agents with limited evidence in
23 humans" for bladder cancer; correct?

24 A. Not specifically, but dry cleaning

1 is.

2 Q. And when you say "dry cleaning is,"
3 you would agree that "dry cleaning (occupational
4 exposures in)" was found to -- was included in the
5 column "agents with limited evidence in humans";
6 correct?

7 A. Correct.

8 Q. It doesn't specifically refer to
9 TCE --

10 A. Correct.

11 Q. -- in that description; correct?

12 A. Correct.

13 Q. While we're looking at the --
14 looking at Exhibit 10, looking again on page 9,
15 you would agree that benzene is not listed among
16 the "agents with sufficient evidence in humans"
17 for bladder cancer; correct?

18 A. Benzene is not. I don't know what
19 benzidine is. I mean, similar word, but I don't
20 know what benzidine is. But I do not see benzene,
21 no.

22 Q. And you would agree that benzene is
23 not listed among the "agents with limited evidence
24 in humans" for bladder cancer correct?

1 A. Correct.

2 Q. Moving on to benzene, on page 33,
3 Exhibit 2 of your expert report, you opine that
4 benzene is a cause of bladder cancer in humans;
5 correct?

6 A. Correct.

7 Q. Also on page 33 of Exhibit 2 of your
8 expert report, you note that the IARC 2018
9 Monographs determined benzene to be carcinogenic
10 to humans; correct?

11 A. Correct.

12 Q. Isn't it true that IARC classified
13 benzene as being carcinogenic to humans based on
14 sufficient evidence of an association between
15 benzene exposure and risk of acute myeloid
16 leukemia and myeloma in adults?

17 A. To my knowledge, that is correct.

18 Q. The classification of benzene as
19 carcinogenic to humans was not based on a finding
20 of sufficient epidemiological evidence for bladder
21 cancer; correct?

22 A. It is not by the EP -- not by the
23 EPA, no. Correct.

24 Q. In your analysis of benzene in your

1 expert report in section C, Exhibit 2, you go
2 through and cite to a number of studies that
3 evaluate benzene exposure and bladder cancer;
4 correct?

5 A. Correct.

6 Q. And under Strength of association
7 for benzene, you cite to four studies that you
8 believe show a significant association between
9 benzene and bladder cancer; is that correct?

10 A. That is correct.

11 Q. The first such study was the 2017
12 Collarile study entitled "Residence in Proximity
13 of a Coal-Oil-Fired Thermal Power Plant and Risk
14 of Lung and Bladder Cancer in Northeastern Italy";
15 correct?

16 A. Correct.

17 Q. Was that a cohort study?

18 A. Give me one sec here.

19 (Reviews document.)

20 Q. To assist you, your analysis is on
21 page 37 --

22 A. Yeah.

23 Q. -- of Exhibit 2.

24 A. It's a -- I mean, it's a

1 population-based study based on these -- the
2 population living there, this coal field. Yes, it
3 is a population-based cohort.

4 Q. And the Collarile study evaluated
5 benzene and other chemicals; correct?

6 A. Correct.

7 Q. You would agree that there is no
8 increased risk of bladder cancer found for men or
9 women under the age of 75; isn't that correct?

10 A. Correct.

11 Q. And the study found inconsistent
12 increases at the highest level exposure by gender
13 and age with no increase for combined ages;
14 correct?

15 A. Correct.

16 Q. The authors did not have information
17 regarding cigarette smoking for the study;
18 correct?

19 A. Correct.

20 Q. And they could not completely rule
21 it out as a confounder?

22 A. They couldn't adjust for it.

23 Q. There was also no information on the
24 daily time participants spent -- spent in each

1 risk area as a part of this study; correct?

2 A. Correct.

3 Q. How does the study show a
4 significant association between benzene and
5 bladder cancer?

6 A. In -- so you assume that they found
7 that in women 75 years or older the risk of
8 bladder cancer was significantly increased with an
9 incidence rate -- rate ratio of 1.94.

10 They -- these patients or these
11 subjects were high -- highly exposed to benzene by
12 their criteria, but there could have been
13 misclassification, but if there had been
14 misclassification, that would -- if there had been
15 a misclassification, I would expect it towards the
16 point estimate to come down towards the null.

17 So you -- so if they got it right or
18 there was minimal misclassification, then it is a
19 significant result.

20 And if it's with the clinical
21 reality that most bladder cancers occur in an
22 older age group, that you wouldn't expect it in a
23 50- or 55-year-old person.

24 Q. And you indicated earlier that age

1 is one of the risk factors for bladder cancer;
2 correct?

3 A. Yes, based on diagnosis, but the
4 exposure would likely occur earlier in life.

5 Q. Another case that you cited to under
6 Strength of association for benzene in your expert
7 report was the 2023 Shala case entitled "Exposure
8 to benzene and other hydrocarbons and risk of
9 bladder cancer among male offshore petroleum
10 workers"; correct?

11 A. Correct.

12 Q. And this was a cohort study of,
13 obviously, only male offshoremen; correct?

14 A. Correct.

15 Q. And authors used job exposure
16 metrics to attempt to quantify exposure to
17 benzene; is that right?

18 A. Correct.

19 Q. And the authors noted that the lack
20 of information on work history during that
21 follow-up could have led to exposure
22 misclassification or distortion of potential
23 exposure-response associations; correct?

24 A. Correct.

1 Q. How are petroleum workers in Norway
2 similar to those at Camp Lejeune?

3 MR. WALLACE: Objection.

4 THE WITNESS: From my
5 reading, the breakdown of fuel tanks and
6 things like that could have led to some
7 of the water contamination at Camp
8 Lejeune.

9 The petroleum obviously was a
10 surrogate -- petroleum workers cohort was
11 a surrogate to look at benzene exposure.
12 So that's why they used that.

13 So whether or not benzene is
14 in petroleum versus contaminated water,
15 it's still benzene.

16 So that that would be the
17 similarity, in my opinion.

18 BY MS. KONSTANTOPOULOS:

19 Q. And you don't have an opinion in
20 your expert report on how the water at Camp
21 Lejeune was contaminated; correct?

22 A. No, that's not my expertise.

23 Q. Okay. You also cited in your expert
24 report under Strength of association, Exhibit 2,

1 the 2017 Hadkhale case that we have also discussed
2 earlier; is that correct?

3 A. Correct.

4 Q. And you indicated that there was an
5 increased risk of bladder cancer -- or excuse me.

6 You indicated that there was an
7 increased risk of -- you indicated that the
8 increased risk of bladder cancer was found with
9 high exposure to benzene versus no exposure; is
10 that correct?

