

Exhibit 592

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

IN RE:)
)
CAMP LEJEUNE WATER) No: 7:23-cv-00897
LITIGATION)
)
This Document Relates To:)
)
ALL CASES)
-----)

VIDEOTAPED DEPOSITION OF
DAVID JOSEPHSON, M.D.
BEVERLY HILLS, CALIFORNIA
JUNE 18, 2025

Reported by:
Susan Myong
CSR 13365
Job No. 7409936

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

IN RE:)
)
CAMP LEJEUNE WATER) No: 7:23-cv-00897
LITIGATION)
)
This Document Relates To:)
)
ALL CASES)
-----)

VIDEOTAPED DEPOSITION OF DAVID JOSEPHSON,
M.D., taken on behalf of defendant, at in 8889 West
Olympic Boulevard, Suite 200, Beverly Hills,
California, beginning at 9:53 a.m., and ending at
1:32 p.m., on Wednesday, June 18, 2025, before Susan
Myong, Certified Shorthand Reporter No. 13365.

1 APPEARANCES OF COUNSEL:

2 For Plaintiff:

3 LAW OFFICES OF JAMES SCOTT FARRIN
4 BY: TOM WILMOTH, ESQ.
5 555 South Magnum Street
6 Suite 800
7 Durham, North Carolina 27701
8 twilmoth@farrin.com
9 MANDELL, BOISCLAIR, & MANDELL, LTD.
10 BY: ZACHARY M. MANDELL, ESQ. (Remote)
11 One Park Row
12 Providence, Rhode Island 02903
13 zmandell@mbmjustice.com

14 For Defendant:

15 U.S. DEPARTMENT OF JUSTICE
16 CIVIL DIVISION, TORTS BRANCH
17 BY: ERICK MARQUINA, ESQ.
18 HANLEY GIBBONS, ESQ.
19 JESSICA ANS, ESQ. (Remote)
20 P. O. Box 340
21 Washington, D.C. 20044
22 (202)340-2572
23 erick.marquina@usdoj.gov

24 Also Present: Zareh Manserian, Videographer
25

I N D E X

WITNESS: DAVID JOSEPHSON, M.D.

EXAMINATION BY	PAGE
MR. MARQUINA	8
MR. WILMOTH	145

EXHIBITS

DEFENDANT	PAGE
EXHIBIT 1 Exhibit A to the Report of David Y. Josephson on Plaintiff Allan W. Howard: Materials Considered List	18
EXHIBIT 2 Exhibit A to the Report of David Y. Josephson on Plaintiff Jacqueline J. Tukes: Materials Considered List	18
EXHIBIT 3 Dr. David Josephson - Supplemental Materials Considered	19
EXHIBIT 4 Dr. David Josephson - Third Supplemental Materials Considered	20
EXHIBIT 5 Dr. David Josephson - Supplemental Materials Considered List	20
EXHIBIT 6 Invoice	23

1	EXHIBITS (Continued)		
2	DEFENDANT		PAGE
3	EXHIBIT 7	Invoice	24
4	EXHIBIT 8	Specific Causation Expert Witness Report: Allan Howard	26
5			
6	EXHIBIT 9	Expert Witness Disclosure	27
7			
8	EXHIBIT 10	Curriculum Vitae	30
9			
10	EXHIBIT 11	Specific Causation Expert Witness Report: Jacqueline Tukes	42
11			
12	EXHIBIT 12	Evaluation of Mortality Among Marines and Navy Personnel Exposed to Contaminated Drinking Water At USMC Base Camp Lejeune: A Retrospective Cohort Study	75
13	EXHIBIT 13	Medical records for Tukes	103
14	EXHIBIT 14	Cancer Risk and Tetrachloroethylene-Contaminated Drinking Water in Massachussetts	119
15	EXHIBIT 15	Mortality Study of Civilian Employees Exposed to Contaminated Drinking Water At USMC Base Camp Lejeune: A Retrospective Cohort Study	128
16			
17	EXHIBIT 16	Cancer Incidence Among Marines and Navy Personnel and Civilian Workers Exposed to Industrial Solvents in Drinking Water At US Marine Corps Base Camp Lejene: A Cohort Study	130
18			
19			
20			
21	EXHIBIT 17	Evaluation of Mortality Among Marines, Navy Personnel, and Civilian Workers Exposed to Contaminated Drinking Water At USMC Base Camp Lejeune: A Cohort Study	134
22			
23			
24			
25			

EXHIBITS (Continued)

DEFENDANT	PAGE
EXHIBIT 18 Extended Mortality Follow-Up in a Cohort of Dry Cleaners	137
EXHIBIT 19 Occupational Exposure to Chlorinated Solvents and Kidney Cancer: A Case-Control Study	140

1 Beverly Hills, California; Wednesday, June 18, 2025

2 9:53 a.m. - 1:32 p.m.

3
4 THE VIDEOGRAPHER: Okay. We are now on
5 camera. My name is Zareh Manserian, and I am the
6 videographer for Golkow, a Veritext division.
7 Today's date is June 18, 2025, and the time is
8 9:53 a.m.

9 This video deposition is being held in
10 8889 West Olympic Boulevard, Beverly Hills,
11 California, in the matter of Camp Lejeune Water
12 Litigation vs. United States of America, in the
13 United States District Court, for the Eastern
14 District of North Carolina. The deponent is
15 Dr. David Josephson.

16 Counsel, please introduce yourselves now.

17 MR. WILMOTH: Tom Wilmoth, here on behalf
18 of the plaintiffs' leadership group and plaintiffs
19 Jacqueline Tukes and Allan Howard.

20 MR. MARQUINA: Erick Marquina for the
21 United States.

22 MR. GIBBONS: Hanley Gibbons for the United
23 States.

24 THE REPORTER: Counsel on Zoom?

25 MR. MANDELL: Zachary Mandell for

1 plaintiffs' leadership group.

2 THE REPORTER: My name is Susan Myong,
3 certified shorthand reporter, number 13365.

4 Raise your right hand.

5 THE WITNESS: (Witness complies.)

6 THE REPORTER: You do solemnly state under
7 penalty of perjury that the testimony you shall give
8 in this matter shall be the truth, the whole truth,
9 and nothing but the truth?

10 THE WITNESS: I do.

11

12 DAVID JOSEPHSON, M.D.,
13 produced as an expert witness by and on behalf of
14 the defendant, and having been first duly sworn, was
15 examined and testified as follows:

16

17 EXAMINATION

18 BY MR. MARQUINA:

19 Q. Good morning, Dr. Josephson.

20 A. Good morning.

21 Q. Can you please state your full name for the
22 record.

23 A. David Josephson.

24 Q. Can you please state your current business
25 address?

1 A. 8635 West Third Street.

2 Q. My name is Erick Marquina. I'm an attorney
3 with the United States Department of Justice. I
4 represent the United States in the Camp Lejeune
5 water litigation, which is pending before the
6 Eastern District of North Carolina.

7 So I understand that you've been deposed
8 before; is that correct?

9 A. Correct.

10 Q. So a lot of this is going to sound familiar
11 to you, but bear with me as I go through a few of
12 the ground rules for the record.

13 During this deposition, the court reporter
14 will record and transcribe everything we say while
15 we're on the record. To make sure everything gets
16 transcribed properly, I'll ask that you always
17 answer my questions clearly and verbally. For
18 example, if I ask a yes-or-no question, I ask that
19 you respond with yes or no rather than shake your
20 head or respond with uh-huh; is that fair?

21 A. Fair.

22 Q. I ask that you please talk at a reasonable
23 pace; is that fair?

24 A. Yes.

25 Q. If you didn't hear or understand my

1 question, please tell me, and I'll clarify. If you
2 answer a question, I will assume that you understood
3 it; is that fair?

4 A. Fair.

5 Q. Please be sure to let me finish asking my
6 question before you begin your answer; is that fair?

7 A. Fair.

8 Q. If you wish to take a break, let me know.
9 All I ask is that if I ask -- if you ask for a break
10 while a question is pending, please finish answering
11 the question before we go on break; is that fair?

12 A. Yes.

13 Q. Do you understand that a few moments ago
14 you took an oath to tell the truth?

15 A. Yes.

16 Q. Do you understand that this is the same
17 oath that you would take in a court of law subject
18 to the same penalties for perjury?

19 A. Yes.

20 Q. You can correct your testimony at any time
21 while you are here; is that fair?

22 A. Yes.

23 Q. Are you currently taking any medications
24 that might affect your memory or testimony?

25 A. No.

1 Q. Are there any medical conditions you have
2 that might affect your memory or ability to testify
3 today?

4 A. No.

5 Q. Is there any reason why you would be unable
6 to give your most truthful and accurate testimony
7 here today?

8 A. No.

9 Q. During the deposition, you may hear counsel
10 say "objection." Unless your attorney instructs you
11 not to answer the question, I ask that you please
12 answer the question after the objection has been
13 made; is that fair?

14 A. Fair.

15 Q. Do you have any questions about what
16 we're -- about what we are doing here today before
17 we begin?

18 A. No.

19 Q. What, if anything, did you do to prepare
20 for today's deposition?

21 A. I read through my declaration reports and
22 reviewed some of the expert testimony including
23 deposition and causation reports provided to me by
24 plaintiffs' counsel.

25 Q. I'd like to break that down a little bit.

1 What expert testimony did you review?

2 A. Specific names or general reports?

3 Q. As best you can recall.

4 A. I reviewed deposition and reports from
5 Drs. Bird, Dr. Hadden, Ms. Reynolds. Expert
6 depositions and reports from Drs. Stadler, Goodman,
7 McCabe, other names that I can't recall right now.

8 I also read the depositions of Mr. Howard
9 and Ms. Tukes.

10 Q. When did you review these documents?

11 A. In the past six months since I've been
12 retained as an expert in this case.

13 Q. Did you have any meetings with counsel in
14 preparation for today?

15 A. Yes.

16 Q. When was that meeting? Was it one or two?

17 A. I had a meeting yesterday.

18 Q. How long was that meeting?

19 A. About an hour.

20 Q. Who was at that meeting?

21 A. Mr. Mandell and Mr. Wilmoth.

22 Q. Was there anyone else?

23 A. No.

24 Q. Were you provided with any documents during
25 those meetings?

1 A. No.

2 MR. WILMOTH: Objection.

3 BY MR. MARQUINA:

4 Q. Was that the only meeting you had in
5 preparation for today?

6 A. I had another meeting last week.

7 Q. How long was that meeting?

8 A. Less than an hour.

9 Q. And do you recall when specifically that
10 meeting occurred?

11 A. Midweek. I don't recall exact date.

12 Q. Was the meeting in person? Over the phone?
13 Both?

14 A. Over Zoom.

15 Q. And I want to circle back to the first
16 meeting we discussed.

17 Was that also in person? Over Zoom?

18 A. Over Zoom.

19 Q. Did you review any documents with counsel
20 during the meeting last week?

21 MR. WILMOTH: Objection. And I'm going to
22 instruct the witness not to answer to the extent
23 that it reveals any communications between him and
24 his counsel.

25 THE WITNESS: May I answer?

1 MR. WILMOTH: You may.

2 THE WITNESS: Just my declaration.

3 BY MR. MARQUINA:

4 Q. Without telling me what was discussed
5 between you and counsel, did you review any other
6 documents?

7 A. No.

8 Q. Have you had any communications with anyone
9 other than an attorney to prepare for your
10 deposition?

11 A. No.

12 Q. Have you had any communications with any of
13 the plaintiffs in the Camp Lejeune Water Litigation
14 about your deposition?

15 A. No.

16 Q. Have you had any communications with any of
17 Allan Wayne Howard's treating physicians?

18 A. No.

19 Q. Have you had any communications with any of
20 Jacqueline Tukes' treating physicians?

21 A. No.

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

24 A. I'd heard about it through media reports
25 and, also, I'd come across of it through prior

1 researching kidney cancer and bladder cancer cases.

2 Q. Do you recall when you first became aware?

3 A. Maybe two years ago. Don't recall the
4 exact date.

5 Q. When were you first contacted about working
6 on this matter?

7 A. September of 2024.

8 Q. Who first contacted you about working on
9 this matter?

10 A. Mr. Wilmoth.

11 Q. Anyone else?

12 A. No.

13 Q. What, if any, information were you provided
14 during that initial contact?

15 A. I was asked if I was willing to review a
16 case.

17 Q. And you have indeed been hired as an expert
18 witness in this case; correct?

19 A. I believe so.

20 Q. When were you formally retained?

21 A. Don't recall the exact date. Must have
22 been sometime in 2024, late 2024.

23 Q. Sometime during the fall sound about right?

24 A. Would have to be maybe a month or so
25 afterwards because I'd have to actually review the

1 documents. So I'm assuming took me about six to
2 eight weeks to probably review the documents and
3 then discuss it with the lawyers and see if I would
4 be willing to take on the case.

5 Q. How many times did you speak with
6 plaintiffs' counsel prior to being retained?

7 A. Don't recall exactly. It'll probably be
8 reflected on my invoice.

9 Q. Do you recall whether it was more than
10 once?

11 A. One or two times.

12 Q. One or two times.

13 Do you have any notes from those
14 conversations before you were retained?

15 A. No.

16 Q. Did you execute a retainer agreement?

17 A. I must have, yes.

18 Q. Did you perform any work regarding this
19 matter before you were retained?

20 A. As part of my initial review, I must have
21 done some work, so -- in order to be officially
22 retained and agree to take on the case, so I'm sure
23 that I did do some work.

24 Q. Aside from any initial work or initial
25 review, did you perform any other type of

1 substantive work before you were formally retained?

2 A. What do you mean by "substantive"?

3 Q. Did you review any medical records -- did
4 you review any medical records, case files, things
5 of the like?

6 A. Of these specific two individuals?

7 Q. Yes.

8 A. Must have been part of my review. Yes.

9 Q. What was your assignment in this matter?

10 MR. WILMOTH: Object to form.

11 BY MR. MARQUINA:

12 Q. I'll reframe.

13 What was the scope of your responsibility
14 in this case as an expert witness?

15 A. To review the medical records, expert
16 reports, and offer an opinion regarding the
17 plaintiffs' development of kidney cancer.

18 Q. And just so the record is clear, when we
19 say "plaintiffs," are we referring to Mr. Allan
20 Wayne Howard and Mrs. Jacqueline Tukes?

21 A. Yes. Those two specific individuals.

22 Q. And you did prepare reports for those two
23 individuals; correct?

24 A. Two separate declarations and reports.
25 Yes.

1 MR. MARQUINA: Okay. And this time, let's
2 see, let's mark this as 1.

3 (Exhibit 1 was marked for
4 identification and attached hereto.)

5 THE WITNESS: Thank you.

6 BY MR. MARQUINA:

7 Q. Dr. Josephson, I'm handing you what's been
8 labeled as Exhibit 1. The document is entitled
9 Exhibit A to the Report of David Y. Josephson on
10 Plaintiff Allan W. Howard Materials Considered List.

11 Do you recognize this document?

12 A. Yes.

13 Q. What is this document?

14 A. This is a list of the documents and
15 literature provided to me in preparation for this
16 case.

17 MR. MARQUINA: Okay. And this is 2.

18 (Exhibit 2 was marked for
19 identification and attached hereto.)

20 BY MR. MARQUINA:

21 Q. Same thing with this one. I've handed
22 you -- or we've handed you what's been entitled as
23 Exhibit A to the Report of David Y. Josephson on
24 Plaintiff Jacqueline J. Tukes Materials Considered
25 List.

1 Do you recognize this document?

2 A. Yes.

3 Q. What is this document?

4 A. This is a list of documents and
5 publications that have been provided to me and to be
6 considered by me in forming my opinions in the case
7 of Jacqueline Tukes.

8 MR. MARQUINA: This is 3.

9 (Exhibit 3 was marked for
10 identification and attached hereto.)

11 BY MR. MARQUINA:

12 Q. Dr. Josephson, I've handed you -- or we've
13 handed you a document entitled Dr. David Josephson,
14 Supplemental Materials Considered List.

15 Do you recognize this document?

16 A. Yes.

17 Q. What is this document?

18 A. This is a list of documents, including
19 causation reports and deposition transcripts,
20 related to the case in addition to medical records
21 related to Mr. Howard and Ms. Tukes, specifically,
22 that have been considered by me in rendering my
23 opinion in the case.

24 MR. MARQUINA: This is, I think, 4.

25 ///

1 (Exhibit 4 was marked for
2 identification and attached hereto.)

3 BY MR. MARQUINA:

4 Q. This is a document entitled Dr. David
5 Josephson, Third Supplemental Materials Considered.

6 Do you recognize this document?

7 A. Yes.

8 Q. What is this document?

9 A. It's disclosing that the transcript of
10 Dr. Hoppe has been provided to me as another
11 supplemental information related to the case.

12 MR. MARQUINA: This is, I believe, 5.

13 (Exhibit 5 was marked for
14 identification and attached hereto.)

15 BY MR. MARQUINA:

16 Q. This document that's been handed to you is
17 entitled Dr. David Josephson, Supplemental Materials
18 Considered List.

19 Do you recognize this document?

20 A. Yes.

21 Q. What is this document?

22 A. Additional reports that have been provided
23 to me in consideration for this case, including
24 reports of Kelly Reynolds, Dr. Shields, and
25 Dr. Allen.

1 Q. So these five, we'll refer to them as,
2 these five, separate materials considered list.

3 Do these reflect a complete and accurate
4 copy of all the materials you considered in
5 developing your opinions for your reports on
6 Mr. Howard and Mrs. Tukes?

7 MR. WILMOTH: Object to form.

8 THE WITNESS: Yes. But I've obviously done
9 my own research historically, and not every
10 publication that I've ever looked at is included in
11 this list.

12 BY MR. MARQUINA:

13 Q. What documents did you review in preparing
14 for -- strike that.

15 Are there documents that you reviewed in
16 preparing your reports in this case that are not
17 included in your materials considered list?

18 A. There must be a number of publications that
19 I have not listed specifically. But having done
20 this for 20 years, I'm sure I've come across
21 research that's not specifically spelled out here in
22 the documents list.

23 Q. Do you recall any specific document or --

24 A. No.

25 Q. -- research that you did not list on your

1 materials considered list?

2 A. No.

3 Q. Did you bring any documents with you to
4 your deposition today?

5 A. No.

6 Q. When did you first begin working as an
7 expert witness?

8 A. Prior to this case?

9 Q. Prior to this case, just in general.

10 A. Probably 2007, 2008.

11 Q. Why did you start working as an expert
12 witness?

13 A. Based on my background and training as a
14 urologic oncologist and robotic surgeon, I was
15 sought out to render opinions regarding medical
16 standards as they relate to care offered by
17 physicians on both the plaintiff and defense side.

18 Q. Have you performed expert work for both
19 plaintiffs and defendants?

20 A. Yes.

21 Q. Approximately what percentage of your work
22 as an expert witness is for plaintiffs?

23 A. 40 percent.

24 Q. Is it fair to say that 60 percent of your
25 work would then be for defendants?

1 A. Yes.

2 Q. Have you received any compensation in
3 connection with your work in this case?

4 A. Yes.

5 Q. How do you charge for your services as an
6 expert? For example, hourly, fixed price, some
7 other arrangement?

8 A. Hourly.

9 Q. Do you recall how much you've billed to
10 date in this case for your work on Mr. Howard's
11 case?

12 A. For both cases or just one case?

13 Q. Let's focus on Mr. Howard first.

14 A. Don't know the exact number, but --

15 Q. Let me --

16 A. -- I'm sure it's in my invoices. I'd say
17 probably \$12,000.

18 MR. MARQUINA: One moment. This is, I
19 think, 6.

20 (Exhibit 6 was marked for
21 identification and attached hereto.)