11 A. Correct.

12 Q. The hazard ratio that you're
13 referencing is 1.16; correct?

14 A. Correct.

15 Q. You would agree that benzene wasn't
16 the only solvent in this study, as previously
17 discussed?

18 A. Correct.

19 Q. And smoking was not used as a
20 confounding factor in this study; correct?

21 A. It was not adjusted for. Correct.

22 Q. Okay. And the last study that you
23 cite under Strength of association for benzene is
24 the 2024 Xie study, which is entitled Occupational

1 exposure to organic solvents and risk of bladder
2 cancer"; correct?

3 A. Correct.

4 Q. You indicated that this case "showed
5 a statistically increased risk of bladder cancer
6 in those 'ever' exposed to benzene"; is that
7 right?

8 A. Correct.

9 Q. And this is a population-based
10 study; correct?

11 A. Population-based case-control study,
12 correct.

13 Q. You agree that the Xie study had
14 positive results but lacked internal consistency
15 and lacked dose-response relationships; correct?

16 MR. WALLACE: Objection.

17 THE WITNESS:

18 (Reviews document.)

19 Correct on the lack -- did not
20 show a dose-response.

21 And what was the first one?

22 BY MS. KONSTANTOPOULOS:

23 Q. You would agree that the Xie study
24 had positive results but lacked internal

1 consistency?

2 A. I don't know what that means.

3 Q. All right.

4 A. "Internal consistency."

5 Q. But you agree that the Xie study
6 lacked a dose-response relationship; correct?

7 A. Correct. The dose-response was not
8 seen.

9 Q. Okay. And in addition to benzene,
10 there were other chemicals found in the study;
11 correct?

12 A. Correct.

13 Q. I believe those included toluene and
14 xylene; is that correct?

15 A. To my knowledge, yes.

16 MS. KONSTANTOPOULOS: If I
17 said those correctly.

18 I'm going to mark as
19 Exhibit 14 the 2024 Xie study entitled
20 "Occupational exposure to organic
21 solvents and risk of bladder cancer" that
22 we are currently discussing.

23 (Document marked for
24 identification as Culp Exhibit 14.)

1 BY MS. KONSTANTOPOULOS:

2 Q. I'm going to point your attention to
3 the first page under IMPACT in the gray box.

4 A. Uh-huh.

5 Q. You would agree that it states --
6 the authors of Xie state:

7 "There is limited evidence about the
8 role of exposure to specific organic solvents,
9 alone or in combination on the risk of developing
10 bladder cancer. In this study, workers with
11 increasing exposure to benzene, toluene, and
12 xylene as a group (BTX) had a statistically
13 significant exposure-response relationship with
14 bladder cancer. Future evaluation of the
15 carcinogenicity of BTX and other organic solvents,
16 particularly concurrent response -- concurrent
17 exposure, on bladder cancer development is
18 needed."

19 You would agree that this study
20 found that there was limited evidence based on the
21 authors of this study on the role of exposure of
22 these chemicals together; correct?

23 MR. WALLACE: Objection.

24 THE WITNESS: Limited

1 evidence means that -- the way they're
2 using it here means there's not -- the
3 evidence in the literature is limited. I
4 don't think it relates to their study or
5 their findings.

6 BY MS. KONSTANTOPOULOS:

7 Q. But you would agree that the authors
8 even indicate that additional studies are needed;
9 correct?

10 A. Yeah, and, in fact, the Yu et al.
11 study that I mentioned earlier that I added after
12 the fact.

13 Do we have a copy of that?

14 MR. WALLACE: I don't.

15 THE WITNESS: Actually used a
16 population-based, the UK database, and
17 they had hundreds of thousands of people.
18 And they actually looked at the same
19 chemicals and they found that, you know,
20 a reliable replication of these results
21 but better.

22 So, I mean, yes, further
23 studies have been done, and they show a
24 positive association.

1 BY MS. KONSTANTOPOULOS:

2 Q. The Yu study that you're talking
3 about, that was a preprint study; correct?

4 So it's final yet; is that fair to
5 say?

6 A. It was published in March of 2025.
7 So it is in the literature. It was not in my
8 report because it wasn't published yet, but it is
9 currently published as of March 2025.

10 Q. And that study similarly indicated
11 that additional studies were needed; is that
12 right?

13 A. Not really. I mean, that was --
14 that was a very strong population-based study
15 looking at ben -- these chemicals. It did not
16 look at PCE or TCE. It looked benzene and these
17 other chemicals BTEX, B-T-E-X. So.

18 Q. It looked at the combination of
19 chemicals that BTEX stands for; correct? This is
20 the Yu study?

21 A. Yes.

22 Q. Okay. For the Consistency factor
23 under your evaluation of benzene in your expert
24 report, Exhibit 2, you state that:

1 "Studies finding significant
2 associations between exposure to benzene and risk
3 of bladder cancer were based on separate and
4 unique cohorts. This was also true of studies
5 that found an increased point estimate in risk but
6 was otherwise not significant."

7 Is that correct?

8 A. Correct.

9 Q. You would agree that there were
10 other cases, though, that found no association
11 between benzene and bladder cancer; correct?

12 A. Correct.

13 Q. One of those cases was the 1986
14 study by Bond that you cited on page 34 of your
15 expert report, Exhibit 2; is that correct?

16 A. Correct.

17 Q. And you indicated "for the total
18 cohort" -- under your analysis of the Bond 1986
19 study -- "bladder cancer mortality was not
20 elevated"; correct?

21 A. (Reviews document.)

22 Correct.

23 Q. And on page 35, Exhibit 2 of your
24 expert report, you cited to the 2004 Bloemen

1 study, which you stated:

2 "Mortality from bladder cancer was
3 not elevated."

4 Correct?

5 A. That was not found in this study.
6 Correct. Based on three deaths, only three
7 deaths.

8 Q. You also cited on page 35 of your
9 expert report, Exhibit 2, to the 2015 Collins
10 study; correct?

11 A. Correct.

12 Q. And you indicated that over 30 years
13 of latency, bladder cancer mortality was only at
14 1.04, which does not show a significant positive
15 association; correct?

16 A. Correct, based on this study's
17 results.

18 Q. Okay. On page 35, you also cited in
19 your expert report, Exhibit 2, to the 1987 Wong
20 study; correct?

21 A. Correct.

22 Q. And you indicated that the
23 standard -- standardized mortality ratio for
24 bladder cancer mortality for all cohort members

1 was .816; is that correct?

2 A. Correct.

3 Q. And that does not show a positive
4 association between benzene and bladder cancer;
5 correct?

6 A. Does not show a significant
7 association. Correct.

8 Q. Well, it doesn't show any
9 association under a figure under 1.

10 Doesn't it show an inverse
11 relationship?

12 A. No, it doesn't show a positive
13 relationship. I mean, it doesn't show a positive
14 association. Correct.

15 Q. Okay. On page 36 of your expert
16 report, Exhibit 2, you cite to the 1997 Lynge
17 study; correct?

18 A. Correct.

19 Q. And in that study, you indicated
20 that the standardized incidence ratio for bladder
21 cancer for men in the total cohort was 1.1 and for
22 women it was .5; correct?