22 BY MR. MARQUINA:

23 Q. Dr. Josephson, is that your -- an invoice
24 for the work you've performed in Mr. Howard's case?

25 A. Yes.

1 Q. And does this document accurately reflect
2 the total amount that you have billed for
3 Mr. Howard's case thus far?

4 A. Correct.

5 (Exhibit 7 was marked for
6 identification and attached hereto.)

7 BY MR. MARQUINA:

8 Q. And, Dr. Josephson, is this an invoice
9 reflecting the total amount you have billed in this
10 case for preparing your report for Ms. Tukes?

11 A. Correct.

12 Q. So is it fair to say the -- you've billed a
13 total of 14,933 in Mr. Howard's case?

14 A. Yes.

15 Q. And if -- I may have my math wrong, but is
16 for a total of about 20 hours; is that fair?

17 A. Correct.

18 Q. And turning back to Mrs. Tukes, the total
19 amount you have billed for her case is \$12,293; is
20 that correct?

21 A. Correct.

22 Q. And that's for a total of about --

23 A. 15 hours.

24 Q. -- 15 hours billed?

25 A. Sorry to disrupt you. Sorry about that.

1 Q. No worries.

2 Does your payment in this case depend on
3 its outcome?

4 A. Absolutely not.

5 Q. Are you reimbursed for any expenses or
6 costs?

7 A. I don't think so.

8 Well, let me -- let me take that back. I
9 have not charged for any costs. But if I get
10 deposed and have to travel and close down my clinic
11 for the day, then I expect to get reimbursed for my
12 time.

13 Q. And that's reflected in your fee schedule;
14 correct?

15 A. Correct.

16 Q. What percentage of your annual income is
17 earned from serving as an expert witness?

18 A. Less than 5 percent.

19 Q. And is the fee schedule you used in this
20 case the same as the fee schedule you've used in
21 prior cases?

22 A. It's been updated as of 2023, 2024. But,
23 yes, it's reflective of all cases that I do.

24 Q. Is the amount that you bill per hour -- let
25 me strike that.

1 Has the amount you've billed per hour been
2 the same in this case as it's been in prior cases?

3 A. Yes.

4 Q. Let me do it this way.

5 That and his report, tab one. Thanks.

6 We're at 8?

7 (Exhibit 8 was marked for
8 identification and attached hereto.)

9 THE WITNESS: Thank you.

10 BY MR. MARQUINA:

11 Q. This is a document entitled Specific
12 Causation Expert Witness Report, Allan Howard.

13 Dr. Josephson, is this the report you
14 prepared for Mr. Howard's case?

15 A. Correct.

16 Q. And that's your signature on the front
17 page; right?

18 A. Correct.

19 Q. If you could turn to page 15, under section
20 8 entitled Fees, this reflects your fee schedule for
21 Mr. Howard's case; correct?

22 A. Correct.

23 Q. And is it fair to say that this is the same
24 exact fee schedule in Mrs. Tukes' case?

25 A. Correct.

1 Q. And for trial testimony, you bill at
2 \$95,000 -- or \$9,500, excuse me, for half day; fair?

3 A. Fair.

4 Q. And that's \$17,000 for a full day of trial
5 testimony?

6 A. Correct.

7 Q. And for out-of-town travel, that is billed
8 at a rate of \$20,000 per day for trial testimony.

9 A. Correct.

10 Q. Okay.

11 (Exhibit 9 was marked for
12 identification and attached hereto.)

13 BY MR. MARQUINA:

14 Q. Dr. Josephson, this is a document entitled
15 Expert Witness Disclosure.

16 Is this a report you've prepared in a case
17 entitled Gallagher vs. R.J. Reynolds Tobacco
18 Company?

19 A. Yes.

20 Q. And if you could turn to page 8 on this
21 document.

22 Here, it reflects you charge \$5,500 per
23 half-day of trial testimony; correct?

24 A. Correct. In 2023.

25 Q. Is there a particular reason why the amount

1 you charge per trial testimony is different in this
2 case than in the Gallagher case?

3 A. Like I alluded to before, my fee schedule
4 has changed as time has gone on and my out-of-office
5 expenses have increased. So that's reflective of
6 the increased cost. It has nothing to do with these
7 two cases specifically. Other cases that I'm
8 currently involved in are charged at the same rate
9 that I have disclosed in the Howard's and Tukes'
10 case.

11 Q. You can set that aside.

12 Dr. Josephson, you'd agree that it's
13 important for a physician testifying as an expert
14 witness to testify only in areas in which they have
15 appropriate training and recent substantive
16 experience and knowledge; right?

17 A. Correct.

18 Q. And you'd also agree that physicians who
19 testify as an expert witness should evaluate cases
20 objectively and provide an independent opinion;
21 right?

22 A. Correct.

23 Q. And physicians who testify as expert
24 witnesses should ensure that their testimony
25 reflects current scientific thought and standards of

1 care that have gained acceptance among peers in the
2 relevant field; right?

3 A. Correct.

4 Q. And if the theory is not widely accepted in
5 the profession, the physician should appropriately
6 characterize the theory on which the testimony is
7 based; right?

8 A. I'm not sure I understand that question.

9 Q. I'll withdraw that for now.

10 You'd agree that it's important for a
11 physician testifying as an expert witness to not
12 exclude any relevant information from consideration;
13 right?

14 MR. WILMOTH: Object to form.

15 THE WITNESS: Can you be more specific?

16 BY MR. MARQUINA:

17 Q. Sure.

18 For example, epidemiological literature
19 reflecting that there is no association, you would
20 agree with me that that's important for an expert to
21 consider.

22 MR. WILMOTH: Object to form.

23 THE WITNESS: I think it has to be taken
24 into a case-specific context. I mean, in general,
25 nothing is considered in isolation.

1 So, yes, it's considered. But how much
2 weight it's given is obviously dependent on the
3 quality and nature of a report.

4 MR. MARQUINA: Tab 3.

5 (Exhibit 10 was marked for
6 identification and attached hereto.)

7 BY MR. MARQUINA:

8 Q. This is 10.

9 Dr. Josephson, this is a document entitled
10 David Y. Josephson, M.D., FACS, Curriculum Vitae.

11 Do you recognize this document?

12 A. Yes.

13 Q. What is this document?

14 A. It's my CV.

15 Q. Who prepared this document?

16 A. I have.

17 Q. Is this your most current CV?

18 A. Yes.

19 Q. Does this document reflect a complete
20 representation of your educational and employment
21 background?

22 A. Yes.

23 Q. Does this document contain all of your
24 publications from the last ten years?

25 A. Yes.

1 Q. Is there any information you did not
2 include in your CV?

3 A. There's abstracts and presentations that
4 are either pending to be presented or pending to be
5 published that are not included in this, but it's
6 not relevant to the cases we're discussing today.

7 Q. Why are those abstracts not relevant to the
8 case?

9 A. Well, they're still pending, so they're
10 related to prostate cancer research related to
11 imaging modalities that have no relevance in kidney
12 cancer.

13 Q. Are there any other items that have been
14 omitted from your CV?

15 A. No.

16 Q. You aren't an attorney; correct?

17 A. Correct.

18 Q. You don't have a Juris Doctor from a law
19 school accredited by the American Bar Association;
20 right?

21 A. Correct.

22 Q. You don't have any legal training?

23 A. No.

24 Q. You've never taught courses in law school;
25 right?

1 A. No.

2 Q. You aren't an economist; correct?

3 A. Correct.

4 Q. You aren't an accountant; correct?

5 A. Correct.

6 Q. You are not an epidemiologist; right?

7 A. Correct.

8 Q. You don't have a certification in
9 epidemiology; right?

10 A. Correct.

11 Q. You've never been a principal investigator
12 for an epidemiological study; right?

13 A. Correct.

14 Q. You've never published peer-reviewed
15 literature in epidemiology; right?

16 A. Correct.

17 Q. You never taught any courses on
18 epidemiology; right?

19 A. Correct.

20 Q. You don't hold yourself out as an expert in
21 risk assessment; right?

22 MR. WILMOTH: Object to form.

23 THE WITNESS: I disagree with that
24 statement.

25 ///

1 BY MR. MARQUINA:

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

4 A. No.

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

7 A. No.

8 Q. Have you taught any courses on risk
9 assessment?

10 A. No.

11 Q. Have you conducted any human health
12 environmental risk assessments?

13 A. Can you be more specific? Any -- I didn't
14 catch the last part of your question.

15 Q. Sure. I'll repeat.

16 Have you conducted any human health
17 environmental risk assessments?

18 A. Yes, as a retained expert.

19 Q. Have you conducted human health
20 environmental risk assessments on any specific site
21 such as a military, industrial, or farmland site?

22 A. No.

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

25 A. Was that part of my documents disclosed?

1 Q. I will represent to you that it is not.

2 A. Then I don't recall.

3 Q. Have you read the EPA's Guidelines for
4 Carcinogen Risk Assessment?

5 A. I don't believe so.

6 Q. Have you read the EPA's Exposure Factors
7 Handbook?

8 A. No.

9 Q. Can you explain how Monte Carlo is used in
10 risk assessment?

11 A. I can't.

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

14 A. No.

15 Q. How many papers on risk assessment have you
16 published in peer -- strike that.

17 How many peer reviewed papers on risk
18 assessment have you published?

19 A. None.

20 Q. Have you been asked by journals to peer
21 review submitted manuscripts on risk assessment?

22 A. May have historically as part of the ASCO
23 Society, but I don't recall any specific.

24 Q. Could you describe the work you've done
25 with the ASCO Society?

1 A. I was a reviewer for ASCO when I first
2 started out. But -- as just general expert
3 reviewer. But I don't recall anything specific to
4 risk assessment in my review.

5 Q. And just for the record, could you spell
6 the acronym for me?

7 A. A-S-C-O, American Society of Clinical
8 Oncology.

9 Q. Have you been asked by the EPA or other
10 agencies to peer review part or all of their
11 guidance documents?

12 A. No.

13 Q. You aren't a geneticist; correct?

14 A. I'm not.

15 Q. Or a molecular pathologist?

16 A. Correct.

17 Q. You don't have any certifications in
18 genetics; right?

19 A. No.

20 Q. Or molecular pathology?

21 A. Correct.

22 Q. You've never peer -- strike that.
23 You never published peer-reviewed
24 literature on genetics; correct?

25 A. No.

1 Q. Or in molecular pathology?

2 A. Correct.

3 Q. You've never taught any courses on
4 genetics; right?

5 A. Correct.

6 Q. Or on molecular pathology?

7 A. Correct.

8 Q. You don't have any training as a
9 geneticist; right?

10 A. No.

11 Q. Or as a molecular pathologist?

12 A. Correct.

13 Q. You aren't a toxicologist; correct?

14 A. Correct.

15 Q. You don't have a certification in
16 toxicology; right?

17 A. Correct.

18 Q. You've never been a principal investigator
19 for a toxicological study; right?

20 A. Correct.

21 Q. You've never published peer-reviewed
22 literature on toxicology; right?

23 A. Correct.

24 Q. You've never taught any courses on
25 toxicology; right?

1 A. Correct.

2 Q. You don't have degrees in biochemistry;
3 right?

4 A. No.

5 Q. You don't have degrees in pharmacology;
6 correct?

7 A. No.

8 Q. You don't have degrees in environmental
9 health; right?

10 A. Correct.

11 Q. You don't have degrees in occupational
12 medicine; correct?

13 A. Correct.

14 Q. You never published peer-reviewed
15 literature regarding the effects of TCE; correct?

16 A. Correct.

17 Q. Or PCE?

18 A. Correct.

19 Q. Or vinyl chloride?

20 A. Correct.

21 Q. Or benzene?

22 A. Correct.

23 Q. You never published peer-reviewed
24 literature regarding the effects of TCE on kidney
25 cancer; right?

1 A. Correct.

2 Q. Or the effects of PCE on kidney cancer?

3 A. Correct.

4 Q. Or the effects of vinyl chloride on kidney
5 cancer?

6 A. Correct.

7 Q. Or the effects of benzene on kidney cancer?

8 A. Correct.

9 Q. In your practice, have you ever treated
10 individuals with kidney cancer that were exposed to
11 the water at Camp Lejeune?

12 A. I don't recall any specifically.

13 Q. Have you ever personally examined
14 Mr. Howard?

15 A. No.

16 Q. Have you ever personally examined
17 Mrs. Tukes?

18 A. No.

19 Q. In your practice, have you ever evaluated
20 the cause of a patient's kidney cancer?

21 A. Yes.

22 Q. Did any of those cases involve exposure to
23 TCE?

24 A. Yes.

25 Q. What were those cases?

1 A. Don't recall specifics, but occupational.

2 Q. Did any of those cases involve PCE?

3 A. Same, occupational.

4 Q. Did any of those cases involve exposure to
5 vinyl chloride?

6 A. I don't recall.

7 Q. Did any of those cases involve exposure to
8 benzene?

9 A. I don't recall.

10 Q. Other than in this case, have you ever
11 offered an expert opinion in a case involving toxic
12 exposures?

13 A. Yes.

14 Q. What were those cases, to the best of your
15 recollection?

16 A. I'm currently reviewing a case related to
17 TCE and kidney cancer, but I've not been named as an
18 expert. And I've reviewed cases in the past which
19 I've decided not to be involved in. I don't recall
20 their exact names.

21 Q. Other than in this case, have you ever
22 offered an expert opinion on the etiology of kidney
23 cancer?

24 A. Are we talking about renal cell carcinoma,
25 or are we talking about urothelial carcinoma, or are

1 we talking about kidney cancer in general?

2 Q. When we say "kidney cancer," what does that
3 mean to you?

4 A. Well, as an urologic oncologist, kidney
5 cancer can be encompassing of both urothelial and
6 renal cell carcinoma. So it's case specific. To
7 the lay public, kidney cancer can be both. As a
8 urologic oncologist, I usually think about it as
9 renal cell carcinoma.

10 Q. Let's go with the broader definition,
11 including both renal cell carcinoma, UTUC, and other
12 types of kidney cancer.

13 Have you ever offered an expert opinion on
14 the etiology of kidney cancer?

15 A. Yes.

16 Q. Could you describe those cases?

17 MR. WILMOTH: I'm going to object. Just
18 instruct the doctor not to discuss cases he's not
19 been disclosed in as an expert.

20 So anything you've been consulted on,
21 Doctor, that is not fair game.

22 THE WITNESS: A few cases that I can
23 disclose are tobacco-related litigation with
24 patients presenting with kidney cancer.

25 ///

1 BY MR. MARQUINA:

2 Q. I believe earlier you mentioned that you
3 chose not to become involved in other cases
4 involving TCE and PCE exposure.

5 Am I remembering that right?

6 A. Yes.

7 Q. Could you explain why?

8 A. Either the documentation was not detailed
9 enough or I didn't believe that I was qualified as
10 an expert regarding the patient's case to be
11 involved.

12 Q. Could you go a little bit further? Why did
13 you believe you weren't qualified as an expert?

14 A. I just didn't find that there was enough
15 documentation for me to render an opinion.

16 Q. Was there any specific kind of
17 documentation you felt was missing for those cases?

18 A. Extensive list of medical records, prior
19 occupational exposure, smoking assessment,
20 environmental reports. I mean, this case was
21 lacking adequate information for me to review.

22 Q. Have you ever been subject to any
23 disciplinary action or censured by any licensing
24 body?

25 A. No.

1 Q. And have you ever been subject to any
2 disciplinary action by any court or tribunal?

3 A. No.

4 MR. MARQUINA: Can we take a five-minute
5 break?

6 THE VIDEOGRAPHER: Going off camera. The
7 time is 10:34 a.m.

8 (Recess from 10:34 a.m. to 10:46 a.m.)

9 THE VIDEOGRAPHER: Okay. We are back on
10 record. The time is 10:46 a.m.

11 MR. MARQUINA: Jessica, could you announce
12 your appearance?

13 Just for the record, we're joined by
14 Jessica Ans on behalf of the United States via Zoom.
15 BY MR. MARQUINA:

16 Q. Okay. Dr. Josephson, we are back.

17 (A discussion was held off the record.)

18 (Exhibit 11 was marked for
19 identification and attached hereto.)

20 BY MR. MARQUINA:

21 Q. Dr. Josephson, if you could take a look at
22 this document as well as what's been previously
23 labeled as Exhibit 8. Those are the two documents
24 I'll be focusing on for right now.

25 So what's been handed to you now, is this

1 the report you prepared in Mrs. Tukes' case?

2 A. Yes.

3 Q. And that alongside Mr. Howard's case, are
4 those the only reports you prepared in this case?

5 A. Correct.

6 Q. Did anyone help you prepare your report on
7 Mr. Howard?

8 A. No.

9 Q. Did anyone help prepare you -- strike that.
10 Did anyone help you prepare your report for
11 Mrs. Tukes?

12 A. No.

13 Q. Did you review the Camp Lejeune Justice Act
14 in reaching your opinion for Mr. Howard and
15 Mrs. Tukes?

16 A. Yes.

17 Q. And just to make everyone's lives easier,
18 let's focus on Mr. Howard's report. If you could
19 turn to page 3 on Mr. Howard's report.

20 You mentioned the "as likely as not"
21 standard in the Camp Lejeune Justice Act in your
22 report for Mr. Howard; correct?

23 A. Correct.

24 Q. And is it fair to say that that standard is
25 also mentioned in your report on Mrs. Tukes?

1 A. Correct.

2 Q. You would agree with me that the "at least
3 as likely as not" standard under the Camp Lejeune
4 Justice Act is a legal standard; correct?

5 MR. WILMOTH: Object to form.

6 THE WITNESS: As it pertains to this case,
7 I believe it is a legal standard.

8 But as a clinician and in medical
9 literature as the -- "at least as likely as not"
10 term may not be spelled out exactly that way. But
11 the concept is applied in general medicine, in
12 research, and as a clinician.

13 BY MR. MARQUINA:

14 Q. What other context in medical literature
15 have you seen the "as likely as not" standard or its
16 equivalent?

17 A. So the analogy that I would use -- and,
18 again, I'm not saying that exactly the wording "at
19 least as likely as not," but I'm using it as a
20 concept.

21 The concept of noninferiority, when you
22 have a well-established intervention, let's say, and
23 you're trying to study whether a second type of
24 intervention that may be less costly, less invasive,
25 or less burdensome is as good but if not better than

1 the first intervention that you're comparing it to.

2 And for a variety of reasons, whether it's
3 the number of interventions needed or the time
4 that's needed to follow something, it would be
5 extremely difficult to prove that it's superior.

6 A noninferiority trial is analogous to the
7 "at least as likely as not" standard from a clinical
8 perspective. It's not a legal perspective.

9 Q. Are you aware of an instance where the "as
10 likely as not" standard has been used in
11 epidemiological research to show an association
12 between exposure to a toxin and a disease outcome?

13 A. From a legal standpoint, no.

14 From a research perspective, again, not
15 using as a legal standard but as kind of a
16 scientific medical research standard, I'm sure it's
17 been applied using animal data to correlate with
18 human data or using case control studies and then
19 applying it to wider epidemiology studies. I can't
20 talk about the methodology specifically, but I'm
21 sure that it has been applied outside of the legal
22 standard definition.

23 Q. If you'll turn to page 4 on your report for
24 Mr. Howard, you note in your report, "This standard
25 affects the context of the opinions provided in this

1 report as the burden of proof acquired to satisfy
2 subsection B is lower."

3 And subsection B is referencing,
4 "Sufficient to conclude a causal relationship is at
5 least as likely as not."

6 Is that a fair reading?

7 A. Yes.

8 Q. And is it fair to say that that same
9 language is included in your report on Mrs. Tukes?

10 A. Correct.

11 Q. How did the "at least as likely as not"
12 standard affect the context of your opinions as you
13 describe in your reports?

14 A. I'm not sure by -- what you mean by "how
15 did it affect my opinion."

16 Q. You mentioned here that -- strike that.
17 How did you apply the "as likely as not"
18 standard in preparing your report for Mr. Howard and
19 Mrs. Tukes?

20 A. My interpretation of the Camp Lejeune
21 Justice Act and reading the number of expert report
22 depositions provided to me was that there was a
23 certain legal standard that was being applied in
24 these cases specifically to show a relationship
25 between environmental exposure and the development

1 of a variety of diseases.

2 My opinions were specifically related to
3 environmental exposure to these toxins and the
4 development of kidney cancer. And my interpretation
5 of the data was that were these exposures sufficient
6 enough to show that an exposure to said substance in
7 consideration with other factors was relevant or
8 equal to the subsequent development of that cancer.

9 So, for example, if there's a variety of
10 factors being considered in a certain individual and
11 there's different risk profiles, did these different
12 factors at least bear equal weight. If not, some of
13 them have more weight than others.

14 Q. When you say "other factors," what are you
15 referring to?

16 A. Other known risk factors for the
17 development of cancer.

18 Q. Are those the same risk factors that you
19 mentioned in both your reports for Mr. Howard and
20 Mrs. Tukes?

21 A. Yes.

22 Q. How would your opinion change, if at all,
23 if you had assessed Mr. Howard and Mrs. Tukes' case
24 under a "more likely than not" standard as opposed
25 to the "as likely as not" standard?

1 MR. WILMOTH: Object to form.

2 THE WITNESS: I believe my opinions would
3 be the same that I've written.

4 BY MR. MARQUINA:

5 Q. Were you instructed to opine on the COJ
6 legal standard?

7 A. No.

8 Q. Did someone provide you a copy of the
9 Camp Lejeune Justice Act's language?

10 A. It was in the reports that I reviewed.

11 Q. But did someone provide you a copy of the
12 statute's language?

13 A. Specifically spelled out or --

14 Q. Yeah.

15 A. No.

16 Q. In whatever form.

17 A. No. It was in the reports that I was
18 provided.

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

21 A. Yes.

22 Q. How did you research the Camp Lejeune
23 Justice Act in preparing your report?

24 A. I read the report. And like I said before,
25 I was aware of the Camp Lejeune -- not necessarily

1 the Justice Act but the Camp Lejeune implications of
2 carcinogens and their development of different
3 diseases and cancers prior to this case.

4 Q. When you say you "reviewed the report,"
5 which report are you referring to?

6 A. I've reviewed the section as it relates to
7 the "at least as likely as not" standard warning in
8 preparation for this report.

9 Q. Is that from the statute or is that from
10 some other literature, for example, the ATSDR's
11 report?

12 A. I don't recall where I read it.

13 Q. Have you previously reviewed statutory
14 language in rendering an expert opinion?

15 A. No.

16 Q. Have you previously addressed the legal
17 burden of proof in rendering an expert opinion such
18 as preponderance of evidence?

19 A. Well, I think in every medical-legal case
20 that I'm retained to opine on, there is some legal
21 standard to a reasonable degree of probability
22 whether something is related to some action.
23 Whether it's a carcinogen. Whether it's falling
24 below the standard of care. Whether it's a
25 development of a complication.

1 So in general terms, yes, I think mostly
2 medical-legal cases that I've been retained as an
3 expert do use some legal statutes and definition but
4 not the "at least as likely as not" standard that is
5 being written on here.

6 Q. You hold your opinions to a reasonable
7 degree of medical and scientific certainty in this
8 case; correct?

9 A. Correct.

10 Q. What is your understanding of that phrase
11 as it relates to this litigation?

12 A. Can you be more specific? I think it's --
13 had you asked me this question 20 years, I wouldn't
14 know where you're going with this.

15 But having done medical-legal work over 20
16 years, I think it's a legal standard that is
17 typically applied for med-legal work.

18 Q. Does your understanding of the term
19 "reasonable degree of medical and scientific
20 certainty" differ in this case versus if you were to
21 apply it in a case applying a different legal
22 standard?

23 A. No.

24 Q. How, if at all, does the COJ's causation
25 standard, specifically the "as likely as not"

1 standard, affect your application of the phrase
2 "reasonable degree of medical and scientific
3 certainty"?

4 A. Your first part I didn't understand. How
5 often?

6 Q. No. How -- let me repeat.

7 So how, if at all, does the "as likely as
8 not" standard affect your application of the phrase
9 "reasonable degree of medical and scientific
10 certainty"?

11 A. It doesn't affect that statement at all.

12 Q. How, if at all, do physicians in your field
13 apply the "as likely as not" standard?

14 A. Again, I think it's a legal statute that is
15 a very specific term.

16 But the way I would use it in a clinical
17 context or a day-to-day context is a -- I'm
18 evaluating a patient that comes to me with a certain
19 disease or a certain cancer, and they ask me, "Well,
20 how did I get this cancer"? And evaluating their
21 social history, where they lived, what kind of
22 carcinogens they were exposed to, what kind of
23 family history they have, medical problems or a
24 variety of factors, assess a risk profile. And in
25 that risk profile, evaluate the different factors

1 and tell them what I think the most contributory or
2 the most contributory factor or factors are
3 depending on how much weight each factor may have.

4 Q. Have you ever used the "as likely as not"
5 standard in peer-reviewed literature you've
6 authored?

7 A. No.

8 Q. Have you ever used the "as likely as not"
9 standard in diagnosing patients?

10 A. No.

11 Q. Have you ever used the "as likely as not"
12 standard in treating patients?

13 A. No.

14 Q. Before this case, have you ever used the
15 "as likely as not" standard in your time serving as
16 an expert witness?

17 A. I don't recall.

18 Q. How, if at all, did the "as likely as not"
19 standard affect your review of the medical
20 literature?

21 A. It did not affect it.

22 Q. Are you familiar with the term "equipoise"?

23 A. Yes. Generally speaking, yes.

24 Q. Do you equate that term with the "as likely
25 as not" standard?

1 A. In this context, yes.

2 Q. Are you aware of any published guidance on
3 how to apply the "as likely as not" standard?

4 A. No.

5 Q. Are you aware of where -- let me step back.
6 You're aware that the ATSDR used the "as
7 likely as not" standard in issuing its assessment on
8 the evidence; correct?

9 A. I saw it listed as part of their reporting
10 methodology. Yes.

11 Q. Are you aware of where the ATSDR got the
12 equipoise and above standard from?

13 A. I'm assuming it's from the Camp Lejeune
14 Justice Act, but I'm not sure.

15 Q. Are you aware that the ATSDR selected that
16 classification scheme due to time constraints and to
17 add diseases to the VA presumption list?

18 MR. WILMOTH: Object to form.

19 THE WITNESS: I'm not sure.

20 BY MR. MARQUINA:

21 Q. In analyzing epidemiologic and toxicologic
22 literature on an association, a literature search is
23 a key step; correct?

24 A. Correct.

25 Q. You would agree with me that a literature

1 search should be crafted to produce both positive
2 and negative results; right?

3 A. I'm not sure you craft it specifically to
4 get negative and positive results. You craft the
5 literature search to evaluate the data and both
6 evaluate the interpretation and use your own kind of
7 interpretation to come to a conclusion.

8 Q. But you would agree with me that the search
9 terms you use in conducting a literature search
10 shouldn't be crafted in such a way to discriminate
11 from favorable findings versus unfavorable findings.

12 A. Agree. Correct.

13 Q. And that's because otherwise, you risk
14 forming an unbalanced opinion; right?

15 A. Or a more biased opinion.

16 Q. Either way, more biased or --

17 A. Correct. Correct.

18 Q. Yeah. And you performed a literature
19 search on PubMed in preparing your reports for
20 Mr. Howard and Mrs. Tukes; right?

21 A. Correct.

22 Q. Did you perform a literature search using a
23 resource other than PubMed for Mr. Howard's case?

24 A. PubMed, generically Google Scholar. I
25 mean, the Internet decides where they're going to

1 pull the publications from, but most of the
2 literature is on PubMed.

3 Q. Was it -- so was it just PubMed that you
4 used or did you also use Google Scholar?

5 A. I typically use PubMed. I mean, when you
6 put in a search term in Safari or Chrome, it usually
7 pulls publications that are on PubMed. And then
8 within PubMed, you can do a more refined search, you
9 know, taking out the date and type of study, whether
10 it's meta-analysis or just a single article.

11 But PubMed is my primary search engine.

12 Q. And you included search terms both in your
13 report for Mr. Howard and Mrs. Tukes; right?

14 A. Correct.

15 Q. And those search terms -- turning to
16 Mr. Howard's report specifically, those search terms
17 include trichloroethylene, or TCE, and renal cell
18 carcinoma, or RCC, or kidney cancer; is that fair?

19 A. Correct.

20 Q. Those terms don't include PCE; correct?

21 A. Correct. But I've done PCE and renal cell
22 carcinoma or kidney cancer for Mrs. Tukes.

23 Q. But let's focus on Mr. Howard's case for
24 now.

25 A. Sure.

1 Q. For Mr. How- -- for the search terms you
2 included for Mr. Howard's case, those search terms
3 do not include the term "PCE"; correct?

4 A. Correct.

5 Q. Those search terms don't include
6 "tetrachloroethylene"; correct?

7 A. Correct.

8 Q. Those search terms don't include "benzene";
9 correct?

10 A. Correct.

11 Q. And those search terms don't include "vinyl
12 chloride"; correct?

13 A. Correct.

14 But in the process of doing this search,
15 usually TCE, PCE, benzene, and vinyl chloride are
16 usually lumped together in some of the study. So
17 it's impossible to isolate TCE alone and not see
18 additional factors being included in the literature
19 that is provided.

20 So the output -- maybe the index term is
21 "TCE," but the output usually will have the
22 additional agents that I've set.

23 Q. But you would agree with me that, regarding
24 Mr. Howard's case, the search terms you included in
25 your report do not include the other three chemicals

1 involved in this case. Those three chemicals being
2 PCE, benzene, and vinyl chloride.

3 A. Correct.

4 Q. I'd like to turn to Ms. Tukes' report.

5 I think your search terms in Mrs. Tukes'
6 case include the terms "tetrachloroethylene," or
7 PCE, and renal cell carcinoma, or RCC, or kidney
8 cancer; is that fair?

9 A. Correct.

10 Q. Is it fair to say that the term
11 "tetrachloroethylene" is a typo --

12 A. Yes.

13 Q. -- and was that typo -- was the correct
14 spelling tetrachloroethylene?

15 A. Yes. T-e-t-r-a. It should be t-e-t-r-a.

16 Q. Was that typo included in the actual search
17 term you used outside of this report for Mrs. Tukes'
18 case?

19 A. The appropriate search term that I used was
20 "tetra" and not "tretra."

21 Q. Understood.

22 An alternate name for PCE is
23 perchloroethylene; correct?

24 A. Correct.

25 Q. The term "perchloroethylene" isn't included

1 in the search index for Mrs. Tukes; correct?

2 A. Correct.

3 Q. The search index also doesn't include TCE;
4 correct?

5 A. Correct.

6 Q. Or TCE's alternative name,
7 trichloroethylene; correct?

8 A. Correct.

9 Q. The search index also doesn't include vinyl
10 chloride; correct?

11 A. Correct.

12 And like I said before, the output of the
13 literature that is given to me will have those
14 additional compounds in their methodology section or
15 in their output section.

16 Q. Sure.

17 You would also agree with me that the
18 search terms for Mrs. Tukes' case don't include
19 benzene; correct?

20 A. Correct.

21 Q. Is it fair to say that your search method,
22 that is the use of PubMed -- strike that.

23 Is it fair to say that PubMed was the only
24 search database that you used for Mrs. Tukes' case?

25 A. As a search methodology, yes. But I don't

1 have -- I can't separate out my experience taking
2 care of patients, my prior knowledge, my prior
3 experiences in isolating anything that I may have
4 known before this case and just purely use the
5 search term that I used to generate the reports.

6 Q. Sure.

7 But my question is just more focused on
8 when conducting your literature review specifically
9 for these cases, was PubMed the only research
10 database you used?

11 A. Yes.

12 Q. And that's for both Mr. Howard and
13 Mrs. Tukes?

14 A. Correct.

15 Q. Okay. How did you decide which studies to
16 include or exclude in your reports?

17 A. Studies that I thought were relevant in the
18 cases.

19 Q. And what does the term "relevant to the
20 cases" mean?

21 A. Cases where there's a certain substance,
22 whether it's TCE or PCE or the other agents that
23 I've discussed have been evaluated. And then if and
24 not there's a relationship that is found between
25 those agents and the development of renal cell

1 carcinoma.

2 Like we've said before, the literature
3 search will output a variety of different reports.
4 Some are stronger in their methodology. Some are
5 weaker.

6 I've included ones that I believe are the
7 strongest in terms of their causal relationship.
8 Have I included everything that I came across? Not.
9 I probably excluded some based on their methodology
10 or the way that the data was obtained.

11 Q. Is there a method you have -- what
12 methodology do you use to exclude -- strike that.

13 What methodology do you use to exclude
14 medical literature from your analysis?

15 A. I don't have a distinct methodology, but
16 I'll give you an example. Maybe a case report of
17 one patient that may have had some exposure, and
18 whether that exposure link was positive or negative,
19 I don't think bears as much weight as a more
20 widespread epidemiology study of thousand of
21 patients.

22 So the type of methodology that is used has
23 some bearing in terms of the weight that researchers
24 and clinicians use when they interpret data.

25 Q. You included the EPA's 2011 toxicology

1 review for trichloroethylene in your materials
2 considered list for both Mr. Howard and Mrs. Tukes'
3 case; right?

4 And you're welcome to review the materials
5 considered list to refresh your recollection.

6 A. Give me one second, please.

7 Q. Sure.

8 A. Yes.

9 Q. Were you aware the EPA published a
10 toxicology review of tetrachloroethylene or
11 perchloroethylene in 2012?

12 A. It's 2011, I believe, but, yes.

13 Q. Did --

14 THE REPORTER: Counsel, your microphone.

15 BY MR. MARQUINA:

16 Q. Did that publication appear in your
17 literature search?

18 A. No. I believe I found out from -- I don't
19 know how I came across that.

20 Q. Do you recall reviewing that document?

21 A. Yes.

22 Q. Is there a reason the study wasn't included
23 in your materials considered list?

24 A. I'm not sure.

25 Q. You included the EPA's 2020 risk evaluation

1 for trichloroethylene in your materials considered
2 list for Mr. Howard's case; correct?

3 A. Where are you referring to?

4 Q. I think it might be page 3.

5 A. Page --

6 Q. 3 from your materials considered list for
7 Mr. Howard.

8 A. Is that in my report or on the materials
9 listed --

10 Q. The materials considered list.

11 MR. WILMOTH: What exhibit number is that?

12 MR. MARQUINA: That should be Exhibit 1, I
13 think, materials considered list. It should be --

14 THE WITNESS: Is that Number 17?

15 BY MR. MARQUINA:

16 Q. Yes.

17 A. Okay. I was provided that.

18 Q. And that same document is included in your
19 materials considered list for Mrs. Tukes; correct?
20 You might be able to find that on page 3, 4 of your
21 materials considered list for Mrs. Tukes.

22 MR. WILMOTH: It will be Exhibit 2, I
23 believe.

24 THE WITNESS: I'll take your word for it,
25 if it's in there.

1 BY MR. MARQUINA:

2 Q. I'll represent to you that it is.

3 A. Okay.

4 Q. Were you aware that the EPA published a
5 risk evaluation for perchloroethylene in 2020?

6 A. Yes.

7 Q. Did that study appear in your literature
8 search?

9 A. No.

10 Q. Did you review it?

11 A. I reviewed it. It wasn't in the PubMed
12 search.

13 Q. You would agree with me that that document
14 isn't included in your materials considered list for
15 either Mr. Howard, Mrs. Tukes, or the supplemental
16 materials considered list that you disclosed;
17 correct?

18 MR. WILMOTH: Object to form.

19 THE WITNESS: That it is not included?

20 BY MR. MARQUINA:

21 Q. That it is not included.

22 A. But it is included. It's on page 3 for
23 Mr. Howard and page 3 for Ms. Tukes.

24 Q. Yes. The EPA public- -- so that would be
25 the EPA risk evaluation for trichloroethylene, but

1 I'm referring to the EPA's risk evaluation for
2 perchloroethylene.

3 A. Oh, I'm sorry. I misunderstood you.

4 Q. No. That's on me.

5 A. Okay. If it's not there, then I didn't
6 include it.

7 Q. Did you review the National Research
8 Council of the National Academy of Sciences 2009
9 report on drinking water at Camp Lejeune?

10 A. I've read -- the exact document, I may not
11 have reviewed in complete, but I have read about it
12 in the expert testimony from other experts in this
13 case, whether it was in their depositions or their
14 reports.

15 Q. So is it fair to say that you were aware of
16 that report?

17 A. Yes.

18 Q. You would agree with me that you did not
19 include that report in your materials considered
20 lists; right?

21 A. If it's not there, then I agree with you.

22 Q. I will represent to you that it is not.

23 A. Noted.

24 Q. You describe Mr. Howard's exposure to
25 toxins in the water at Camp Lejeune as substantial;

1 correct?

2 A. Correct.

3 Q. And you do the same for Mrs. Tukes, that
4 is, describe her exposure to toxins in the water at
5 Camp Lejeune as substantial?

6 A. Correct. Howard's more substantial than
7 Ms. Tukes.

8 Q. You would agree with me that your reports
9 do not provide a definition for the term
10 "substantial exposure"; right?

11 A. Correct.

12 Q. You would agree with me that you do not
13 quantify what substantial exposure is; correct?

14 A. I don't define "substantial," but I'm using
15 expert testimony and reports of exposure that have
16 been provided to me as a basis for my opinion about
17 what "substantial" would be considered.

18 Q. Would you agree with me that you do not
19 identify a threshold for when an exposure becomes
20 substantial?

21 A. Correct.

22 Q. Would you agree with me that you do not
23 identify a threshold amount of exposure to TCE
24 whereby an individual is guaranteed to develop
25 kidney cancer?