23 A. Correct.

24 Q. And that doesn't show a positive

1 association either; correct?

2 A. Not -- no, it does not.

3 Q. On page 36 of your expert report,
4 Exhibit 2, you cite to the 2005 Sorahan study;
5 correct?

6 A. Correct.

7 Q. And this is a cohort study that did
8 not find an increased risk of bladder cancer
9 deaths; is that right?

10 A. Correct.

11 Q. On page 36 of your report,
12 Exhibit 2, you also cite to the 2015 Linet study;
13 correct?

14 A. Correct.

15 Q. And here on page 36, you stated that
16 the relative risk of bladder cancer mortality was
17 only .9; correct?

18 A. It was 0.9, correct.

19 Q. 0.9.

20 On page 38 of your expert report,
21 you also cite to the 1994 Greenland study;
22 correct?

23 A. Correct.

24 Q. And you indicated that "As it

1 relates to association between benzene exposure
2 and bladder cancer mortality, the odds ratio was
3 1.02"; correct?

4 A. Correct.

5 Q. And that also does not show a
6 positive association between benzene and bladder
7 cancer; correct?

8 A. Not a significant positive
9 association, correct.

10 Q. Now, going -- moving on to
11 dose-response.

12 On page 40 of your expert report,
13 Exhibit 2, you cite to the Hadkhale study and the
14 Collarile study that we discussed earlier.

15 Why did you choose these two studies
16 to support dose-response?

17 A. The -- well, as discussed, the
18 Hadkhale study had a dose-response of a medium
19 exposure of 1.05, which was statistically
20 significant, and 1.16 of the high exposure rate,
21 which was also significant -- statistically
22 significant, and that does show a dose-response.

23 In terms of the -- go back to the
24 old fire pit thing.

1 (Reviews document.)

2 Page -- oh, yes. Okay.

3 (Reviews document.)

4 So the -- this study did not find
5 the higher -- high exposure to benzene showed the
6 significant increase and risk in women 75 or older
7 as opposed to lower exposure, which did not show
8 any positive association.

9 Q. You would agree that you cited to
10 multiple studies in your overall analysis that do
11 not support a dose-response relationship; isn't
12 that true?

13 A. Correct.

14 Q. But you did not mention them in your
15 analysis of dose-response for benzene here;
16 correct?

17 A. Correct.

18 Q. Which Bradford Hill factors did you
19 give the most weight to when analyzing benzene?

20 A. I, again, used all the factors
21 together in my -- forming my final opinion and not
22 one specifically.

23 Q. Were there any that received less
24 weight?

1 A. I mean, as you could see, I mean,
2 there some have more support than others, but
3 ultimately it's the culmination of all 9 factors
4 for me.

5 Q. You agree that you don't have an
6 analysis here that specifically describes how you
7 weighed consideration -- these considerations in
8 your expert report for benzene; correct?

9 A. Correct. I weighed them all
10 together as one. Some were more supportive, but
11 those that lacked as much support did not
12 necessarily negate an association.

13 Q. Earlier you stated that you used the
14 2017 ATR that's in evidence to help form your
15 opinion; correct?

16 A. It was one of the -- yes.

17 Q. And specifically on -- and
18 specifically you stated on page 5 Exhibit 2 of
19 your expert report:

20 "In its 2017 assessment of the Camp
21 Lejeune water contamination, ATSDR applied the 'at
22 least as likely as not' standard."

23 Correct?

24 A. Correct.

1 Q. And on page 6 of your expert report,
2 Exhibit 2, you stated:

3 "Given that the same standard
4 governs my analysis here, in addition to other
5 considerations regarding the relevant literature,
6 I agree with ATSDR's approach and employ the same
7 in my review."

8 Correct?

9 A. It's on page what number?

10 Q. Page 6 of your expert report,
11 Exhibit 2.

12 A. I have page -- it's on page 5.

13 "Given that the same standard
14 governs my analysis here, in addition to other
15 considerations regarding the relevant literature,
16 I agree with ATSDR's approach and employ the same
17 in my review." Correct.

18 Q. Thank you. Page 5. I appreciate
19 it.

20 I'm going to direct your attention
21 back to Exhibit 5 the ATSDR 2017 Assessment of the
22 Evidence.

23 I am going to point your attention
24 to page 95 of Exhibit 5.

1 Do you see the section entitled
2 "TCE"?

3 A. Yes.

4 Q. You would agree that ATSDR in its
5 2017 Assessment of the Evidence concluded, and I
6 quote:

7 "ATSDR concludes that there is below
8 equipoise evidence for causation for TCE and
9 bladder cancer."

10 Correct?

11 A. As stated in the 2017 publication,
12 correct.

13 Q. And you would agree that for -- that
14 the last sentence under the section for vinyl
15 chloride and benzene, it states:

16 "Therefore ATSDR concludes that for
17 vinyl chlorine chloride and benzene there is below
18 equipoise evidence for causation for bladder
19 cancer."

20 Correct?

21 A. In the 2017 ATSDR report, correct.

22 Q. I should have asked this earlier,
23 but have you or anyone in your family been in the
24 military?

1 A. No. I mean, nobody in my immediate
2 family.

3 Q. Okay.

4 A. I mean, back in World War II type of
5 thing, but they're all dead and stuff. (Laugh).

6 Q. So.

7 A. My great uncles and stuff.

8 Q. Okay. So neither you nor any member
9 of your family was ever stationed at Camp Lejeune?

10 A. No.

11 MS. KONSTANTOPOULOS: Okay.

12 I'm going to move on to a discussion of
13 the invoices that you recently provided.

14 We're marking your invoices as
15 Exhibit 14 -- 15. We are marking your
16 invoices as Exhibit 15.

17 (Document marked for
18 identification as Culp Exhibit 15.)

19 BY MS. KONSTANTOPOULOS:

20 Q. And please note that we have put
21 them in chronological order based on invoice date.

22 MR. WALLACE: Is there?

23 Thank you.

24 BY MS. KONSTANTOPOULOS:

1 Q. It's my understanding that your
2 baseline billable rate is \$600 per hour; correct?

3 A. Correct.

4 Q. And your travel time is also \$600 an
5 hour?

6 A. Correct.

7 Q. And you have support staff that
8 assist you; is that correct?

9 A. Yes.

10 Q. And what relationship do they have
11 to you?

12 A. They -- as mentioned earlier, they
13 provide the logistics of scheduling meetings,
14 admin support, pulling documents, pulling papers
15 that I direct them to. If I have direct access to
16 a paper, I pull it myself, but I don't want to
17 bill \$600 to go search for it in the library when
18 they could do it at a much more cost-effective
19 rate.