1 MR. WILMOTH: Object to form.

2 THE WITNESS: Again, I'm using causation
3 reports and exposure reports and compare that to
4 what would be considered a normal exposure in the
5 general public as a relative term for what would be
6 considered substantial. But you are correct. I
7 don't give a definition of what "substantial" is
8 considered.

9 BY MR. MARQUINA:

10 Q. And when you say you're relying on reports,
11 are we referring to Dr. Kelly Reynolds' exposure
12 calculations that she prepared for this case?

13 A. Yes. And causation reports that I've
14 reviewed as well.

15 Q. The general causation reports?

16 A. Correct. By Dr. Burton Hatton.

17 Q. So is it fair to say that you rely on
18 Mr. Reynolds' exposure calculations to quantify the
19 amount of exposure that both Mr. Howard and
20 Mrs. Tukes had at Camp Lejeune?

21 A. Yes.

22 Q. And that's for the four chemicals at issue
23 in this case, that being TCE, PCE, vinyl chloride,
24 and benzene; correct?

25 A. Correct.

1 Q. You don't rely on exposure calculations
2 other than those of Dr. Kelly Reynolds; correct?

3 A. I don't think they're case-specific
4 calculations that I have seen regarding both these
5 individuals. I would consider them, but I have not
6 considered them in rendering my report.

7 Q. So is it fair to say that your
8 consideration of exposure calculations is limited to
9 those of Dr. Kelly Reynolds?

10 A. Yes.

11 Q. Okay. Dr. Kelly Reynolds' report for --
12 strike that.

13 Dr. Kelly Reynolds' calculations of
14 exposure amounts is represented in total mass of
15 ingested chemicals which she measured in micrograms;
16 correct?

17 A. I think it's both in cumulative total mass
18 but also concentration, and then there's some
19 modeling that's provided in terms of volume of
20 ingestion.

21 Q. Sure.

22 So is it fair to say that she provided
23 exposure calculations for Mr. Howard and Mrs. Tukes
24 both in total mass, which is reflected in
25 micrograms, and as an average dose of exposure,

1 which is measured in micrograms per liter month?

2 A. Yes.

3 Q. And those are the specific calculations you
4 relied on in rendering your report -- your opinion,
5 excuse me.

6 A. Correct.

7 Q. Are you aware of whether total mass
8 ingested, which is the units that Dr. Kelly Reynolds
9 used in her report, is generally accepted in the
10 field of toxicology?

11 A. Am I aware of its general acceptance?

12 Q. Yes. If the use of those units is
13 generally accepted.

14 MR. WILMOTH: Object to form.

15 THE WITNESS: I don't think I'm in a
16 position to tell you if it's an accepted standard or
17 not.

18 BY MR. MARQUINA:

19 Q. Just bear with me.

20 Is it fair to say that you do not have
21 opinions that are independent from Dr. Kelly
22 Reynolds regarding the amount of TCE, PCE, benzene,
23 or vinyl chloride that Mr. Howard or Mrs. Tukes were
24 exposed to?

25 A. I don't.

1 MR. WILMOTH: Object to form.

2 BY MR. MARQUINA:

3 Q. Are you aware of whether any epidemiologic
4 studies apply the same exposure metric that
5 Dr. Reynolds did in her report for these cases?

6 A. Can you be more specific about epidemiology
7 reports?

8 Q. Sure. Let me step back.

9 Are you aware of any published literature
10 on which you relied in this case for rendering your
11 reports for Mr. Howard or Mrs. Tukes, whether in any
12 of those -- that literature, whether any of that
13 literature used the same units as Dr. Reynolds?

14 A. Micro- --

15 MR. WILMOTH: Object to form.

16 THE WITNESS: Are you saying micrograms per
17 liter as a unit of measure?

18 BY MR. MARQUINA:

19 Q. I'll start with total mass which she
20 measured in micrograms.

21 A. Again, I can't tell you about a specific
22 publication. But whether or not it's a standard way
23 to define it, maybe there's a conversion methodology
24 that maybe needs to be taken into account. But
25 total exposure has been reported in some of the

1 literature.

2 Q. Do you recall which literature
3 specifically?

4 A. I don't recall if Aschengrau reports the
5 same exact cumulative exposure units, whether its
6 using micrograms per liter, but I believe that one
7 reported it.

8 I could be wrong. I'm not sure.

9 Q. Do you -- let me step back.

10 Are you aware that the EPA's risk
11 assessment guidelines require that exposures be
12 estimated as oral doses of milligrams per kilogram
13 day or inhalation doses of micrograms per meter
14 cubed?

15 MR. WILMOTH: Object to form.

16 THE WITNESS: I don't think I'm in a
17 position to answer that question.

18 BY MR. MARQUINA:

19 Q. You concluded that -- let me step back.

20 If you'll turn to page 10 on Mr. -- your
21 report for Mr. Howard.

22 Is it fair to say the chart you have in
23 your report at the top of page 10 reflects the
24 calculations that Dr. Reynolds performed for
25 Mr. Howard?

1 A. Yes.

2 Q. And just for the record, that chart
3 reflects a cumulative dose or a cumulative exposure
4 measured in micrograms per liter month; right?

5 A. Correct.

6 Q. And for TCE, that total is 5,937; right?

7 A. Correct.

8 Q. For PCE, that total is 251; correct?

9 A. Correct.

10 Q. For vinyl chloride, reflected here as VC,
11 that total is 343; correct?

12 A. Correct.

13 Q. For benzene, which is reflected in this
14 chart as BZ, that total is 70; correct?

15 A. Correct.

16 Q. You concluded in your report that these
17 totals placed Mr. Howard in the medium exposure
18 category; right?

19 A. Correct. According to the report by Bove
20 in 2014.

21 Q. And let's go to Ms. -- your report on
22 Mrs. Tukes on page 13. Same set of questions.

23 So the chart you have at the bottom of page
24 13 in your report for Mrs. Tukes, is it fair say
25 that that chart reflects the calculations that

1 Dr. Kelly Reynolds performed for Mrs. Tukes in this
2 case?

3 A. Correct.

4 Q. And in this chart, it reflects cumulative
5 dose or amount of exposure in micrograms per liter
6 month related to the chemicals; correct?

7 A. Correct.

8 Q. And for TCE, that is a total of 3.65;
9 right?

10 A. Correct.

11 Q. For PCE, using the TechFlo MP Model, that's
12 82.85; right?

13 A. Correct.

14 Q. For, again, PCE, this time using the MT3DMS
15 model, that's 181.37; correct?

16 A. Correct.

17 Q. For VC, otherwise known as vinyl chloride,
18 that's 13.04; right?

19 A. Correct.

20 Q. And for BZ, or benzene, reflected here for
21 only at Hadnot Point, HP, that is 60?

22 A. Correct.

23 Q. Mrs. Tukes resided on Camp Lejeune while
24 her husband was stationed there between June 1985
25 and January of 1987; right?

1 A. Correct.

2 Q. Were you aware that the contaminated supply
3 wells at Tarawa Terrace and Hadnot Point were shut
4 down by February 1985?

5 A. Yes.

6 Q. I'd like to turn back to your report on
7 Mr. Howard, turning to page 10.

8 At the bottom of page 10 you refer to
9 Mr. Howard's exposure as ppb per liter; correct?

10 A. Correct.

11 Q. How did you convert Dr. Reynold's
12 calculations to ppb per liter?

13 A. From micrograms per liter to ppb per liter?

14 Q. From micrograms per --

15 A. Per liter months to ppb per liter?

16 Q. Yes.

17 A. Those are comparable units. They may not
18 be the same exact data points, but they would be
19 considered equivalent.

20 Q. Is it your opinion that -- let me step
21 back.

22 Are you aware of how many parts per billion
23 per liter is equal to any amount of micrograms per
24 liter month?

25 MR. WILMOTH: Object to form.

1 THE WITNESS: Again, I think they're
2 comparable units, just different ways of being
3 reported.

4 BY MR. MARQUINA:

5 Q. Are you aware of whether parts per billion
6 per liter is a standard unit of concentration or
7 cumulative dose?

8 A. I've seen it reported as that. Yes.

9 Q. Do you know where?

10 A. No.

11 Q. Have you ever published peer-reviewed
12 literature using parts per billion per liter as a
13 unit of measurement?

14 A. No.

15 Q. Would you agree that Dr. Reynolds' exposure
16 assessment doesn't account for Mr. Howard's or
17 Mrs. Tukes' respective weights?

18 A. Based on the reporting, no, I don't think
19 it considers their weight.

20 Q. You mentioned earlier that you relied on
21 the Bove study --

22 A. Uh-huh.

23 Q. -- exposure categories in your reports;
24 correct?

25 A. Correct.

1 Q. And just to be specific, we're referring to
2 Bove 2014A; correct?

3 A. Correct.

4 Q. And -- I'll show you. One moment.
5 (Exhibit 12 was marked for
6 identification and attached hereto.)

7 BY MR. MARQUINA:

8 Q. You've been handed a document entitled
9 Evaluation of Mortality Among Marines and Navy
10 Personnel Exposed to Contaminated Drinking Water at
11 USMC base Camp Lejeune, a Retrospective Cohort
12 Study.

13 Is this the Bove 2014 study that you're
14 referring to?

15 A. Yes. Correct.

16 Q. And the classification used in this study
17 specifically is the one referred to on page 10 of
18 the study; correct?

19 A. Correct.

20 Q. And that classification system specifically
21 referring to low exposure, medium exposure, and high
22 exposure; right?

23 A. Correct.

24 Q. Is it fair to say that you've compared
25 Dr. Reynolds' exposure calculations to the exposure

1 classifications in Dr. Bove's 2014A study to
2 determine whether Mr. Howard's exposure to
3 contaminated water at Camp Lejeune caused his kidney
4 cancer?

5 A. I used cumulative exposures from
6 Ms. Reynolds and utilized the hazard ratios for
7 cumulative exposure in the Bove study to come up
8 with low, medium, and high exposure and utilized
9 dose exposure categories to come up with the hazard
10 ratios for the development of kidney cancer that
11 I've listed in my report.

12 Q. And you used that same methodology for
13 Mrs. Tukes' report; correct?

14 A. Correct.

15 Q. Do you know whether Dr. Reynolds used the
16 same methodology as Dr. Bove to calculate micrograms
17 per liter months for marines at Camp Lejeune?

18 A. I can't answer that question.

19 Q. Could you walk me through how you reliably
20 conclude that Mr. Howard would be in the medium
21 exposure category under the Bove study?

22 A. So let's go to table 6, cumulative exposure
23 variables in micrograms per liter months within the
24 Camp Lejeune cohort.

25 Q. Sure.

1 A. Cumulative exposure for Mr. Howard was
2 let's say 6,000. In the table where it says
3 "level," line number 3, and you see the reference
4 level as being equal to or less than 1, low exposure
5 would be 1 to 3,100, medium exposure would be
6 greater than 3,100 to 7,700, high exposure would be
7 greater than 7,700 to almost 40,000.

8 Mr. Howard's cumulative exposure was 5,937,
9 which put him in the medium exposure category in
10 table 6.

11 I then used the hazard ratios for
12 categorical cumulative exposure in table 7 and then
13 plugged that into the medium exposure category for
14 TCE, for kidney cancer, and that would be 1.21. For
15 PCE, the total cumulative exposure was 251.

16 In table 6, it's in the medium exposure
17 category between 155 and 380. If you come down to
18 table 7, PCE medium exposure category has a hazard
19 ratio of 1.82.

20 Q. And is it fair to say you performed that
21 same methodology for Mrs. Tukes' exposure using
22 Dr. Reynolds' exposure calculations?

23 A. Correct.

24 Q. Excuse me.

25 A. I'm happy to go through it with you line by

1 line.

2 Q. No need.

3 You mention that Mr. Howard was exposed to
4 contaminated water during his training through water
5 buffalos and canteens in your Mr. Howard report on
6 page 8; right?

7 A. Yes.

8 Q. Your report does not address how the water
9 buffalos were filled; right?

10 A. No.

11 Q. You did not independently verify where the
12 water buffalos were filled; right?

13 A. Correct.

14 Q. Your report does not address how the
15 canteens were filled; right?

16 A. Correct.

17 Q. And you did not independently verify where
18 those canteens were filled; right?

19 A. I have no way of verifying that. But,
20 correct, I did not do that.

21 Q. In your practice, do you offer any
22 guarantees to your patients?

23 MR. WILMOTH: Object to form.

24 THE WITNESS: Guarantees in what sense?

25 Yes, I offer them guarantees that I'll treat them as

1 best as I can. I'll guarantee them that I'd be
2 there at the time of their surgery. I guarantee
3 them that I'm going to do all of the case. Those
4 are the sort of guarantees I offer them.

5 I don't offer them any guarantees in terms
6 of outcomes or my interpretation of their data.

7 BY MR. MARQUINA:

8 Q. Would you agree that medicine is not an
9 exact science?

10 A. Yes.

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

13 A. Yes.

14 Q. You would agree with me there are multiple
15 types of renal cell cancer; correct?

16 A. Correct.

17 Q. Would you agree that renal masses are
18 biologically heterogeneous?

19 A. Yes.

20 Q. And clear cell is the most common type of
21 renal cell carcinoma; correct?

22 A. Correct.

23 Q. Papillary is less common?

24 A. Correct.

25 Q. Would you agree that different subtypes of

1 renal cell carcinoma have distinct clinical
2 characteristics?

3 A. Yes.

4 Q. Would you agree that different subtypes of
5 renal cell carcinoma have different prognostic
6 significance?

7 A. Yes.

8 Q. And you would agree with me that smoking is
9 a risk factor for developing kidney cancer?

10 A. Yes.

11 Q. You would agree with me that family history
12 of kidney cancer is a risk factor for the
13 development of kidney cancer?

14 A. Yes.

15 Q. Would you agree with me that exposure to
16 radiation is a risk factor for the development of
17 kidney cancer?

18 A. Not a significant risk factor.

19 Q. Is there a difference in how you weight
20 risk factors for kidney cancer?

21 A. Well, yeah. Some things can be quantified.
22 Like smoking can be quantified in terms of pack
23 years of exposure. Number of packs, number of years
24 can be quantified.

25 Obesity is a general term. That has been

1 linked to kidney cancer. You can have BMIs of 40
2 and 50. And you can have BMIs of 27, 28. Those
3 could be quantified.

4 Certain risk factors are harder to define.

5 Ingestion of, let's say, medications,
6 depends on how long the patient took it and how many
7 doses they took. It'd be probably hard to quantify.
8 But I believe some of them are quantifiable.

9 Q. So stepping back, just wanted to home in on
10 one thing.

11 You would agree that obesity is a risk
12 factor for the development of kidney cancer?

13 A. Yes.

14 Q. Would you agree that diabetes is a risk
15 factor in the development of kidney cancer?

16 A. Yes, but not as strong as others.

17 Q. Not as strong as which other risk factors?

18 A. Smoking, obesity, carcinogenic exposure,
19 chronic kidney disease.

20 Q. Any others? And let me step back.

21 Any other risk factors that you would --
22 that you weigh diabetes lower than?

23 A. I think diabetes is a lower linked variable
24 compared to, let's say, stronger variables that have
25 been studied, such as smoking and obesity.

1 Q. Would you agree with me that hypertension
2 is a risk factor for the development of kidney
3 cancer?

4 A. Yes.

5 Q. Would you agree with me that age is a risk
6 factor in the development of kidney cancer?

7 A. That's a very soft term. Because not
8 everyone that grows old gets kidney cancer, but
9 kidney cancers typically develop in the sixth decade
10 of life. So the older you are, the increased risk.
11 But, again, it's a weaker correlation than, let's
12 say, smoking and hypertension or obesity.

13 Q. Sure. And just to put a number on that,
14 you would agree with me that the median age of
15 diagnosis for kidney cancer is 65; right?

16 A. Correct.

17 Q. Would you agree with me that 14 percent of
18 renal cancer diagnoses occur in the 45- to
19 54-year-old age group?

20 A. Yes.

21 Q. Is race a risk factor in the development of
22 kidney cancer?

23 A. Not that I would consider a strong risk
24 factor.

25 Q. But would you agree with me that African

1 Americans are diagnosed with kidney cancer at higher
2 rates than Americans of other races?

3 A. Yes.

4 Q. And I think you may have mentioned this
5 before, but is chronic kidney disease a risk factor
6 in the development of kidney cancer?

7 A. Correct.

8 Q. Would you agree with me that each patient
9 is different with idiosyncratic risk factors?

10 A. How do you define "idiosyncratic"?

11 Q. Every patient might come in with separate
12 risk factors from any other patient, for example.

13 A. Absolutely.

14 Q. Would you agree that many, if not most,
15 patients with one or more risk factors for kidney
16 cancer do not go on to develop kidney cancer?

17 A. Yes. Just like most patients that smoke
18 three packs a day don't go on to develop lung
19 cancer. But smoking per se is strongly linked with
20 the development of cancer.

21 Q. Would you agree with me that having one or
22 more risk factors for kidney cancer does not
23 guarantee that a patient will develop kidney cancer?

24 A. Correct.

25 Q. Would you agree with me then an individual

1 may still develop kidney cancer even if they had no
2 identifiable risk factors for kidney cancer?

3 A. Yes.

4 Q. And I think you mentioned this before, but
5 you would agree with me that not all risk factors
6 are equal?

7 A. Correct.

8 Q. Some risk factors are more prevalent and,
9 therefore, explain more cancers; right?

10 A. More prevalent and also have been studied
11 more extensively.

12 Q. Would you agree with me that some risk
13 factors are more potent?

14 MR. WILMOTH: Object to form.

15 THE WITNESS: Again, I think they've been
16 studied more extensively, and there's a better
17 mechanism of action that had been defined on how
18 cancers have developed because we have more data on
19 that risk factor.

20 BY MR. MARQUINA:

21 Q. Would you agree with me that the same risk
22 factor may affect individuals differently?

23 A. Absolutely.

24 Q. So, for example, smoking one pack a year
25 for -- may increase patient A's risk cancer --

1 cancer risk more than a pack a year history for
2 patient B?

3 A. Yes.

4 Q. Would you agree that risk factors may have
5 a dose response relationship?

6 A. Yes.

7 Q. For example, smoking ten pack years
8 generally has a different risk than smoking one pack
9 year.

10 A. Yes.

11 Q. And having a BMI of 35 carries a different
12 risk than having a BMI of 20.

13 A. Weaker association, but, yes.

14 Q. Would you agree that cancer is caused by
15 genetic mutations?

16 A. In the broad term, yes, cancer is brought
17 on by genetic mutations that happens throughout the
18 body.

19 Q. And those mutations can occur randomly?

20 A. Yes.

21 Q. And those mutations in fact do occur
22 randomly.

23 A. Yes.

24 Q. Would you agree that our body -- strike
25 that.

1 Would the agree that the human body
2 frequently repairs genetic mutations?

3 A. Yes.

4 Q. Would you agree that mutated cells die
5 before they can proliferate?

6 A. Yes.

7 Q. Is it fair to say that some cancers have an
8 unknown cause?

9 A. Outside of identifiable factors, yes.

10 Q. And is it fair to say that a cancer with an
11 unknown cause is considered to be idiopathic?

12 A. I think some people use the term
13 "idiopathic" and "unknown" synonymously. Idiopathic
14 is just a -- kind of more refined term of saying I
15 don't know.