20 Q. Do the -- does your admin support
21 staff review medical bills or drafts of expert
22 reports as a part of their role?

23 A. Not to my knowledge.

24 Q. And on -- in Exhibit 2, Exhibit B,

1 which is your fee schedule, you list Physician's
2 Support Staff; correct?

3 A. Correct.

4 Q. And under Physician's Support Staff,
5 you include an associate scientist, staff MD/PhD
6 epidemiologist, and nurse practitioner (advance
7 practice); correct?

8 A. Which I have never used. (Laugh).

9 Q. Okay. So these individuals or the
10 physician's support staff did not assist you in
11 your work on this case?

12 A. No. No.

13 Q. Okay.

14 A. I should take that out. When I did
15 this initially, I just did a standard, but I never
16 actually used them. So, or anybody like that.

17 Q. Okay. I believe earlier you
18 indicated that you were first retained
19 approximately sometime around June of 2023; is
20 that correct?

21 A. To the best of my knowledge.

22 Q. And you would agree that in the
23 first invoice the first time that you billed in
24 this case was actually June 12th of 2023; is that

1 correct?

2 A. (Reviews document.)

3 Correct.

4 Q. Okay. And you billed for something
5 called "Review Medical, Scientific, or Regulatory
6 Literature"; correct?

7 A. Correct.

8 Q. What does that mean?

9 A. In this instance, it's likely the
10 ATS -- ATSDR documentation, the initial scientific
11 articles, things like that.

12 I have not reviewed anything
13 medical. I think that's a catchall phrase that
14 they put in there. When I submit, I usually just
15 say review of literature, review of regulatory
16 documents.

17 Q. Okay. And then there are a number
18 of additional entries underneath your billed
19 items, correct, on the first page of Exhibit 15?
20 Where the rate is \$215 an hour?

21 A. (Reviews document.)

22 Correct.

23 Q. And that is not work that you
24 performed; correct? Because that's at a much

1 lower rate.

2 A. To my knowledge, that is correct.

3 Q. Who performed that work?

4 A. I would anticipate it's possibly my
5 admin staff.

6 Q. Did your admin staff travel with you
7 for conferences or meetings?

8 A. No.

9 Q. Do you know why they would bill for
10 "Client Project Conference or Meeting"?

11 A. They're routinely present at
12 meetings in case we need them to do something or
13 to facilitate future scheduling and future
14 whatever is needed admin-wise.

15 Q. And the admins that you're
16 referencing that are charging \$215 an hour, are
17 they employed by Medical Science Affiliates, LLC?

18 A. They are.

19 Q. And I think you might have been
20 referring to Medical Science Associates probably?

21 A. That's my bad.

22 Q. It's okay. I assume you mean --

23 A. Yeah, yeah.

24 Q. -- Medical Science Affiliates, LLC;

1 correct?

2 A. There's only one. Yes.

3 Q. Okay. And the bottom left-hand part
4 of the invoice on this first page of Exhibit 15,
5 you would agree that there is a letter, a number
6 "M223024 - Camp Lejeune Consulting (Dr. Stephen
7 Culp)"; correct?

8 A. Correct.

9 Q. Was the mandate articulated in
10 Exhibit 2 of your expert report the same mandate
11 that you were given when you were first retained
12 in this case?

13 A. Yes.

14 Q. Were there any other mandates that
15 you were given as a part of your expert work in
16 this case?

17 A. No.

18 Q. And move on to the next, second page
19 of Exhibit 2 -- I mean, Exhibit 15. Sorry.

20 Do you know what this "Project
21 Communication/Coordination" bill of \$225 is
22 related to?

23 A. No, not specifically.

24 Q. Do you approve the admin -- the

1 admin billing?

2 A. No.

3 Q. Okay. Did this -- do these invoices
4 come from you specifically or from Medical Science
5 Affiliates, LLC?

6 A. I submit my invoice to Medical
7 Science Affiliates, who then submit it to the
8 legal team, and they pay it off and then I get
9 paid from Medical Science Affiliates --

10 Q. Do you --

11 A. -- for my hours.

12 Q. Do you see what the admins are
13 billing before you submit your time?

14 A. Not specifically.

15 Q. Okay. Were you ever asked to
16 perform any consulting work on an individual by
17 the name of Stephen Dunning in relation to this
18 case?

19 A. Not to my knowledge.

20 Q. Are you aware that Stephen Dunning
21 is a plaintiff --

22 A. Not to my knowledge.

23 Q. -- in this case?

24 A. I have not reviewed any -- any

1 plaintiff files or medical records.

2 Q. On -- if you look at the bottom
3 right of your exhibit, there should be a 00016
4 number on an invoice dated May 17th. It would be
5 the -- the 8th page of your -- of Exhibit 15.

6 A. Okay.

7 Q. The fourth item down includes
8 "Creating Report Template Per Expert's Direction"
9 May 1 to May 2.

10 Did I read that correctly?

11 A. Correct.

12 Q. Is that a report template for the
13 expert report that you are testifying about here
14 today?

15 A. The best of my knowledge, that's
16 probably -- I remember having meetings where we
17 were trying to come up with a system by which, if
18 we are approaching that point in time where I am
19 reviewing medical records -- I don't know if
20 you've seen medical records. It's like a whole
21 bunch of stuff. Again, from a cost-effectiveness,
22 I don't want to, like, drudge through to find such
23 and such and spend an hour doing so.

24 So what I did was, working with the

1 admin staff is, say, okay, this is -- when I
2 review a case, this is what I want to see. This
3 is what I, you know, what are the medical
4 problems, what are their social history,
5 medications, things like that not only. And then,
6 obviously, smoking status and things, if that's
7 included in their medical record, and kind of
8 flesh out what the pertinent positives are and the
9 pertinent negatives rather than just deliver into
10 my e-mail box a 900-page file of medical records.

11 So I know -- I know I did discuss
12 that with the admin team, and we worked on that to
13 figure out if, when it happens -- I'm assuming
14 it's going to happen maybe -- that that's the kind
15 of a route we would take.

16 Q. And you -- part of what you just
17 talked about was your assessment of differential
18 diagnosis; is that right?

19 A. Correct.

20 Especially the VA. Oh. Those
21 medical records are the worst. (Laugh).

22 Q. Fair.

23 A. Don't quote me on that. (Laugh).

24 Q. Unfortunately, I think you're

1 quoted.

2 A. (Laugh).

3 Q. And it looks like there was --
4 unfortunately, I don't know the exact page number,
5 but the invoice is dated October 11, 2024. It is
6 the 14th page of Exhibit 15.

7 I'm looking at the bottom left-hand
8 corner of that invoice and there is a number with
9 a letter, which is M224168- and then it states
10 "Edward Raymond/United States of America (Camp
11 Lejeune) (Dr. Stephen Culp)."

12 You're aware that Edward Raymond is
13 a plaintiff in this matter; correct?

14 A. I -- I assume that. Yes, we had
15 discussed reviewing his records, but then
16 immediately was asked not to review, which I did
17 not.

18 Q. Looks like the first item on this
19 invoice is 1.25 hours "Review Case File" October
20 2nd and October 9th; correct?

21 A. Correct.

22 Q. Did you review his file for
23 approximately 1.25 hours before you stopped
24 reviewing it?

1 A. I mean, I don't -- I never reviewed
2 it. I never downloaded it.

3 Q. What is this 1.25 hours then in the
4 first item relating to Edward Raymond that states
5 "Review Case File"?

6 A. I'm not sure, to my knowledge,
7 what -- what that is.

8 Q. Okay. Were you asked to consult on
9 the review of any other medical records of
10 plaintiffs, other than the brief time where you
11 were asked to consult on Edward Raymond?

12 MR. WALLACE: Objection.

13 THE WITNESS: Not to my
14 knowledge.

15 BY MS. KONSTANTOPOULOS:

16 Q. Were you asked to consult on
17 anything other than the mandate that you testified
18 to in your expert report on Exhibit 2 in this
19 case?

20 MR. WALLACE: Objection.

21 THE WITNESS: No, not to my
22 knowledge.

23 BY MS. KONSTANTOPOULOS:

24 Q. How much time did you spend

1 preparing your expert report, Exhibit 2?

2 A. I felt like an eternity. (Laugh).

3 I mean, whatever I put down is the
4 time I spent. I don't know where that is. It's
5 late last year when...

6 Q. Well, was it in the invoice dated
7 December 13, 2024 where you billed 15 hours for
8 something called "Review Case File" and you listed
9 November 23rd, November 30th?

10 A. Yeah, that would have been it.

11 Q. Okay. Is that -- are those all?

12 A. I was prepare -- I was preparing my
13 personal -- my expert opinion report. So.

14 Q. Okay. And that's the total amount
15 of time you spent preparing your report; is that
16 correct?

17 MR. WALLACE: Objection.

18 THE WITNESS: Not the total.

19 I know, I mean, my preparation,
20 obviously, for the expert -- my expert
21 opinion was done over many months.

22 The final report, though, was
23 concentrated over about a month, and that
24 was close to the date where it was

1 written up in final form and signed off
2 on.

3 BY MS. KONSTANTOPOULOS:

4 Q. So I apologize.

5 When did you start working on the
6 expert report? Approximately what month? What
7 year?

8 A. I'd say bits and pieces started at
9 about a year before it was finalized, just
10 gathering information on paper.

11 Q. There is an item in that same
12 invoice we were discussing, the invoice dated
13 December 13, 2024. It's the third line item down.

14 It states ".75 Research/Receive --
15 Retrieved Medical, Scientific, or Regulatory
16 Literature." And there's a \$295 charge or rate
17 next to that. I'm sorry. The rate.

18 A. Yes.

19 Q. Who -- who did that?

20 A. I'm -- I'm not sure. I don't know.
21 It's not me. It wasn't me. Anything with 600 is
22 me. Otherwise I don't know exactly the individual
23 who billed for the other stuff.

24 Q. Did someone assist you in

1 researching for your expert report?

2 A. Not for researching. For at my
3 direction, they would pull articles, pull
4 manuscripts, pull papers, things like that.

5 Q. Did any of these admin -- admin who
6 billed in your invoices, did any of them draft any
7 portion of your report?

8 A. No, not -- they did not draft any
9 portion of the report. No, it was all done by me.

10 Q. You would agree that they would
11 -- they edited your final report, though; correct?

12 MR. WALLACE: Objection.

13 THE WITNESS: To the degree
14 of kind of putting it together,
15 formatting issues, things like that, yes,
16 but not the substance.

17 BY MS. KONSTANTOPOULOS:

18 Q. Okay. And I ask because the second
19 to last entry in that invoice dated December 13,
20 2024 states "Editing and Finalizing Report"
21 December 2nd, December 5th, December 12th with a
22 rate of \$225.

23 A. Yeah. Assistance of me finalizing
24 the report and getting it to counsel.

1 Q. What is the entry "Client Project
2 Conference or Meeting" mean? I'm looking at the
3 last page of Exhibit 15. It's the invoice dated
4 3/14/2025.

5 A. The "Client Project Conference Or
6 Meeting"? That, that one?

7 Q. Correct.

8 A. I am assuming it is a meeting
9 between me and counsel.

10 Q. And you have additional invoices
11 since this last invoice date of February 27th of
12 2025; correct?

13 A. I have submitted one since May. So
14 I submitted -- I submitted an invoice mid-April
15 for one hour of time for a client meeting with
16 counsel. And since mid-April till today, I'm
17 going to have the invoice for all the work I've
18 done this past month. Correct.

19 Q. Okay.

20 A. I have not submitted an invoice, but
21 it will.

22 MS. KONSTANTOPOULOS: Okay.

23 Counsel I would just ask that you provide
24 that to us when you have it, along with

1 the updated CV that Dr. Culp referenced.

2 MR. WALLACE: All right.

3 Yeah. We can address that.

4 MS. KONSTANTOPOULOS: Thank
5 you. I appreciate it.

6 MR. WALLACE: Thank you.

7 MS. KONSTANTOPOULOS: Can we
8 take a quick 10-minute break?

9 THE WITNESS: Yeah.

10 MR. WALLACE: Yes.

11 THE WITNESS: I was hoping
12 you would say that. Coffee.

13 THE VIDEOGRAPHER: The time is
14 2:52 PM. We are going off the record.

15 (A recess was taken.)

16 THE VIDEOGRAPHER: The time is
17 3:18 PM. We're going back on the record.
18 Please proceed, counsel.

19 MS. KONSTANTOPOULOS: Thank
20 you.

21 BY MS. KONSTANTOPOULOS:

22 Q. Earlier I might have referred to the
23 ATSDR Assessment of Evidence as the ATDR
24 Assessment of Evidence.

1 You understood that I was referring
2 to the ATSDR Assessment of Evidence; correct?

3 A. Correct.

4 Q. Okay. Going back to Exhibit 15,
5 which are your invoices.

6 A. Okay.

7 Q. Looking again at the invoice dated
8 December 13th of 2024.

9 You stated earlier that there was a
10 charge by an administrative individual for
11 "Editing and Finalizing Report" of 6.5 hours;
12 correct?

13 A. Correct.

14 Q. Do you know the name of the
15 individual that finalized or edited your report?

16 A. No, not specific.

17 Q. Have you ever met that individual?

18 A. Probably. I know individuals who I
19 work with. There's about three or four
20 individuals that worked, but I don't know
21 specifically who that refers to or could it be a
22 number of individuals. I don't know.