16 Q. Is it your opinion that idiopathic etiology
17 is mutually exclusive of the existence of
18 identifiable risk factors in a patient?

19 A. Can you rephrase that?

20 Q. Sure.

21 Put another way, if a patient has an
22 identifiable risk factor such as smoking, is it your
23 testimony that their cancer -- their kidney cancer
24 could not be idiopathic in origin?

25 A. I wouldn't use the term "idiopathic," and I

1 rarely use the term "idiopathic." I read
2 Dr. Stadler's report that he believes that all
3 cancers are idiopathic, and I wholeheartedly
4 disagree with that statement.

5 I can't say to a person that has smoked
6 four packs a day for 60 years and they got lung
7 cancer that, sir, your cancer is idiopathic because
8 you could have had other factors contribute to it.

9 My interpretation of that report is -- of
10 his report is that that's the way he defines
11 cancers, that all cancers are idiopathic, and I
12 disagree with that.

13 There are cases where patients present and
14 there's no identifiable risk factor whatsoever.
15 Maybe they're 20 years old, they've never been
16 exposed to anything, they're completely healthy, and
17 they end up getting kidney cancer. In that
18 situation I would use maybe the term "I don't know"
19 or "unknown" or "idiopathic." But it's not my go-to
20 term.

21 Q. Is there a term you use in your practice
22 when evaluating patients in the situation where you
23 can't readily identify the cause of their kidney
24 cancer?

25 A. Yeah. It's unknown.

1 Q. Would you agree with me that the majority
2 of kidney cancer cases have no known cause?

3 A. I'm not sure I agree with that.

4 Q. Would you agree that the causes of kidney
5 cancer are not fully understood?

6 A. Yes. We have mechanisms that we can't
7 account for.

8 Q. And that's because science is continuing to
9 identify new potential causes of kidney cancer;
10 right?

11 A. Absolutely.

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

14 A. Yes.

15 Q. In your practice, about what percentage of
16 kidney cancer cases that you have seen have unknown
17 causes?

18 A. I can't give you a percentage.

19 Q. Could you estimate?

20 A. Say, probably half.

21 Q. And is that the same across clear cell,
22 renal cell carcinoma cases?

23 A. I don't think I've done a subdivision about
24 subtypes but -- strike that.

25 I don't have subtype division in terms of

1 known and unknown cause.

2 Q. So probably about half of your -- of all
3 kidney cancer --

4 A. Correct.

5 Q. -- patients you have.

6 Okay. Is it fair to say that the universe
7 of known causes of kidney cancer is not the same as
8 the universe of potential causes of kidney cancer?

9 A. Let me rephrase that.

10 Are you saying that there is risk factors
11 that have not been identified?

12 Q. Yes.

13 A. Yes.

14 Q. And that's because there are potential
15 causes that we may not know about.

16 A. Correct.

17 Q. "We" referring to science.

18 A. Correct.

19 Q. Is it fair to say that you did not rule out
20 potential unknown causes in your report?

21 MR. WILMOTH: Object to form.

22 THE WITNESS: That's always in a
23 differential diagnosis of someone presenting with
24 cancer.

25 But in those -- these two specific cases, I

1 think there's a very extensive medical history with
2 documentation, in addition to a very extensive list
3 of environmental risk that is provided. I've
4 accounted for unknown risk factors, but I think
5 there are known risk factors that have to be taken
6 into consideration with more weight than the unknown
7 causes.

8 BY MR. MARQUINA:

9 Q. If a kidney cancer patient's only
10 identifiable risk factor was a one-pack year smoking
11 history, that patient's cancer may still have been
12 caused by some random risk factor that we cannot
13 identify; right?

14 A. One pack smoking history just for one year,
15 and they smoked a long time ago?

16 Q. For example, yes.

17 A. Yes. It could be -- yeah. It's not a
18 substantial risk factor.

19 Q. You'd agree that it's possible for a member
20 of the general public to develop kidney cancer
21 without exposure to any potential risk factor
22 including Camp Lejeune water; right?

23 A. Absolutely.

24 Q. In other words, there's some background
25 risk for developing kidney cancer.

1 A. Correct.

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

5 A. Fairly common. And in comparison to other
6 cancers, they're fairly uncommon. Like compared to
7 prostate cancer, it's uncommon. In comparison to,
8 you know, pancreatic cancer, probably less common --
9 I mean more common. Sorry.

10 Q. Do you agree that there were approximately
11 80,000 new cases of kidney cancer and renal pelvis
12 cancer in 2025?

13 A. Yes.

14 Q. And kidney cancer accounts for
15 approximately 4 percent of all new cancer cases in
16 the United States?

17 A. Yes.

18 Q. Would you agree that since 2005, there have
19 been roughly between 14 to 16 new kidney cancer
20 cases every -- for every 100,000 person each year?

21 A. I'll take your word for it. I haven't done
22 the calculation in my mind.

23 Q. Would you agree that the lifetime risk for
24 developing kidney or renal pelvis cancer is around
25 1.8 percent?

1 A. Again, I'll take your calculation.

2 Q. And would you agree that 1.8 percent
3 lifetime risk includes all causes of kidney cancer,
4 whether known or unknown?

5 A. Yes.

6 Q. And that excludes Camp Lejeune water;
7 right?

8 A. Excludes or includes?

9 Q. Excludes.

10 A. It could include and it could exclude it.
11 But yes, I mean, 1.8 could account for all cancers,
12 whether there is known causes or unknown causes.

13 Q. Would you agree that a reliable methodology
14 for determining the etiology of a disease should
15 take into account the background risk for the
16 development of that disease?

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

18 Q. So, for example, in your differential
19 diagnosis for these cases, would you agree that it's
20 important to consider that background risk for
21 developing kidney cancer, that 1.8 percent we
22 discussed?

23 A. How are you defining "background risk"?

24 Q. I think we -- you would agree with me that
25 there is a general risk for a member of the public

1 developing kidney cancer absent risk factors, which
2 is around 1.8 percent; right?

3 A. So I'm not -- I don't know the exact
4 calculation you're using.

5 Are you using 1.8 percent of cancers --
6 someone has a lifetime risk of 1.8 percent of kidney
7 cancer development and that includes unknown causes?
8 How are you getting to that?

9 Q. Well, we can circle back.

10 You didn't conduct any chemical tests to
11 determine whether Mr. Howard's kidney cancer was
12 caused by toxic exposure; right?

13 A. No.

14 Q. And the same is true for Mrs. Tukes?

15 A. Correct.

16 Q. Are there any features of kidney cancer
17 that are characteristics of chemically-introduced
18 kidney cancer that are different from your
19 run-of-the-mill kidney cancer?

20 A. Not that I'm aware of.

21 Q. Would you agree that as of about 2011, the
22 rate of renal cell carcinoma has increased by about
23 2 percent per year for the past 65 years?

24 A. Yeah.

25 Q. Would you agree that the reason for that

1 increase is unknown?

2 A. No. I think it's because of widespread
3 adoption of imaging, so incidental findings, better
4 imaging technologies.

5 Q. Do you employ differential diagnosis in
6 your practice to determine the cause of disease?

7 A. Yes.

8 Q. How often?

9 A. Routinely.

10 Q. And how -- could you describe how you
11 employ differential diagnosis in your practice?

12 A. I think I alluded to it earlier, that a
13 patient may come in for an evaluation of a
14 newly-diagnosed cancer, bladder, kidney, prostate,
15 testes. And part of it is taking a history. And
16 that history includes a detailed examination of
17 medical history. So assess for comorbid conditions,
18 hypertension, chronic kidney disease, social
19 history, where they lived, how much they smoked for,
20 did they do drugs, how much alcohol they ingested,
21 what kind of occupation they have, how long they've
22 worked at a certain field, if they worked in a
23 manufacturing factory where they do plastics or
24 someone that's directly on an assembly line or did
25 you work in the office in a plastics factory?

1 I mean, you can get into a nuanced detail
2 about social history and medications, but that's all
3 part of the differential.

4 Q. So I want to turn to your opinions in this
5 case.

6 So regarding Mr. Howard, your opinion is
7 that the contaminated water at Camp Lejeune more
8 likely than not caused him to develop kidney cancer;
9 right?

10 A. Correct.

11 Q. And just to be clear, your use of "more
12 likely than not" is higher than the phrase "at least
13 as likely as not"; right?

14 A. Yes.

15 Q. You don't have any opinions about the cause
16 of Mr. Howard's -- let me step back.

17 Mr. Howard has also been diagnosed with
18 non-Hodgkin lymphoma; right?

19 A. Correct.

20 Q. You don't have any opinions about the cause
21 of Mr. Howard's non-Hodgkin lymphoma; correct?

22 A. Correct.

23 Q. And turning to Mrs. Tukes, your opinion is
24 that her exposure to contaminated water at
25 Camp Lejeune more likely than not caused her to

1 develop her kidney cancer; right?

2 A. Correct.

3 Q. And as with Mr Howard, your use of "more
4 likely than not" is a higher standard than the "at
5 least as likely as not" standard we discussed
6 earlier; right?

7 A. Correct.

8 Q. Would you agree that a differential
9 diagnosis is a process doctors use to determine or
10 identify the cause of a particular injury or health
11 condition?

12 A. Both in terms of determining and also in
13 terms of giving weight. Yes.

14 Q. Would you agree that a differential
15 diagnosis requires ruling in all reasonable
16 potential causes of a disease?

17 A. It doesn't require you to rule in. I think
18 more requires you to also rule out.

19 Q. Sure.

20 But as an initial matter, you would rule in
21 potential causes and thereafter rule out --

22 A. Yes. You would put them in, and then take
23 them out if they have no weight.

24 Q. Right.

25 And you used that methodology in

1 Mr. Howard's case; correct?

2 A. Yes.

3 Q. And you used that methodology as well in
4 Mrs. Tukes' case; correct?

5 A. Yes.

6 Q. You identified smoking as a principal risk
7 factor for kidney cancer; right?

8 A. Yes.

9 Q. And since smoking is a risk factor for
10 kidney cancer, you ruled it into your differential
11 diagnosis for Mr. Howard; right?

12 A. Yes.

13 Q. And for Mrs. Tukes?

14 A. One second.

15 Q. Sure.

16 A. It was considered, but I don't -- I didn't
17 give it any weight. She was not a significant
18 smoker.

19 Q. I understand.

20 But you considered the risk factor in your
21 differential --

22 A. Oh, I'm sorry. I thought -- I thought you
23 meant did I consider it as a substantive risk
24 factor.

25 Q. Yeah, yeah. I --

1 A. I considered it. But, no, it was not part
2 of my differential in terms of a substantive risk
3 factor.

4 Q. Sure.

5 So just to circle back, you considered the
6 risk factor of smoking in both Mr. Howard and
7 Mrs. Tukes' case.

8 A. Of course.

9 Q. Okay. But as you mentioned, you ruled it
10 out in Mrs. Tukes' case; right?

11 A. Yes.

12 Q. How?

13 A. She wasn't a substantial risk factor.

14 Q. Why?

15 A. Because I didn't believe -- I didn't see
16 anything that she was a heavy smoker.

17 Q. And you also ruled out smoking as a cause
18 for Mr. Howard's kidney cancer; correct?

19 A. Yes. Again, it was minimal exposure, and
20 the time that he had quit was a long time before the
21 development of cancer.

22 And from my understanding of how smoking is
23 related to kidney cancer or cancer development in
24 the general, the relative risk of the development of
25 cancer -- sorry. I'm going too fast -- usually goes

1 back down to almost normal levels the longer you
2 have quit before the development of that cancer.

3 Q. Sure.

4 And just to clarify for the record,
5 Mr. Howard had a two-pack-a-year smoking history;
6 correct?

7 A. Correct.

8 Q. You also list -- you also identified
9 hypertension as a principal risk factor for kidney
10 cancer; correct?

11 A. Correct.

12 Q. And so you considered it in your
13 differential diagnosis for both Mr. Howard and
14 Mrs. Tukes; right?

15 A. Correct.

16 Q. You ruled out hypertension as a cause for
17 Mr. Howard's kidney cancer in your differential
18 diagnosis; right?

19 A. Correct.

20 Q. What methodology did you use to reach that
21 conclusion?

22 A. He wasn't hypertensive.

23 Q. You also ruled out hypertension as a cause
24 of Mrs. Tukes' kidney cancers in your differential
25 diagnosis for her; right?

1 A. Correct.

2 Q. What methodology did you use to reach that
3 conclusion?

4 A. It wasn't longstanding significant
5 hypertension or was not reported as an uncontrolled
6 hypertension where she was not complying with
7 medication or control.

8 Q. When you say "uncontrolled hypertension,"
9 what do you mean?

10 A. People that may have control -- people that
11 may be diagnosed with hypertension who are given
12 medications who don't take their medication or
13 hypertensive episodes which are out of control even
14 despite medication.

15 Q. In your report you identified genetic
16 predisposition as a principal risk factor for kidney
17 cancer; right?

18 A. I believe I used genetic susceptibility.

19 Q. I think if you'll turn to your report for
20 Mrs. Tukes at page 15.

21 A. Uh-huh.

22 Q. There it says "genetic predisposition."

23 A. I see that.

24 Q. And you considered that factor for both
25 Mr. Howard and Mrs. Tukes; right?

1 A. Yes.

2 Q. You ruled out genetic predisposition in --
3 as the cause of Mr. Howard's kidney cancer; correct?

4 A. Yes.

5 Q. What methodology did you use to rule out
6 genetic predisposition as the cause of Mr. Howard's
7 kidney cancer?

8 A. One, he did not have any formal genetic
9 analysis bearing any weight on his development of
10 kidney cancer. And, two, he had no family history
11 for kidney cancer. And he had other risk factors
12 that beared more weight than genetic predisposition
13 or genetic susceptibility.

14 Q. You ruled out genetic predisposition as a
15 cause of Mrs. Tukes' kidney cancer in your
16 differential diagnosis; right?

17 A. Yes.

18 Q. In fact, you conclude that Mrs. Tukes was
19 genetically more susceptible to exposure to toxins;
20 right?

21 A. Based on the report that I read from
22 Dr. Allen and her extensive genetic profile and the
23 fact that she had two formal genetic evaluations
24 well before this case was ever brought forward, the
25 normal routes of genetic development by known gene

1 lines, let's say Von Hippel-Lindau gene lines or
2 other genetic factors that have been implicated to
3 kidney cancer, which she did not have, I beared
4 weight that she had an environmental exposure as a
5 primary cause for the development of kidney cancer.

6 And as -- and Dr. Allen has stated her
7 genetic alterations in two different cell lines may
8 have made her more susceptible to develop these
9 cancers based on lower levels of environmental
10 exposure.

11 Q. Sure.

12 And just to circle back, you relied on
13 Dr. Irving Allen's report to reach your conclusion
14 regarding the role of genetics in Mrs. Tukes' case;
15 correct?

16 A. Yes.

17 Q. Do you have an independent opinion about
18 the role of genetics in Mrs. Tukes -- in the cause
19 of Mrs. Tukes' kidney cancers?

20 A. Yes. Prior to reading that report, I was
21 interested in knowing whether genetic evaluation had
22 been performed when I first reviewed her chart. And
23 surprisingly, given the fact that she had two formal
24 evaluations and both of those evaluations did not
25 contribute any known genetic cell lines, I ruled out

1 a genetic or hereditary cause as the principal
2 factor for her development of kidney cancer.

3 Q. And when we talk about the genetic testing
4 that Mrs. Tukes underwent, we're referring to the
5 first one being 2012 for Von Hippel-Lindau syndrome;
6 correct?

7 A. That was included in it. Yes.

8 Q. Yes.

9 And the other one is a genetic assessment
10 conducted in 2018; right?

11 A. Correct.

12 Q. And regarding the first test, the Von
13 Hippel-Lindau syndrome, that test was negative;
14 right?

15 A. Yes.

16 MR. MARQUINA: What number are we on?

17 THE REPORTER: 13.

18 (Exhibit 13 was marked for
19 identification and attached hereto.)

20 MR. MARQUINA: 13? Thank you.

21 BY MR. MARQUINA:

22 Q. Dr. Josephson, I've handed you a collection
23 of documents which were used as Exhibit 1 in
24 Ms. Garbarini's deposition regarding Mr. Tukes'
25 case. If you could turn to what's been

1 Bates-stamped at the bottom as page 517. If you see
2 there, this is the result of the test we were just
3 discussing for -- excuse me -- Von Hippel-Lindau
4 syndrome; correct?

5 A. Yes.

6 Q. Would you agree with me that the testing
7 includes language that says, "Rarely individuals may
8 have a mutation or deletion in the genes tested that
9 is not identified by the described testing
10 methodology"? You can find that about five lines
11 from the bottom of the center.

12 A. Yes.

13 Q. And would you agree with me that this
14 testing also includes language that says, "In
15 addition, the phenotype observed and the individual
16 tested here may be due to a variant in a gene not
17 analyzed by this test"?

18 A. Correct.

19 Q. Regarding the genetic test that Mrs. Tukes
20 underwent in 2018, that test evaluated a panel of 30
21 genes; right?

22 A. Correct.

23 Q. Would you agree with me that the test was
24 limited to that panel of 30 genes?

25 A. That's what it states. Correct.

1 Q. Would you agree that hereditary renal
2 cancer is often multifocal?

3 A. Yes.

4 Q. Would you agree that hereditary renal
5 cancer is often bilateral?

6 A. Yes.

7 Q. Would you agree that Mrs. Tukes had
8 multifocal disease?

9 A. Yes.

10 Q. Would you agree that Mrs. Tukes had
11 bilateral disease?

12 A. Yes.

13 Q. What literature did you rely upon to
14 conclude that genetic predisposition was not a cause
15 of Mrs. Tukes' kidney cancer?

16 A. I didn't rely on any literature.

17 MR. MARQUINA: I think this is a good time
18 for a break. Can we go off the record.

19 THE VIDEOGRAPHER: Okay. The camera time
20 is 12:11.

21 (Recess from 12:11 p.m. to 12:22 p.m.)

22 THE VIDEOGRAPHER: Back on record. The
23 time is 12:22 p.m.

24 BY MR. MARQUINA:

25 Q. Dr. Josephson, would you agree that the

1 standard of care is to refer a patient to genetic
2 counseling if they have a renal malignancy when they
3 are age 46 and younger?

4 A. Yes.

5 Q. Or when they have multifocal renal masses?

6 A. Yes.

7 Q. Or when they have bilateral renal masses?

8 A. I think that's a soft call, but it's
9 prudent or a good idea to do that.

10 Q. Or whenever there is a personal family
11 history that suggests a familial renal neoplastic
12 syndrome?

13 A. Yes. Although I do feel like a lot of
14 clinicians do fall below the standard of care and
15 don't refer patients.

16 Q. Or when there is a first or second degree
17 relative with the history of renal malignancy?

18 A. Again, I think it should be standard but
19 usually omitted.

20 Q. You'd agree that Mrs. Tukes was diagnosed
21 younger than age 46?

22 A. Yes.

23 Q. And she had multifocal renal masses?

24 A. Yes.

25 Q. And she had bilateral renal masses?

1 A. Yes.

2 Q. And there was at least some indication that
3 her mother had a renal malignancy.

4 MR. WILMOTH: Object to form.

5 THE WITNESS: I believe there's some
6 documentation in the records that she may have died
7 with a known renal mass. But based on the
8 deposition testimony, I think it's questionable
9 whether it was a primary renal cancer or maybe a
10 spec from another site or if she even had kidney
11 cancer.

12 BY MR. MARQUINA:

13 Q. Even if Mrs. Tukes' mother did not have a
14 renal malignancy, the standard of care would be to
15 refer to genetic counseling; right?

16 A. Correct. Which she had.

17 Q. And that's because hereditary renal cell
18 carcinoma typically presents at a younger age?

19 A. Yes.

20 Q. Would you agree with me that you did not
21 address race or ethnicity as risk factors in your
22 differential diagnosis for Mrs. Tukes?

23 A. I didn't spell them out. I just didn't
24 think they had as much substantial weight as other
25 risk factors.

1 Q. And I think we mentioned earlier that you
2 agreed with me that African Americans have an
3 increased risk of kidney cancer; right?

4 A. Yes.

5 Q. And Mrs. Tukes is African American; right?

6 A. Yes.

7 Q. In your report, you also didn't address
8 gender or sex as risk factors in your differential
9 diagnosis; correct?

10 A. Correct.

11 Q. Would you agree that men are diagnosed with
12 kidney cancer at higher rates than women?

13 A. Yes.

14 Q. Mr. Howard is male; correct?

15 A. Correct.

16 Q. In your reports you identified
17 environmental risk factors as a principal risk
18 factor for kidney cancer; correct?

19 A. Yes.

20 Q. And so obviously you considered
21 environmental risk factors in your differential
22 diagnosis for both Mr. Howard and Mrs. Tukes.

23 A. Absolutely. That's why we're here today.

24 Q. Right.

25 What scientific literature -- and the

1 environmental risk factors you -- strike that.

2 And specific to Mr. Howard and Mrs. Tukes'
3 case, the environmental risk factor you referred to
4 and you considered in their cases is the -- their
5 exposure to toxins in the Camp Lejeune water; right?

6 A. Correct.

7 Q. What scientific literature did you rely on
8 to rule in Camp Lejeune water as a risk factor for
9 both Mr. Howard and Mrs. Tukes?

10 A. It's exactly what we talked about before.
11 My Google -- my PubMed search regarding TCE and PCE
12 and kidney cancer, the publications that I've
13 provided in my declarations, and the list of
14 documents that are provided to me for review prior
15 to this deposition.

16 Q. Have you ever -- strike that.

17 Would you agree that it's possible
18 Mr. Howard would have developed kidney cancer even
19 if he had never been exposed to Camp Lejeune water?

20 MR. WILMOTH: Object to form.

21 THE WITNESS: Yes, it's possible. But now
22 we're getting into theoretical possibility. So I
23 think I'm relying more on objective data that has
24 been obtained.

25 ///

1 BY MR. MARQUINA:

2 Q. Sure.

3 Same question for Mrs. Tukes. Would you
4 agree it's possible that Mrs. Tukes would have
5 developed kidney cancer even if she had never been
6 exposed to Camp Lejeune water?

7 MR. WILMOTH: Same objection.

8 THE WITNESS: Again, I think this is
9 theoretical. I'm more basing on objective data.

10 BY MR. MARQUINA:

11 Q. Can you say whether Mr. Howard would have
12 lived his life cancer-free if he had never been
13 exposed to Camp Lejeune water?

14 MR. WILMOTH: Object to form.

15 THE WITNESS: He was exposed, and he's
16 still leaving cancer-free today. So I'm not sure --
17 is that another way of you asking if he could have
18 developed kidney cancer if he wasn't exposed to the
19 water?

20 BY MR. MARQUINA:

21 Q. I'll withdraw that question.

22 Can you say how much less likely Mr. Howard
23 would be to develop cancer if he had never been
24 exposed to Camp Lejeune water?

25 MR. WILMOTH: Object to form.

1 THE WITNESS: I can't.

2 BY MR. MARQUINA:

3 Q. Same question for Mrs. Tukes.

4 MR. WILMOTH: Same objection.

5 THE WITNESS: I can't.

6 BY MR. MARQUINA:

7 Q. You don't have any opinions regarding the
8 reasonableness of Mr. Howard's kidney cancer
9 treatment; correct?

10 A. The reasonableness meaning in terms of was
11 he treated appropriately?

12 Q. Yes.

13 A. No. I think he was treated appropriately.

14 Q. Same question for Mrs. Tukes. You don't
15 have any opinions for the propriety of Mrs. Tukes'
16 medical treatment for her kidney cancer; correct?

17 A. No.

18 Q. Mr. Howard remains disease free 15 years
19 after his kidney cancer diagnosis; right?

20 A. Correct.

21 Q. And he would be considered in remission for
22 kidney cancer?

23 A. Yes.

24 Q. You would agree with me that Mr. Howard has
25 made a full recovery from his nephrectomy; right?

1 A. Yes.

2 Q. Would you agree with me that Mr. Howard's
3 postoperative care related to his nephrectomy was
4 unremarkable?

5 A. Yes.

6 Q. Would you agree with me that there is
7 currently no evidence for any chance of recurrence
8 for Mr. Howard?

9 A. Correct.

10 Q. Would you agree with me that there's
11 currently no evidence of metastatic disease related
12 to kidney cancer for Mr. Howard?

13 A. Correct.

14 Q. Since Mr. Howard's nephrectomy in 2008,
15 he's been under surveillance for recurrence; right?

16 A. Correct.

17 Q. And his renal function remains normal as of
18 his most recent available medical records?

19 A. As far as I recall, yes.

20 Q. Since at least 2008, Mr. Howard had
21 pulmonary nodules for which he received routine
22 surveillance; right?

23 A. Correct.

24 Q. But the lung nodules haven't progressed;
25 correct?

1 A. Correct. It was originally thought that he
2 had metastatic disease and was set up to get
3 systemic therapy with IL-2.

4 But after further evaluation, it was
5 determined that there were not metastatic disease,
6 and it was actually just, I believe, more kind of
7 noncancerous nodules. And he did not undergo the
8 therapy that was planned.

9 Q. In other words, there's no malignancy as it
10 relates to those lung nodules; right?

11 A. Correct.

12 Q. And there's no reason to think Mr. Howard's
13 lung nodules will become malignant; right?

14 A. Correct.

15 Q. Mr. Howard's tumor was pT1 in size and
16 grade 2; correct?

17 A. PT1b, grade 2, yes.

18 Q. Right.

19 Would you agree with me that that indicates
20 a low risk for future malignancy as it relates to
21 his renal cell carcinoma?

22 A. Lower risk of kidney cancer malignancy. It
23 doesn't predispose to other malignancies.

24 So his chances of recurrence, I'd say, are
25 probably 5 to 10 percent, at that.

1 Q. How did you arrive at that chance of
2 occurrence?

3 A. That's based on my knowledge and
4 experience.

5 Q. Would you agree with me that the only
6 permanent injury related to Mr. Howard's kidney
7 cancer is the loss of his right kidney?

8 A. Yes, which potentially has a predisposition
9 for younger age of death overall compared to the
10 general population because of chronic kidney disease
11 but not related to the cancer per se.

12 Q. Well, you would agree with me there's no
13 guarantee that Mr. Howard will experience those
14 outcomes you mentioned; right?

15 A. No. But we prefer -- when possible, we
16 prefer to preserve as much renal function as
17 possible. Because what we've determined over the
18 past couple of decades is even if we cure someone of
19 their cancer, we may be predisposing them to earlier
20 death because of the development of chronic kidney
21 disease because they have one less kidney.

22 Q. You would agree with me that currently
23 there's no evidence that Mr. Howard has chronic
24 kidney disease?

25 A. Correct.

1 Q. Mrs. Tukes received a renal transplant in
2 April of 2024; right?

3 A. Yes.

4 Q. And from June 2023 to March of 2024,
5 Mrs. Tukes was on dialysis, right?

6 A. Correct.

7 Q. She received her kidney transplant when she
8 was 59 years old?

9 A. Yes.

10 Q. And she received a deceased donor
11 transplant; right?

12 A. Yes.

13 Q. Would you agree that deceased donor kidney
14 transplants are expected to last about 13 years?

15 A. Around that time, yes.

16 Q. Would you agree that kidney transplants
17 vary in lifespan?

18 A. Yes.

19 Q. Would you agree that it's impossible to
20 accurately predict the exact lifespan of a kidney
21 transplant?

22 A. Correct.

23 Q. Would you agree that as of her most recent
24 medical records, Mrs. Tukes has not rejected her
25 kidney transplant?

1 A. Correct.

2 Q. Would you agree that it is speculative to
3 predict how long Mrs. Tukes' transplant will last?

4 A. Well, you just gave me 13 years. So I'm
5 going to speculate that it's around 13 to 15 years.
6 But she's probably going to need some additional
7 treatment in her lifetime, that 13 after 59 will
8 take her to 72.

9 Average life expectancy for general
10 population is well in their late 70s. So I'm not
11 sure what's going to happen when she -- if and when
12 her transplant fails, but that's outside the scope
13 of my evaluation in this case.

14 Q. You don't have any opinions regarding
15 Mr. Howard's medical billing; correct?

16 A. No.

17 Q. You don't have any opinions about
18 Mrs. Tukes' medical billing; right?

19 A. No.

20 Q. You reviewed the general causation report
21 of Dr. Benjamin Hatten; right?

22 A. Correct.

23 Q. You also reviewed the general causation
24 report of Dr. Steven Bird; right?

25 A. Correct.

1 Q. And you relied on the reports of
2 Drs. Hatten and Bird in rendering your opinions --
3 strike that.

4 Specifically, you relied on Drs. Hatten and
5 Bird's reports regarding the levels at which the
6 toxins at issue are hazardous to humans and known to
7 cause kidney cancer; right?

8 A. Yes.

9 Q. Is it fair to say that you don't have
10 independent -- or strike that.

11 Is it fair to say that you don't have
12 opinions that are independent from Drs. Hatten or
13 Bird regarding the levels of chemicals at issue in
14 this case?

15 MR. WILMOTH: Object to form.

16 THE WITNESS: No, I disagree. I think I've
17 relied on their expert -- general causation experts
18 as a framework for the concentrations and their
19 causal link to kidney cancer.

20 But based on my own independent research
21 like we've talked about, the PubMed search, my
22 experience as a urologic oncologist treating
23 patients, my own role as a scientist and a PI in
24 different research trials, interpretation of the
25 data, and the volumes of expert reports and

1 depositions, I've come up with my own independent
2 interpretation of exposure in this case.

3 BY MR. MARQUINA:

4 Q. Do you have opinions regarding the levels
5 at which TCE caused kidney cancer?

6 A. An absolute value where you get kidney
7 cancer?

8 Q. A threshold.

9 A. I don't have an opinion regarding absolute
10 levels.

11 Q. Do you have an opinion about the threshold
12 of PCE exposure that causes kidney cancer?

13 A. Again, I don't have an absolute value.
14 But, again, I've used the general causation as a
15 framework to build upon.

16 Q. Sure. Same question for benzene.

17 A. Same.

18 Q. Same question for vinyl chloride.

19 A. Same.

20 Q. You reviewed the --

21 THE REPORTER: Sorry.

22 MR. MARQUINA: No. That's on me.

23 BY MR. MARQUINA:

24 Q. You reviewed the Aschengrau study in
25 preparing your report for Mrs. Tukes; right?

1 A. Correct.

2 (Exhibit 14 was marked for
3 identification and attached hereto.)

4 BY MR. MARQUINA:

5 Q. Is that the Aschengrau study that I just
6 handed -- that we just handed to you?

7 A. Yes.

8 Q. You state that this study found that
9 persons exposed to PCE up through the 90th
10 percentile of relative dose delivered between 27.1
11 milligrams and 44.1 milligrams had elevated kidney
12 cancer risk with OR 1.36.

13 A. Yes.

14 Q. Right?

15 And you conclude that Mrs. Tukes had
16 similar levels of exposure as individuals in the
17 90th percentile in the Aschengrau study; right?

18 A. Correct.

19 Q. If you'll turn to page 289 on the
20 Aschengrau study.

21 A. Uh-huh.

22 Q. On the end of the first full paragraph on
23 the right side, you would agree with me that no
24 kidney cancers were considered exposed to high
25 relative delivered dose; right?

1 A. Where are you reading that? I'm sorry.

2 Q. Sure. It's the end of the first full
3 paragraph on the right side of page 289. The last
4 sentence in that first full paragraph. Quote, "No
5 kidney cancer cases were considered exposed to high
6 RDDs."

7 A. Yes.

8 Q. If you'll turn to page 290, under the last
9 sentence in the discussion -- the last sentence in
10 the first paragraph of the discussion section, it
11 reads, "No kidney cancer cases were considered
12 exposed when latency was taken into account, and no
13 meaningful increases in the risk of kidney cancer
14 were detected without latency;" right?

15 A. Yes.

16 Q. You would agree with me that the Aschengrau
17 study uses -- excuse me, measures exposure in
18 milligrams, which is different from the units that
19 Dr. Kelly Reynolds used; right?

20 A. Yes.

21 Q. You would agree with me that in your report
22 on Mrs. Tukes, you did not convert Dr. Reynold's
23 unit into milligrams; right?

24 A. Correct.

25 Q. You would agree with me that the Aschengrau

1 study did not consider race?

2 A. They didn't report on race, but it did
3 account for race in their demographic data.

4 Q. The cases and controls predominantly white
5 and elderly -- right? -- as reflected on page 288.

6 A. Yes. But it had -- again, it's not
7 significant.

8 Q. The study did not consider obesity;
9 correct?

10 A. Correct.

11 Q. The study did not consider hypertension?

12 A. Correct.

13 Q. The study did not consider genetic
14 predisposition to kidney cancer; correct?

15 A. Correct.

16 Q. The study did not consider family history
17 of kidney cancer; correct?

18 A. Correct.

19 Q. This study did not consider diabetes;
20 correct?

21 A. Correct.

22 Q. And this study did not consider alcohol
23 consumption; right?

24 A. Let me just read this quickly.

25 Q. Sure.

1 A. I don't see it. Correct.

2 Q. You would agree with me that the study did
3 not directly measure individual exposure; right?

4 A. No.

5 Q. You can set that aside.

6 You considered and relied on the ATSDR's
7 2017 assessment of the evidence; correct?

8 A. Can you be more specific about what
9 evidence you're talking about?

10 Q. Sure. It's in -- one moment.

11 A. You're talking about the publication that I
12 reference?

13 Q. For example, right here, in -- I think you
14 listed in both Mr. Howard and Mrs. Tukes. Your
15 references for both of those reports.

16 A. Yes.

17 Q. The ATSDR assessment of the evidence for
18 drinking water contaminants at Camp Lejeune and
19 specific cancers and other diseases.

20 A. Yes.

21 Q. Are you aware that Dr. Frank Bove was the
22 sole author for that study?

23 A. Yes.

24 Q. Would you agree that cumulative exposure to
25 a chemical by itself does not provide full insight

1 into the risk associated with that exposure?

2 A. Can you explain that in a different way?

3 Q. Sure.

4 You would agree with me that the intensity
5 of exposure is important for determining the risk
6 associated with that exposure.

7 A. So how much consumption is...

8 Q. Yes.

9 A. Yes, of course.

10 Q. You would agree with me that the duration
11 of exposure is important to determining the risk
12 associated with that exposure; right?

13 A. Yes.

14 Q. You would agree with me that the frequency
15 of exposure to a chemical is important for
16 determining the risk associated with that exposure;
17 right?

18 A. If those variables can be accounted for and
19 measured, yes.

20 Q. Were you aware that the studies conducted
21 by the ATSDR regarding exposure to contaminated
22 water at Camp Lejeune failed to account for a
23 marine's deployment off base?

24 MR. WILMOTH: Object to form.

25 THE WITNESS: I can't comment on the

1 methodology.

2 BY MR. MARQUINA:

3 Q. If we could go back to Exhibit 12, the Bove
4 2014A study.

5 A. Got it.

6 Q. This study did not evaluate direct chemical
7 exposure in individuals; right?

8 A. Like individual risk?

9 Q. Like the study didn't evaluate how much
10 each individual person in the study was exposed to a
11 given chemical; right?

12 A. Correct. I think it was just general
13 framework.

14 Q. Right. And the study only assessed
15 mortality; right?

16 A. Yes. That's one of the limitations of the
17 study, which if you ask me, mortality is a surrogate
18 for more extensive disease. So if you can account
19 for mortality where the cases were -- did happen and
20 the patient died of kidney cancer, this would also
21 include, which is not reported, a number of patients
22 that would have developed kidney cancer, like
23 Mr. Tukes -- Mr. Howard or Ms. Tukes that didn't go
24 on to die of kidney cancer.

25 So there's probably more of these -- the

1 same relationship where there is a risk of
2 developing it is probably going to be more
3 pronounced had they gotten data about the actual
4 incidence of kidney cancer.

5 Q. Dr. Bove in his 2014A study did not
6 consider obesity; correct?

7 A. Correct.

8 Q. The study did not consider hypertension;
9 right?

10 A. Correct.

11 Q. The study did not consider genetic
12 predisposition to kidney cancer; right?

13 A. It's not listed as one of the assessments.

14 Q. This study did not consider family history
15 of kidney cancer.

16 A. Correct.

17 Q. The study did not consider diabetes.

18 A. Correct.

19 Q. The study did not consider alcohol
20 consumption.

21 A. Correct.

22 Q. The study did not consider other potential
23 occupational exposures; correct?

24 A. Correct.

25 Q. On page 13 of the study, you would agree

1 with me that Dr. Bove acknowledges that a limitation
2 to the study was the lack of information on smoking;
3 right?

4 A. That's on page 14. Yeah, page 13.

5 Q. Dr. Bove acknowledges that errors in base
6 assignment likely occurred; correct?

7 A. Yes.

8 Q. Dr. Bove also acknowledges that many
9 stationed at Camp Lejeune spent time away from the
10 base for training or deployment; correct?

11 A. I'll take your word for it. I don't recall
12 that part.

13 Q. It would be on the -- under Limitations, if
14 there are -- four paragraphs under that section on
15 page 12. It's the last sentence in the third
16 paragraph.

17 A. Yes.

18 Q. And if you'll turn to page 13 of the study,
19 on the left side at the very bottom, the study
20 notes, "Many HR estimates lacked precision as
21 indicated by wide confidence intervals, due to small
22 numbers of specific causes of death; right?

23 A. Correct. And I've kind of alluded to this
24 before. This was a mortality evaluation.

25 Had it been a formal cancer incidence

1 evaluation, I believe the results would be more
2 pronounced. Because, like you said before, the
3 majority of people that get diagnosed with kidney
4 cancer don't go on to die of kidney cancers.

5 Q. You would agree with me that the study also
6 notes, within that same paragraph, "lack of
7 precision in the HR estimates indicates uncertainty
8 about the actual magnitude of the effects of the
9 drinking water exposures on specific causes of
10 death"; right?