23 Q. Do you know what their credentials
24 are?

1 A. Not offhand, no.

2 Q. And how did they return their edits
3 to you? Was it in redline or in some other form?

4 A. (Pause). Most of my edits -- any
5 edits that I would have done and passed on would
6 have been through highlighting or comment.

7 Q. So I'm referring specifically to the
8 work the admins performed on editing and
9 finalizing your report.

10 How did they provide those edits or
11 finalizations to you?

12 A. It was back and forth. I mean,
13 making sure everything was as crisp as could be
14 and read well -- read well with least grammatical
15 errors. I don't know the specifics of that
16 specific, the 6 and a half hours.

17 Q. Were you able to track the changes
18 that they made?

19 A. Any changes that were made were
20 sometimes tracked, not always, but most -- most
21 all changes were made by me.

22 Q. Were the changes that they made --
23 strike that.

24 Were the changes that were made

1 clear to you when you would receive an edited
2 version?

3 A. Yes. Like where specific how the
4 breakdown of the report would be, where you --

5 MR. WALLACE: I'm going to
6 step in right here, and to the extent
7 that counsel for the DOJ is asking about
8 the content of any communications or
9 documents that Dr. Culp shared with
10 anybody that is employed by him or
11 associated with him, such information is
12 not discoverable.

13 And I advise you not to answer
14 any questions about the content of those
15 documents or communications.

16 THE WITNESS: I will refrain
17 from answering.

18 BY MS. KONSTANTOPOULOS:

19 Q. I'm not asking about the content.
20 I'm asking about how you were able to track any
21 changes.

22 MR. WALLACE: And my -- and
23 my -- I still object on the basis of such
24 information not being discoverable under

1 CMO 17. It -- yeah, my objection still
2 stands.

3 MS. KONSTANTOPOULOS: Fair,
4 and you're still instructing your --
5 Dr. Culp not to answer at all?

6 MR. WALLACE: To the extent
7 that he can answer your question without
8 getting into the content of information
9 or documents or communications that he
10 shared with people he works with.

11 THE WITNESS: Suffice it to
12 say, everything in this document was
13 written by me, approved by me, and signed
14 off by me.

15 BY MS. KONSTANTOPOULOS:

16 Q. Okay. And, again, to be clear, the
17 admins that you've been referring to do not work
18 for you. They work for Medical Science
19 Affiliates, LLC; correct?

20 A. Correct.

21 Q. Okay.

22 A. I do not pay them.

23 Q. And they are paid by Medical Science
24 Affiliates, LLC, to your knowledge?

1 A. I -- to my knowledge, yes.

2 Q. And according to these invoices,
3 they're paid -- these invoices are paid by the
4 Bell Legal Group; is that correct?

5 A. To my knowledge, yes.

6 Q. Okay. Moving on to -- moving back
7 to the Yu article that you discussed, the new
8 article that you were talking about.

9 A. Uh-huh.

10 Q. Earlier I indicated -- I asked you
11 if this was a preprint version of the study.

12 It wasn't a preprint version, but it
13 is a preproof publication; correct?

14 A. Are you referring to EPUB?
15 ePublished? It's a manuscript you can download
16 from the journal on the web, correct. I don't
17 know if it's physically in a book or a manuscript
18 journal.

19 Q. What I mean by preproof is that it
20 hasn't been officially finalized yet; correct?

21 A. If it's accepted for publication and
22 published in a PDF, then it has been reviewed --
23 peer reviewed and published, yes. It has been
24 approved by definition.

1 Q. So if I were to tell you that the
2 cover page states that it will undergo additional
3 review before it is published in its final form,
4 that would be incorrect?

5 A. I personally downloaded the paper
6 from the journal. So I would assume that it is
7 published and approved.

8 There might be a preprint out there,
9 I guess.

10 Q. And you would agree that it was
11 counsel that provided you with a copy of the
12 study; correct?

13 A. Correct.

14 Q. You would agree that there was no
15 individual exposure data in this report; correct?

16 MR. WALLACE: Objection.
17 Objection.

18 THE WITNESS: I'd want to see
19 the article before answering that
20 question.

21 BY MS. KONSTANTOPOULOS:

22 Q. Well, you would agree that exposure
23 was estimated using a computer model; isn't that
24 correct?

1 A. Again, I would want to see the
2 manuscript before I answer that question. Because
3 I know there's exposure -- low level exposure that
4 they evaluated, but I would want to refresh my
5 memory on exactly what they looked at.

6 Q. And you would agree that the study
7 does not focus on the effects of bladder cancer in
8 BTEX -- BTEX and bladder cancer but, rather, on
9 other diseases; correct?

10 A. I really wish we had a print of
11 that. (Laugh).

12 I cannot answer that without looking
13 at the study.

14 MS. KONSTANTOPOULOS: Counsel
15 wants to print a few copies, I would be
16 amenable to that.

17 MR. WALLACE: This is your
18 deposition.

19 BY MS. KONSTANTOPOULOS:

20 Q. Is it your testimony here today that
21 the Yu March 2025 study has undergone peer review?

22 A. To my knowledge, yes, based on its
23 publication in a peer-reviewed journal.

24 Q. What journal was it published in?

1 A. I don't know -- remember the
2 specific name. That is -- it is accessible to
3 maybe look it up.

4 Q. You would agree that there is some
5 information missing from this study, for example,
6 tables are still missing and need to be added,
7 correct, before it can be finalized?

8 MR. WALLACE: Objection.

9 THE WITNESS: Not to my
10 knowledge.

11 Again, the study I downloaded
12 myself seemed to be complete in published
13 format.

14 MS. KONSTANTOPOULOS: All
15 right. Thank you for answering all my
16 questions.

17 I now pass the witness.

18 MR. WALLACE: All right.

19 Thank you.

20 EXAMINATION

21 BY MR. WALLACE:

22 Q. Dr. Culp, I have a few questions for
23 you.

24 During your deposition, counsel for

1 DOJ asked you questions concerning smoking as a
2 potential confounder for bladder cancer.

3 You recall that?

4 A. Yes.

5 Q. Okay. What role does smoking have
6 in an epidemiological study involving bladder
7 cancer?

8 A. So we know that smoking, based on
9 multiple studies, has a risk factor for bladder
10 cancer. Obviously, there are people who don't
11 smoke who get bladder cancer. There are people
12 who smoke that don't get bladder cancer. But we
13 know based on the available data, that smoking is
14 an established risk factor.

15 Now, in looking at smoking in other
16 studies looking at bladder cancer, by definition,
17 a confounding variable has to be associated with
18 both the exposure and also the outcome.

19 We know, based our evidence already
20 obtained, that smoking is -- is associated with
21 the outcome of developing bladder cancer.