11 A. Correct. Again, this is a mortality study.

12 Q. And just to clarify, HR refers to hazard
13 ratio; right?

14 A. Correct.

15 Q. If you'll turn to table 5 of the study on
16 page 8?

17 A. Table 5, page 8. I'm there.

18 Q. You mentioned in your report on Mr. Howard
19 that the Bove study found a hazard ratio of 1.3 when
20 comparing exposed personnel from Camp Lejeune to
21 nonexposed from Camp Pendleton; right?

22 A. Yes.

23 Q. And that's in reference to table 5?

24 A. Yes.

25 Q. The confidence interval for kidney cancer

1 was -- included ranges from 0.84 to 2.16; right?

2 A. Yes.

3 Q. That includes one; right?

4 A. Yes.

5 Q. Okay. You can set that aside.

6 (Exhibit 15 was marked for
7 identification and attached hereto.)

8 BY MR. MARQUINA:

9 Q. You've been handed a document entitled
10 Mortality Study of Civilian Employees Exposed to
11 Contaminated Drinking Water at USMC Base
12 Camp Lejeune: a retrospective cohort study.

13 This is what is referred -- what you refer
14 to in your reports as Bove 2014B; right?

15 A. Yes.

16 Q. This study did not evaluate direct chemical
17 exposure in individuals; right?

18 A. Correct.

19 Q. And, again, this study only assessed
20 mortality?

21 A. Yes.

22 Q. This study did not control for or consider
23 smoking?

24 A. Correct.

25 Q. This study did not control for or consider

1 obesity; right?

2 A. Correct.

3 Q. Or hypertension?

4 A. Correct.

5 Q. Or genetic predisposition to kidney cancer?

6 A. Correct.

7 Q. Or family history of kidney cancer?

8 A. Correct.

9 Q. Or diabetes?

10 A. Correct.

11 Q. Or alcohol consumption?

12 A. Didn't control for it, but they did mention
13 it as a cofounder.

14 Q. You would agree that the study did not
15 control for other potential occupational exposures?

16 A. Correct.

17 Q. The study notes on page 2 that a majority
18 of the supply wells in the HP system were not
19 contaminated, so contamination levels varied
20 depending on the wells in use at a particular time;
21 right?

22 A. That's what it states. Correct.

23 Q. And that's -- and HP is in reference to
24 Hadnot Point; right?

25 A. Correct.

1 I believe that's because they were shut
2 down by 1985. So that's what it's related to.

3 Q. One moment.

4 If you'll go to page 12, right side.

5 You would agree with me that a limitation
6 of the study was the small numbers of most causes of
7 death which resulted in wide confidence -- excuse
8 me, confidence intervals for the measures of effect;
9 right?

10 A. Correct. And, again, this is a mortality
11 study. And the limitation and extrapolating is that
12 this is a lot more pronounced than cancer incidence.
13 So it does not account for the development of kidney
14 cancer cases that did not go on to die and were
15 reported with this study.

16 Q. You can set that aside. Tab 14.

17 You relied on the Bove cancer incidence
18 study; right?

19 A. Yes.

20 (Exhibit 16 was marked for
21 identification and attached hereto.)

22 BY MR. MARQUINA:

23 Q. The exhibit that you've just been handed is
24 that same study; right?

25 A. Cancer incidence study?

1 Q. Yes.

2 A. Yes.

3 Q. Were you aware that the study did not
4 perform any statistical significance testing?

5 A. One second.

6 Q. Sure.

7 A. They do not report any statistical
8 significance variables in their hazard ratios.

9 Q. In this study there was no individualized
10 exposure assessment performed; right?

11 A. Correct.

12 Q. This study did not control for or consider
13 obesity; right?

14 A. Correct.

15 Q. And this study did not control for or
16 consider hypertension; right?

17 A. Correct.

18 Q. This study did not control for or consider
19 family history of kidney cancer.

20 A. Correct.

21 Q. Right?

22 Or diabetes?

23 A. Correct.

24 Q. Or alcohol consumption?

25 A. Correct.

1 Q. If you'll turn to table 3 on page 7, this
2 table reflects a comparison of cancer outcomes at
3 Camp Lejeune and Camp Pendleton among marines and
4 navy personnel who began serving active duty and
5 were stationed at either base between 1975 and 1985;
6 right?

7 A. Yes.

8 Q. And under this table for kidney and renal
9 pelvis cancer, it has an adjusted hazard ratio of
10 1.06; right?

11 A. Yes.

12 Q. With a confidence interval ranging from
13 0.96 to 1.18; right?

14 A. Correct.

15 Q. That confidence interval includes one;
16 right?

17 A. Correct.

18 Q. Oh, excuse me. Let me correct myself.
19 The adjusted hazard ratio confidence
20 interval includes 0.95 to 1.18.

21 A. Yes.

22 Q. And, again, same question. That include --
23 that confidence interval includes one; right?

24 A. Yes.

25 Q. The adjusted hazard ratio under -- for the

1 same table under renal cell and clear cell carcinoma
2 is 1.03; right?

3 A. Yes.

4 Q. With a confidence interval ranging from
5 0.91 to 1.16; right?

6 A. Yes.

7 Q. That confidence interval includes one;
8 right?

9 A. Yes.

10 Q. For papillary, under the same table, the
11 confidence -- or, excuse me, the adjusted hazard
12 ratio for papillary is 1.18; right?

13 A. Yes.

14 Q. With a confidence interval ranging from
15 0.86 to 1.60; right?

16 A. Can you read that again?

17 Yes, I see that.

18 Q. Yes?

19 A. Yes.

20 Q. Okay. That confidence interval includes
21 one; right?

22 A. Yes.

23 Q. If you'll turn to table 5 on page 10, this
24 reflects the results of the cancer incidence study
25 based on duration of residency at Camp Lejeune for

1 the marine and navy cohort; right?

2 A. Yes.

3 Q. And under kidney and renal pelvis cancer,
4 the adjusted hazard ratio for low duration at
5 Camp Lejeune is 1.12; right?

6 A. Yes.

7 Q. The adjusted hazard ratio for medium
8 duration at Camp Lejeune is 1.01; right?

9 A. Yes.

10 Q. The adjusted hazard ratio for high duration
11 at Camp Lejeune is 0.94; right?

12 A. Yes.

13 Q. These hazard ratios reflect a non-monotonic
14 trend; right?

15 A. Is that how they define it? Yes.

16 Q. You can set that aside.

17 You also reviewed and relied on Dr. Bove's
18 2024 mortality study in rendering your opinions for
19 both Mr. Howard and Mrs. Tukes; right?

20 A. Yes.

21 (Exhibit 17 was marked for
22 identification and attached hereto.)

23 BY MR. MARQUINA:

24 Q. You've just been handed Exhibit 17, which
25 is the 2000 -- Dr. Bove's 2014 mortality study;

1 right?

2 A. Correct.

3 Q. In this study there was no individualized
4 exposure assessment performed.

5 A. Correct.

6 Q. This study did not assess the time-varying
7 nature of exposure; right?

8 A. In terms of duration?

9 Q. The time-varying nature of exposure,
10 whether exposures on any given day would go up or
11 down.

12 A. No.

13 Q. And, again, the study only assessed
14 mortality; right?

15 A. Correct.

16 Q. The study did not control for or consider
17 obesity; right?

18 A. Correct.

19 Q. Or hypertension?

20 A. Correct.

21 Q. Or family history of kidney cancer?

22 A. Correct.

23 Q. Or diabetes?

24 A. Correct.

25 Q. Or alcohol consumption?

1 A. Correct.

2 Q. If you'll turn to page 6 of the study under
3 table 2.

4 A. Uh-huh. Yes.

5 Q. Table 2 gives the standard mortality ratio
6 for marines and navy personnel at Camp Lejeune
7 compared to the general population; right?

8 A. Yes.

9 Q. The standard mortality ratio for kidney and
10 renal pelvis cancers was 1.11; right?

11 A. I'm seeing 1.21.

12 Are you on table 2?

13 Q. Table 2, yeah. Under observed SMRs under
14 the first.

15 A. Okay.

16 Q. That says for Camp Lejeune.

17 A. Correct. And then 0.91 for Camp Pendleton,
18 so the risk ratio --

19 Q. Sure.

20 A. -- is 1.21.

21 Q. Sure. So for the risk ratio that's 1.21,
22 that has a confidence interval ranging from 0.95 to
23 1.54; right?

24 A. Correct.

25 Q. That includes one; right?

1 A. Correct.

2 Q. If you'll turn to page 8 of the study on
3 table 4. This give the hazard ratios which we
4 just -- one moment.

5 It includes the same hazard ratio and
6 confidence interval we just discussed; right?

7 A. Yes.

8 Q. You can set that aside.

9 In your report for Mrs. Tukes, you relied
10 on the Callahan study; right?

11 A. Yes.

12 (Exhibit 18 was marked for
13 identification and attached hereto.)

14 THE WITNESS: Thank you.

15 BY MR. MARQUINA:

16 Q. The document you were just handed is the
17 Callahan study; right?

18 A. Yes.

19 Q. You state in your report on Ms. Tukes that
20 this study is one of the ones that demonstrated an
21 increased risk of kidney cancer in cohorts exposed
22 to PCE; right?

23 A. Yes.

24 Q. The study did not directly measure chemical
25 exposure among participants in the study; right?

1 A. Can you be more specific?

2 Q. There's no -- the study did not quantify
3 how much PCE each individual within the study was
4 exposed to.

5 A. No. This was a mortality study of people
6 that were -- worked in dry cleaners, worked dry
7 cleaning.

8 Q. And if you'll turn page 5 of the Callahan
9 study.

10 A. Uh-huh.

11 Q. You would agree with me that the study
12 notes that the absence of direct exposure monitoring
13 in subjects were placed in the lack of a specific
14 exposure scale for tetrachlorethylene or other
15 individual dry cleaning solvents are additional
16 limitations of the study; right?

17 A. Correct.

18 Q. The authors of the study note that they
19 were unable to directly assess when members of the
20 study cohort were first exposed to
21 tetrachlorethylene; right?

22 A. Correct.

23 Q. The study did not control for or consider
24 smoking; right?

25 A. No.

1 Q. Or obesity?

2 A. Nope.

3 Q. Or hypertension?

4 A. Correct.

5 Q. Or genetic predisposition to kidney cancer?

6 A. Correct.

7 Q. Or family history of kidney cancer?

8 A. Correct.

9 Q. Or diabetes?

10 A. Correct.

11 Q. Or alcohol consumption?

12 A. Correct.

13 Q. The study did not control for or consider
14 occupational exposures prior to the participants
15 membership in the union.

16 A. Correct.

17 Q. And if you'll turn to page 6, you would
18 agree with me that the study was limited by the
19 relatively small sample size?

20 A. Yes.

21 Q. And standard mortality ratio results for
22 kidney cancer were null overall in this study;
23 right?

24 If you'll turn to page 4, second paragraph,
25 second to last sentence.

1 A. Yes. I agree. It's mortalities, estimate.

2 Q. You also relied on the Purdue study in your
3 report on Mrs. Tukes; right?

4 A. Which study?

5 Q. The Purdue study.

6 A. Yes.

7 Q. Your report cites this as a report -- or
8 excuse me. Your report cites this as a study -- one
9 of multiple studies that have demonstrated an
10 increased risk of kidney cancer in cohorts -- excuse
11 me, cohorts exposed to PCE; right?

12 A. Yes.

13 (Exhibit 19 was marked for
14 identification and attached hereto.)

15 BY MR. MARQUINA:

16 Q. That's Exhibit 19.

17 Is this a Purdue study?

18 A. This is.

19 Q. If you can turn to page 7, would you agree
20 with me that the authors of the study note that
21 analysis of perchloroethylene exposure duration
22 average weekly exposure and accumulative hours of
23 exposure were null including all exposure
24 intensities?

25 A. Correct.

1 But there were detailed analysis suggestive
2 of an association with increased risk.

3 Q. This study had a participation rate of
4 54 percent among the control group; right?

5 A. Correct.

6 Q. And the authors noted that low response
7 rate among controls was a limitation to their study;
8 right?

9 A. Correct.

10 Q. And if you turn to page 10 of the study,
11 you would agree with me that the authors of the
12 Purdue study state that they cannot rule out the
13 possibility that the association between PCE and
14 kidney cancer may have arisen due to chance; right?

15 A. Correct. That's a limitation of any study.
16 You can't control for every variable.

17 Unlike the other studies, this study did
18 account for obesity, hypertension, and smoking. So
19 there's no one perfect study out there. And, again,
20 there's going to be limitations to a lot of studies
21 where you're dependent on a cohort returning surveys
22 or lack of long-term follow-up.

23 And these have -- you can't use them in a
24 vacuum; right? You have to account for limitations
25 in every kind of literature to support it.

1 Q. Sure.

2 You would agree with me that the authors of
3 this Purdue study noted that they cannot entirely
4 rule out the possibility that selection bias
5 influenced their results; right?

6 A. Again, they have to identify limitations,
7 and that's part of every research article.

8 Q. Is that a yes, though?

9 A. Yes.

10 Q. The study did not consider genetic
11 predisposition; correct?

12 A. Correct.

13 Q. Or family history of kidney cancer?

14 A. Let me make sure it's not on the table.

15 Q. Sure.

16 A. Hypertension, body mass index, smoking are
17 accounted for. Pre-genetics is not.

18 Q. The study did not consider diabetes;
19 correct?

20 A. No.

21 Q. Or alcohol consumption?

22 A. Nope.

23 Q. Or other occupational exposures such as
24 jobs held for less than 12 months?

25 A. Yes.

1 MR. MARQUINA: Could we go off the record
2 for a few minutes?

3 THE VIDEOGRAPHER: Okay. Going off camera.
4 The time is 1:14 p.m.

5 (Recess from 1:14 p.m. to 1:27 p.m.)

6 THE VIDEOGRAPHER: Back on the record. The
7 time is 1:27 p.m.

8 BY MR. MARQUINA:

9 Q. Dr. Josephson, are you aware what the
10 background lifetime cancer incidence rate is?

11 A. Can you repeat that?

12 Q. Are you aware of what the background
13 lifetime cancer incidence rate is?

14 A. I'm not familiar with that term.

15 Q. Is it fair to say that you do not discuss
16 background lifetime cancer incidence rates in either
17 of your reports?

18 A. Correct.

19 Q. Are you aware of the phrase "cancer slope
20 factor"?

21 A. No.

22 Q. Are you aware of the term "inhalation risk
23 unit"?

24 A. I've seen it used in some of the reports,
25 but I don't use it.

1 Q. Is it fair to say you did not use the
2 inhalation risk unit in your report for either
3 Mr. Howard or Mrs. Tukes?

4 A. Correct.

5 Q. Is it fair to say that you do not express
6 Mr. Howard's cancer risk as a probability?

7 A. Can you be more specific?

8 Q. In your reports, you did not express the
9 likelihood of Mr. Howard developing kidney cancer
10 following his exposure to Camp Lejeune water as a
11 percentage; right?

12 A. Correct. It's not -- it's not listed as a
13 number.

14 Q. The same is true for Mrs. Tukes; right?

15 A. Correct.

16 But if you extrapolate more likely than
17 not, I would say at least 50 percent of two factors
18 being counted for, so it would be 51 percent.

19 Q. And just so I have it right, is it your
20 testimony that both Mr. Howard and Mrs. Tukes were
21 51 percent likely to have developed their cancers
22 following their exposures to Camp Lejeune water?

23 MR. WILMOTH: Object to form.

24 THE WITNESS: I think I'm extrapolating to
25 give you a defined number, but I'm not using an

1 objective number. I'm using the term "more likely
2 than not" as a general term.

3 BY MR. MARQUINA:

4 Q. I think earlier you testified that you have
5 had patients and you've treated patients with
6 occupational exposures to TCE and PCE; is that
7 right?

8 A. Yes.

9 Q. Have you treated patients with exposure to
10 TCE or PCE in any other context aside from
11 occupational exposures?

12 A. Well, occupational exposure is a primary
13 risk that I'm aware of outside of the scope of this
14 case regarding contamination from drinking water. I
15 can't recall specifically.

16 MR. MARQUINA: Okay. That does it for me.
17 No further questions for me.

18 MR. WILMOTH: All right. Thanks. I'm
19 going to have just a few questions.

20

21 EXAMINATION

22 BY MR. WILMOTH:

23 Q. All right, Dr. Josephson. One question I
24 wanted to ask you about, and this is probably the
25 only exhibit I'm going to show you, I'm going to go

1 back to the Jacqueline Tukes report. I believe it
2 is Exhibit Number 11.

3 A. Yeah.

4 Q. And looking on page 7.

5 Just let me know when you get there.

6 A. I'm there.

7 Q. Okay. I just want to make sure it's clear
8 for the record. Right in the middle of that page,
9 there's a paragraph that starts "at the time of
10 original diagnosis."

11 Do you see that?

12 A. Yes.

13 Q. Can you read that paragraph and tell me
14 about Mrs. Tukes' smoking history?

15 A. She was a nonsmoker.

16 Q. For how long was she a nonsmoker?

17 A. Lifetime.

18 Q. Okay. Thank you, Doctor.

19 You were asked some questions about the
20 studies you considered and their limitations.

21 Do you recall those?

22 A. Yes.

23 Q. Did you consider the limitations to each of
24 these studies that you reviewed?

25 A. Of course. I think every study has to have

1 some inherent limitations. There's no such thing as
2 a perfect study which you can account for every
3 single variable when talking about -- when you're
4 talking about risk factors.

5 In the ideal world, we would be able to
6 account for every identifiable or known risk
7 factors. But that's just the nature of interpreting
8 data in the published literature.

9 Q. And having considered the limitations, do
10 you still find those studies helpful in supporting
11 your opinions in these two cases?

12 A. Yes.

13 Q. And, Doctor, all the opinions in the Tukes
14 report and the Howard report as well as the opinions
15 you've given here today, do you hold all those
16 opinions to a reasonable degree of medical
17 certainty?

18 A. Yes.

19 MR. WILMOTH: No further questions.

20 MR. MARQUINA: None for me.

21 THE REPORTER: Counsel, did you need a copy
22 of the transcript?

23 MR. WILMOTH: Yes.

24 THE REPORTER: How about video?

25 MR. WILMOTH: Let me find out because I'm

1 not sure what our policy is.

2 THE VIDEOGRAPHER: All right. Going off
3 camera. The time is 1:32 p.m.

4 THE REPORTER: They are ordering a rough.
5 So per code, I need to offer that as well to you.
6 Did you want a rough or are you okay?

7 MR. WILMOTH: Yes, we want to get a rough,
8 and he's going to read and sign.

9 (Whereupon, at 1:33 p.m., the taking of
10 the deposition of DAVID JOSEPHSON, M.D.
11 was adjourned.)

12 --oOo--

13

14

15

16

17

18

19

20

21

22

23

24

25

DEPONENT'S DECLARATION

I, DAVID JOSEPHSON, M.D., declare under penalty of perjury that I have read the foregoing transcript, and I have made any corrections, additions, or deletions that I was desirous of making, and that the foregoing is a true and correct transcript of my testimony contained therein.

Executed this ____ day of _____,
20____, at _____, _____.
(City) (State)

DAVID JOSEPHSON, M.D.