22 However, there is no reason to assume that smoking
23 is associated with the exposure to PCE, TCE, or
24 benzene.

1 Those who are exposed to PCE,
2 there's no reason, in my mind, to say that somehow
3 those that were exposed to these chemicals were
4 somehow different in their smoking habits versus
5 those that were not exposed.

6 Therefore, in that -- in that
7 context, it would lead to, if anything,
8 misclassification, nondifferential
9 misclassification bias, which would ultimately
10 lead the point estimate towards the null.

11 Q. Okay. All right. You mentioned
12 misclassification bias.

13 Can you describe what that means?

14 MS. KONSTANTOPOULOS:

15 Objection to form.

16 THE WITNESS:

17 Misclassification bias. So when you go
18 back and you look at exposure, first,
19 again, you got exposure. You got
20 outcome.

21 Outcome you want to make sure
22 that if you're looking at an incidence,
23 you want to make sure the patient was
24 diagnosed with urothelial bladder cancer,

1 not some other type of bladder cancer.
2 If they died of bladder cancer, ideally
3 you would want that, to know that.

4 Unfortunately, death
5 certificates are not perfect, and they
6 don't always list what they died of. Or
7 the patient may have had bladder cancer,
8 but died of a heart attack. Therefore,
9 they didn't necessarily didn't have
10 bladder cancer, but that was not what was
11 used in the outcome as the event.

12 Likewise an exposure, you
13 would want to, you know, was the patient
14 exposed? Was the patient not exposed?
15 And invariably and unfortunately -- and
16 this is reality -- when you do
17 retrospective studies, it's sometimes
18 difficult to remember the levels of (A)
19 if you were exposed or not and (B) how
20 much were you exposed.

21 So all of that is, you know,
22 it's inherent in any retrospective study.
23 Again, that's why, prospective cohort,
24 randomized control studies are the best

1 studies. Because when you follow
2 patients in time, you know exactly what's
3 going on. It's very -- I mean, this is
4 obviously the most expensive studies, but
5 you eliminate or try to minimize any sort
6 of misclassification, which can
7 ultimately affect your study results.

8 BY MR. WALLACE:

9 Q. You mentioned just now prospective
10 randomized control studies as studies that could
11 help eliminate misclassification bias.

12 Are you aware of any prospective
13 randomized control studies involving any of the
14 chemicals that individuals were exposed to at Camp
15 Lejeune?

16 A. No.

17 MS. KONSTANTOPOULOS:

18 Objection to form and foundation.

19 THE WITNESS: It -- it would
20 be unethical to expose any person or
21 group of people to a potential
22 carcinogen.

23 BY MR. WALLACE:

24 Q. Okay. One of the Bradford Hill

1 viewpoints that you discussed in questioning by
2 counsel for DOJ was the viewpoint of consistency.

3 Do you recall that --

4 A. Yes.

5 Q. -- testimony?

6 MS. KONSTANTOPOULOS:

7 Objection to form.

8 BY MR. WALLACE:

9 Q. All right. Can you explain what
10 consistency means in the context of the Bradford
11 Hill viewpoints?

12 A. So consistency from my use of it in
13 the Bradford Hill is using unique and multiple
14 cohorts to examine (A) the question at hand. So a
15 number of these studies were follow-ups. You
16 know, we looked at 10-year, you know. There's one
17 study had three or four follow-ups.

18 Yes, that might be a valid study,
19 but that doesn't add to the consistency of
20 satisfying that criteria for the Bradford Hill.

21 What satisfies is, you know, we're
22 looking at this cohort in Norway. We're looking
23 at this cohort in Illinois. We're looking at
24 exposure in different elements and different

1 cohorts and finding similar results.

2 That's where consistency lies in the
3 Bradford Hill analysis.

4 Q. And if you see elevated associations
5 in two different populations, does that support
6 consistency, in your opinion?

7 MS. KONSTANTOPOULOS:

8 Objection to form.

9 THE WITNESS: It supports
10 positive association, yes.

11 BY MR. WALLACE:

12 Q. Okay. We also talked about --
13 excuse me.

14 In questioning from counsel for the
15 DOJ, you discussed the Bradford Hill viewpoint of
16 biological plausibility.

17 Do you recall that?

18 A. Yes.

19 MS. KONSTANTOPOULOS:

20 Objection. Form.

21 BY MR. WALLACE:

22 Q. Can you explain what biological
23 plausibility means within the Bradford Hill
24 viewpoint --

1 MS. KONSTANTOPOULOS:

2 Objection to form.

3 BY MR. WALLACE:

4 Q. -- analysis?

5 A. Is it -- well, the plausibility. Is
6 this something that is reasonably inferred that
7 can cause a bad outcome? So if you have a
8 chemical, you have an outcome.

9 Is there -- is it biologically
10 possible that relying, again, on the toxicology
11 experts and their analysis, that if a chemical is
12 beyond what would be considered safe, is it
13 biologically possible that it could cause a
14 cancer, namely, bladder cancer, and my answer is
15 yes.

16 Q. Okay. So you said you -- let me
17 ask.

18 Did you review -- I'm sorry. Let me
19 take a step back.

20 In the plaintiffs' -- other
21 plaintiff experts there, the toxicologists, did
22 you -- were their reports consistent with your
23 understanding of how chemical exposures can cause
24 bladder cancer?

1 MS. KONSTANTOPOULOS:

2 Objection to form.

3 THE WITNESS: Yeah. I mean, I
4 did -- I didn't do my own independent
5 toxicology review, but I did an
6 independent review of their review and
7 found that their support of biologic
8 plausibility was met.

9 BY MR. WALLACE:

10 Q. Okay. What is your understanding of
11 the plausible mechanism behind why TCE, PCE, or
12 benzene can cause bladder cancer?

13 MS. KONSTANTOPOULOS:

14 Objection to form.

15 THE WITNESS: As mentioned,
16 with each of the chemicals in the -- my
17 report in the analogy section, I think
18 smoking is a great analogy.

19 Cigarette smoke is not just
20 one chemical. It's a variety of
21 chemicals that's metabolized by the lung,
22 filtered down into the kidney, and
23 ultimately stored in the bladder until
24 it's eliminated from the body. That's

1 why I think of bladder as an
2 exposure-related disease.

3 When chemicals get broken down
4 in whatever form that might be and get
5 filtered through the kidney, they sit in
6 the bladder for, you know, hours. When
7 we look at bladder cancer, it is a field
8 effect disease.

9 So when you have diagnose with
10 bladder cancer and I go in and I remove a
11 bladder tumor, if I don't scope that
12 patient three months later, I have
13 committed medical malpractice. Simply
14 because whatever caused that tumor in the
15 first place, every cell in the bladder
16 has been exposed to, and that's why I
17 said 50 percent will go on to have a new
18 tumor. And I'd say 90, 95 percent of the
19 time that new tumor is a separate area
20 than the original tumor.

21 A lot of people ask: Why
22 don't you just take out that part of the
23 bladder and surgically remove it? Again,
24 that would be medical malpractice because

1 it's a field effect disease. Every
2 cell -- and I've done three patients in
3 my lifetime, my career, and each one of
4 those patients recurred and ended up
5 having to have their whole bladder
6 removed.

7 So it is well-accepted in the
8 urologic -- urologic oncology community
9 that bladder cancer is a field effect
10 disease based on exposure to a carcinogen
11 via it from cigarette smoke or be it from
12 other chemicals and, in my opinion, TCE,
13 PCE, and benzene are all candidates for
14 that.

15 BY MR. WALLACE:

16 Q. I want to shift gears and talk about
17 limitations on studies. Throughout your
18 deposition, counsel for DOJ asked you about
19 various limitations on studies.

20 Do you recall that testimony?

21 A. Yes.

22 Q. All right. Are you aware of any
23 studies looking at TCE, PCE, or benzene exposure
24 that do not have limitations?

1 A. No.

2 Q. Okay. Does the mere presence of
3 limitations in a given study give you reason to
4 disregard that study?

5 A. No. In fact, if a limit -- if the
6 discussion in a paper or manuscript I was
7 reviewing did not list its limitations, I would
8 not put that forward, that paper, for acceptance
9 in a journal because the authors do not recognize
10 their limitations on what they were looking at.

11 Q. All right. So is --

12 A. Or how they analyzed it.

13 Q. Is it your testimony that it's
14 actually a strength of a paper if it lists its
15 limitations?

16 MS. KONSTANTOPOULOS:

17 Objection to form. Foundation.

18 THE WITNESS: Yes. I mean, if
19 -- anybody can list a limitation, but if
20 it makes sense that these are limitations
21 and that they could affect the results,
22 then, yes, it strengthens the conclusion
23 or the inference of the author in their
24 assessment of what the results were.

1 BY MR. WALLACE:

2 Q. Now, earlier you were talking about
3 misclassification bias as one such limitation; is
4 that correct?

5 A. Correct.

6 Q. Now, you also said another phrase
7 that I'd like to ask you about. You said bias
8 towards the null.

9 What does "bias towards the null"
10 mean?

11 MS. KONSTANTOPOULOS:

12 Objection to form.

13 THE WITNESS: So the null is
14 basically 1.0. That is assuming --
15 you're assuming that there's no
16 association -- your a priori assumption
17 is that there is no association between
18 chemical exposure and bladder cancer.

19 When you have a significant --
20 statistically significant result of
21 positive association, then you reject the
22 null -- reject the null hypothesis that
23 there's no association. That's why it's
24 called the null.

1 So the null is 1.0. So when
2 you have nondifferential
3 misclassification, that means that either
4 there's no reason -- again with cigarette
5 smoking, there's no reason to think that
6 somebody exposed and not exposed would be
7 more or less likely to smoke.

8 When you misclassify, it
9 actually brings the true estimate down
10 towards the null, and it can actually
11 alter. You might have a positive
12 association, but in the end you don't see
13 it because of that nondifferential
14 misclassification.

15 BY MR. WALLACE:

16 Q. Did you see evidence of
17 nondifferential misclassification bias in the
18 studies that you reviewed for this case?

19 A. Yeah. I mean, there's plenty of
20 -- there's plenty -- plenty of the studies that
21 you can have nondifferential misclassification
22 bias.

23 Q. Okay. And those instances of
24 nondifferential misclassification bias are listed

1 in your report?

2 MS. KONSTANTOPOULOS:

3 Objection to form.

4 THE WITNESS: I believe, yes.

5 BY MR. WALLACE:

6 Q. Okay. And to the extent that
7 they're not listed in your report, one could go
8 back and look at the studies themselves and see if
9 the authors of the studies had identified
10 misclassification as a potential limitation?

11 MS. KONSTANTOPOULOS:

12 Objection to form.

13 THE WITNESS: Correct.

14 BY MR. WALLACE:

15 Q. Okay. You were also asked some
16 questions about two review agencies: EPA's 2020
17 Risk Assessment for PCE and IARC's evaluation
18 -- 2014 evaluation of PCE, TCE, and other
19 chlorinated solvents.

20 Do you recall that testimony?

21 A. Yes.

22 Q. Okay. And I believe counsel for the
23 DOJ or -- I'm sorry. Let me strike that.

24 In your report, did you review any

1 epidemiological studies involving TCE, PCE, or
2 benzene, for that matter, that postdate EPA's 2020
3 Risk Assessment for PCE and IARC's 2014 evaluation
4 of PCE, TCE, and other chlorinated solvents?

5 MS. KONSTANTOPOULOS:

6 Objection to form.

7 THE WITNESS: Yes, I read
8 multiple studies after those dates, and
9 they're included in the report. Except
10 for Dr. Yu et al., which we've already
11 mentioned.

12 MR. WALLACE: Okay. Thank
13 you. I have no further questions at this
14 time.

15 MS. KONSTANTOPOULOS: I have
16 no further questions either.

17 MR. WALLACE: Okay.

18 THE WITNESS: Do you have any
19 questions? (Laugh).

20 THE VIDEOGRAPHER: (Laugh).

21 The time is 3:41 PM. We're
22 going off the record.

23 (Signature not waived, the deposition
24 concluded at 3:41 PM.)

ERRATA SHEET

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DECLARATION UNDER PENALTY OF PERJURY

I declare under penalty of perjury that I have read the entire transcript of my Deposition taken in the captioned matter or the same has been read to me, and the same is true and accurate, save and except for changes and/or corrections, if any, as indicated by me on the DEPOSITION ERRATA SHEET hereof, with the understanding that I offer these changes as if still under oath.

Signed on the _____ day of _____, 2025.

STEPHEN H. CULP, MD, PHD

CERTIFICATE OF REPORTER
COMMONWEALTH OF VIRGINIA)

I, Denise Dobner Vickery, a
Registered Court Reporter and Notary Public of
the Commonwealth of Virginia, do hereby certify
that the witness was first duly sworn by me.

I do further certify that the
foregoing is a verbatim transcript of the
testimony as taken stenographically by me at the
time, place and on the date herein set forth, to
the best of my ability.

I do further certify that I am
neither a relative nor employee nor counsel of
any of the parties to this action, and that I am
neither a relative nor employee of such counsel,
and that I am not financially interested in the
outcome of this action.



DENISE DOBNER VICKERY, CRR-RMR
Notary Public in and for the
Commonwealth of Virginia
Certification No. 0313133
Notary Registration No. 126014

My Commission expires: March 31, 2026

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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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