I, DAVID JOSEPHSON, M.D., do hereby certify that I have read the foregoing statement and that, to the best of my knowledge, said statement is true and accurate (with the exception of the following changes listed below):

[illegible]

877-370-3377
Case 7:23-cv-00897-RJ Document 508-1 Filed 08/26/25 Page 151 of 193

REPORTER'S CERTIFICATE

I, SUSAN MYONG, Certified Shorthand
Reporter No. 13365 in and for the State of
California, do hereby certify:

That, prior to being examined, the witness
named in the foregoing deposition was by me placed
under oath to testify to the truth;

That said deposition was taken down by me
in shorthand at the time and place therein named and
thereafter reduced to typewriting through
computer-aided transcription;

That said deposition is a true, correct,
and complete transcript of said proceedings taken to
the best of my ability.

I further certify that I am not interested
in the event of the action.

The dismantling, unsealing, or unbinding of
the original transcript will render the Reporter's
Certificate null and void.

WITNESS MY HAND this 30th day of June,
2025.



SUSAN MYONG, CSR No. 13365

&	1.54 136:23	13.04 72:18	1987 72:25
& 3:7	1.60 133:15	130 5:18	1:14 143:4,5
0	1.8 91:25 92:2 92:11,21 93:2 93:5,6	13365 1:24 2:19 8:3 151:5 151:25	1:27 143:5,7
0.84 128:1	1.82. 77:19	134 5:21	1:32 2:18 7:2 148:3
0.86 133:15	10 5:6 30:5,8 70:20,23 73:7 73:8 75:17	137 6:3	1:33 148:9
0.91 133:5 136:17	113:25 133:23 141:10	14 5:13 82:17 91:19 119:2 126:4 130:16	2
0.94 134:11	100,000 91:20	14,933 24:13	2 4:16 18:17,18 62:22 93:23 113:3,16,17 129:17 136:3,5 136:12,13
0.95 132:20 136:22	103 5:12	140 6:4	2.16 128:1
0.96 132:13	10:34 42:7,8	145 4:5	20 4:21,23 21:20 24:16 50:13,15 85:12 87:15 149:14
00897 1:5 2:5	10:46 42:8,10	15 5:15 24:23 24:24 26:19 100:20 111:18 116:5 128:6	20,000 27:8
02903 3:8	11 5:7 42:18 146:2	155 77:17	200 2:16
1	119 5:13	16 5:18 91:19 130:20	2000 134:25
1 4:14 18:2,3,8 62:12 77:4,5 103:23	12 5:9 75:5 124:3 126:15 130:4 142:24	17 5:21 62:14 134:21,24	20044 3:14
1.01 134:8	12,000 23:17	17,000 27:4	2005 91:18
1.03 133:2	12,293 24:19	18 1:17 2:18 4:14,16 6:3 7:1 7:7 137:12	2007 22:10
1.06 132:10	128 5:15	181.37 72:15	2008 22:10 112:14,20
1.11 136:10	12:11 105:20 105:21	18711 151:24	2009 64:8
1.12 134:5	12:22 105:21 105:23	19 4:19 6:4 140:13,16	2011 60:25 61:12 93:21
1.16 133:5	13 5:12 71:22 71:24 103:17 103:18,20 115:14 116:4,5 116:7 125:25 126:4,18	1975 132:5	2012 61:11 103:5
1.18 132:13 133:12		1985 72:24 73:4 130:2 132:5	2014 71:20 75:13 134:25
1.18. 132:20			
1.21 136:21			
1.21. 77:14 136:11,20			
1.3 127:19			
1.36. 119:12			

2014a 75:2 76:1 124:4 125:5	62:4,6,20 63:22,23 77:3 132:1	51 144:18,21 517 104:1 54 82:19 141:4 555 3:4 59 115:8 116:7	800 3:5 82.85 72:12 8635 9:1 8889 2:15 7:10
2014b 128:14 2017 122:7 2018 103:10 104:20 202 3:15 2020 61:25 63:5 2023 25:22 27:24 115:4 2024 15:7,22,22 25:22 115:2,4 134:18 2025 1:17 2:18 7:1,7 91:12 151:23 23 4:25 24 5:3 251 71:8 77:15 26 5:4 27 5:5 81:2 27.1 119:10 27701 3:5 28 81:2 288 121:5 289 119:19 120:3 290 120:8	3,100 77:5,6 3.65 72:8 30 5:6 104:20 104:24 30th 151:22 340 3:14 340-2572 3:15 343 71:11 35 85:11 380 77:17	6 6 4:25 23:19,20 76:22 77:10,16 136:2 139:17 6,000 77:2 60 22:24 72:21 87:6 65 82:15 93:23	9 9 5:5 27:11 9,500 27:2 90th 119:9,17 95,000 27:2 9:53 2:17 7:2,8
	4	7	a
	4 4:21 19:24 20:1 45:23 62:20 91:15 137:3 139:24 40 22:23 81:1 40,000 77:7 42 5:7 44.1 119:11 45 82:18 46 106:3,21	7 5:3 24:5 77:12,18 132:1 140:19 146:4 7,700 77:6,7 70 71:14 70s 116:10 72 116:8 7409936 1:25 75 5:9 7:23 1:5 2:5	a.m. 2:17 7:2,8 42:7,8,8,10 ability 11:2 151:16 able 62:20 147:5 above 53:12 absence 138:12 absent 93:1 absolute 118:6 118:9,13 absolutely 25:4 83:13 84:23 88:11 90:23 108:23 abstracts 31:3 31:7 academy 64:8 acceptance 29:1 68:11 accepted 29:4 68:9,13,16
	5	8	
3	5 4:23 20:12,13 25:18 113:25 127:15,17,23 133:23 138:8 5,500 27:22 5,937 71:6 77:8 50 81:2 144:17	8 4:4 5:4 26:6,7 26:20 27:20 42:23 78:6 127:16,17 137:2 80,000 91:11	
3 4:19 19:8,9 30:4 43:19			

account 69:24 74:16 88:7 92:11,15 120:12 121:3 123:22 124:18 130:13 141:18 141:24 147:2,6 accountant 32:4 accounted 90:4 123:18 142:17 accounts 91:14 accredited 31:19 accumulative 140:22 accurate 11:6 21:3 150:6 accurately 24:1 115:20 acknowledges 126:1,5,8 acquired 46:1 acronym 35:6 act 43:13,21 44:4 46:21 48:20,23 49:1 53:14 act's 48:9 action 41:23 42:2 49:22 84:17 151:18 active 132:4	actual 57:16 125:3 127:8 actually 15:25 113:6 add 53:17 addition 19:20 90:2 104:15 additional 20:22 56:18,22 58:14 116:6 138:15 additions 149:8 address 8:25 78:8,14 107:21 108:7 addressed 49:16 adequate 41:21 adjourned 148:11 adjusted 132:9 132:19,25 133:11 134:4,7 134:10 adoption 94:3 affect 10:24 11:2 46:12,15 51:1,8,11 52:19,21 84:22 affects 45:25 african 82:25 108:2,5 age 82:5,14,19 106:3,21	107:18 114:9 agencies 35:10 agents 56:22 59:22,25 ago 10:13 15:3 90:15 agree 16:22 28:12,18 29:10 29:20 44:2 53:25 54:8,12 56:23 58:17 63:13 64:18,21 65:8,12,18,22 74:15 79:8,11 79:14,17,25 80:4,8,11,15 81:11,14 82:1 82:5,14,17,25 83:8,14,21,25 84:5,12,21 85:4,14,24 86:1,4 88:1,3,4 90:19 91:10,18 91:23 92:2,13 92:19,24 93:21 93:25 96:8,14 104:6,13,23 105:1,4,7,10,25 106:20 107:20 108:11 109:17 110:4 111:24 112:2,6,10 113:19 114:5 114:12,22	115:13,16,19 115:23 116:2 119:23 120:16 120:21,25 122:2,24 123:4 123:10,14 125:25 127:5 129:14 130:5 138:11 139:18 140:1,19 141:11 142:2 agreed 108:2 agreement 16:16 aided 151:13 alcohol 94:20 121:22 125:19 129:11 131:24 135:25 139:11 142:21 allan 4:15 5:4 7:19 14:17 17:19 18:10 26:12 allen 20:25 101:22 102:6 allen's 102:13 alluded 28:3 94:12 126:23 alongside 43:3 alterations 102:7 alternate 57:22
--	---	--	---

alternative 58:6 america 7:12 33:2 american 31:19 35:7 108:5 americans 83:1 83:2 108:2 amount 24:2,9 24:19 25:24 26:1 27:25 65:23 66:19 68:22 72:5 73:23 amounts 67:14 analogous 45:6 analogy 44:17 analysis 55:10 60:14 101:9 140:21 141:1 analyzed 104:17 analyzing 53:21 animal 45:17 announce 42:11 annual 25:16 ans 3:13 42:14 answer 9:17 10:2,6 11:11 11:12 13:22,25 70:17 76:18	answering 10:10 appear 61:16 63:7 appearance 42:12 appearances 3:1 application 51:1,8 applied 44:11 45:17,21 46:23 50:17 apply 46:17 50:21 51:13 53:3 69:4 applying 45:19 50:21 appropriate 28:15 57:19 appropriately 29:5 111:11,13 approximately 22:21 91:10,15 april 115:2 areas 28:14 arisen 141:14 arrangement 23:7 arrive 114:1 article 55:10 142:7 aschengrau 70:4 118:24	119:5,17,20 120:16,25 asco 34:22,25 35:1 aside 16:24 28:11 122:5 128:5 130:16 134:16 137:8 145:10 asked 15:15 34:20 35:9 50:13 146:19 asking 10:5 110:17 assembly 94:24 assess 51:24 94:17 135:6 138:19 assessed 47:23 124:14 128:19 135:13 assessment 32:21 33:6,9 33:23 34:4,10 34:13,15,18,21 35:4 41:19 53:7 70:11 74:16 103:9 122:7,17 131:10 135:4 assessments 33:12,17,20 125:13	assignment 17:9 126:6 associated 123:1,6,12,16 association 29:19 31:19 45:11 53:22 85:13 141:2,13 assume 10:2 assuming 16:1 53:13 atsdr 53:6,11 53:15 122:17 123:21 atsdr's 49:10 122:6 attached 18:4 18:19 19:10 20:2,14 23:21 24:6 26:8 27:12 30:6 42:19 75:6 103:19 119:3 128:7 130:21 134:22 137:13 140:14 attorney 9:2 11:10 14:9 31:16 author 122:22 authored 52:6 authors 138:18 140:20 141:6 141:11 142:2
---	---	--	--

available 112:18 average 67:25 116:9 140:22 aware 14:22 15:2 45:9 48:25 53:2,5,6 53:11,15 61:9 63:4 64:15 68:7,11 69:3,9 70:10 73:2,22 74:5 93:20 122:21 123:20 131:3 143:9,12 143:19,22 145:13	bar 31:19 base 5:10,16,20 5:23 75:11 123:23 126:5 126:10 128:11 132:5 based 22:13 29:7 60:9 74:18 101:21 102:9 107:7 114:3 117:20 133:25 basing 110:9 basis 65:16 bates 104:1 bear 9:11 47:12 68:19 beared 101:12 102:3 bearing 60:23 101:9 bears 60:19 began 132:4 beginning 2:17 behalf 2:15 7:17 8:13 42:14 believe 15:19 20:12 34:5 41:2,9,13 44:7 48:2 60:6 61:12,18 62:23 70:6 81:8 98:15 100:18	107:5 113:6 127:1 130:1 146:1 believes 87:2 benjamin 116:21 benzene 37:21 38:7 39:8 56:8 56:15 57:2 58:19 66:24 68:22 71:13 72:20 118:16 best 12:3 39:14 79:1 150:5 151:16 better 44:25 84:16 94:3 beverly 1:16 2:16 7:1,10 bias 142:4 biased 54:15,16 bilateral 105:5 105:11 106:7 106:25 bill 25:24 27:1 billed 23:9 24:2 24:9,12,19,24 26:1 27:7 billing 116:15 116:18 billion 73:22 74:5,12 biochemistry 37:2	biologically 79:18 bird 12:5 116:24 117:2 117:13 bird's 117:5 bit 11:25 41:12 bladder 15:1 94:14 bmi 85:11,12 bmis 81:1,2 body 41:24 85:18,24 86:1 142:16 boisclair 3:7 bottom 71:23 73:8 104:1,11 126:19 boulevard 2:16 7:10 bove 71:19 74:21 75:2,13 76:7,16,21 122:21 124:3 125:5 126:1,5 126:8 127:19 128:14 130:17 bove's 76:1 134:17,25 box 3:14 branch 3:12 break 10:8,9,11 11:25 42:5 105:18
b			
b 46:2,3 85:2 back 13:15 24:18 25:8 42:9,16 53:5 69:8 70:9,19 73:6,21 81:9 81:20 93:9 95:16 98:5 99:1 102:12 105:22 124:3 143:6 146:1 background 22:13 30:21 90:24 92:15,20 92:23 143:10 143:12,16			

bring 22:3	138:8	51:19,20 55:18	110:23 111:8
broad 85:16	camera 7:5	55:22 57:8	111:16,19,22
broader 40:10	42:6 105:19	65:25 76:4,10	112:12 113:22
brought 85:16	143:3 148:3	77:14 79:12,15	114:7,11,19
101:24	camp 1:5 2:5	80:9,12,13,17	117:7,19 118:5
buffalos 78:5,9	5:10,16,20,23	80:20 81:1,12	118:7,12
78:12	7:11 9:4 14:13	81:15 82:3,6,8	119:12 120:5
build 118:15	14:22 38:11	82:15,18,22	120:11,13
burden 46:1	43:13,21 44:3	83:1,6,16,16,19	121:14,17
49:17	46:20 48:9,19	83:20,22,23	124:20,22,24
burdensome	48:22,25 49:1	84:1,2,25 85:1	125:4,12,15
44:25	53:13 64:9,25	85:14,16 86:10	126:25 127:4
burton 66:16	65:5 66:20	86:23,23 87:7	127:25 129:5,7
business 8:24	72:23 75:11	87:7,17,24	130:12,14,17
bz 71:14 72:20	76:3,17,24	88:2,5,9,12,16	130:25 131:19
c	90:22 92:6	89:3,7,8,24	132:2,9 133:24
c 35:7	95:7,25 109:5	90:9,11,20,25	134:3 135:21
calculate 76:16	109:8,19 110:6	91:7,8,11,12,14	137:21 139:5,7
calculation	110:13,24	91:15,19,24	139:22 140:10
91:22 92:1	122:18 123:22	92:3,21 93:1,7	141:14 142:13
93:4	126:9 127:20	93:11,16,18,19	143:10,13,16
calculations	127:21 128:12	94:14 95:8	143:19 144:6,9
66:12,18 67:1	132:3,3 133:25	96:1 97:7,10	cancers 49:3
67:4,8,13,23	134:5,8,11	98:18,21,23,23	82:9 84:9,18
68:3 70:24	136:6,16,17	98:25 99:2,10	86:7 87:3,11
71:25 73:12	144:10,22	99:17 100:17	87:11 91:3,3,6
75:25 77:22	cancer 5:13,18	101:3,7,10,11	92:11 93:5
california 1:16	6:5 15:1,1	101:15 102:3,5	99:24 102:9,19
2:17 7:1,11	17:17 31:10,12	103:2 105:2,5	119:24 122:19
151:6	37:25 38:2,5,7	105:15 107:9	127:4 136:10
call 106:8	38:10,20 39:17	107:11 108:3	144:21
callahan	39:23 40:1,2,5	108:12,18	canteens 78:5
137:10,17	40:7,12,14,24	109:12,18	78:15,18
	47:4,8,17	110:5,12,16,18	

carcinogen 34:4 49:23	29:24 31:8 39:10,11,16,21	120:5,11 121:4 124:19 130:14	89:8,15,20 90:7 92:3,12
carcinogenic 81:18	40:6 41:10,20 43:1,3,4 44:6	147:11	92:12 93:7
carcinogens 49:2 51:22	45:18 47:23 49:3,19 50:8	catch 33:14	96:16,21
carcinoma 39:24,25 40:6	50:20,21 52:14 54:23 55:23	categorical 77:12	118:12 126:22
40:9,11 55:18	56:2,24 57:1,6	categories 74:23 76:9	127:9 130:6
55:22 57:7	57:18 58:18,24	category 71:18	cell 39:24 40:6
60:1 79:21	59:4 60:16	76:21 77:9,13	40:9,11 55:17
80:1,5 88:22	61:3 62:2	77:17,18	55:21 57:7
93:22 107:18	64:13 66:12,23	causal 46:4	59:25 79:15,20
113:21 133:1	67:3 69:10	60:7 117:19	79:21 80:1,5
care 22:16 29:1	72:2 79:3 95:5	causation 5:4,7	88:21,22 93:22
49:24 59:2	97:1,4 98:7,10	11:23 19:19	102:7,25
106:1,14	101:24 102:14	26:12 50:24	107:17 113:21
107:14 112:3	103:25 109:3	66:2,13,15	133:1,1
carlo 34:9	106:13 117:14	116:20,23	cells 86:4
carolina 1:2 2:2	118:2 145:14	117:17 118:14	censured 41:23
3:5 7:14 9:6	cases 1:7 2:7	cause 38:20	center 104:11
carries 85:11	15:1 23:12	79:11 86:8,11	certain 46:23
case 6:5 12:12	25:21,23 26:2	87:23 88:2	47:10 51:18,19
15:16,18 16:4	28:7,7,19 31:6	89:1 94:6	59:21 81:4
16:22 17:4,14	38:22,25 39:2	95:15,20 96:10	94:22
18:16 19:6,20	39:4,7,14,18	98:17 99:16,23	certainty 50:7
19:23 20:11,23	40:16,18,22	101:3,6,15	50:20 51:3,10
21:16 22:8,9	41:3,17 46:24	102:5,18 103:1	147:17
23:3,10,11,12	50:2 59:9,18	105:14 117:7	certificate
23:24 24:3,10	59:20,21 69:5	caused 76:3	150:1 151:1,21
24:13,19 25:2	87:13 88:2,16	85:14 90:12	certification
25:20 26:2,14	88:22 89:25	93:12 95:8,25	32:8 36:15
26:21,24 27:16	91:11,15,20	118:5	certifications
28:2,2,10	92:19 109:4	causes 88:4,9	35:17
		88:13,17 89:7	certified 2:19
			8:3 151:4

certify 150:3 151:6,17 chance 112:7 114:1 141:14 chances 113:24 change 47:22 150:9 changed 28:4 changes 150:7 characteristics 80:2 93:17 characterize 29:6 charge 23:5 27:22 28:1 charged 25:9 28:8 chart 70:22 71:2,14,23,25 72:4 102:22 chemical 93:10 122:25 123:15 124:6,11 128:16 137:24 chemically 93:17 chemicals 56:25 57:1 66:22 67:15 72:6 117:13 chloride 37:19 38:4 39:5 56:12,15 57:2 58:10 66:23	68:23 71:10 72:17 118:18 chlorinated 6:5 chose 41:3 chrome 55:6 chronic 81:19 83:5 94:18 114:10,20,23 circle 13:15 93:9 98:5 102:12 cites 140:7,8 city 149:15 civil 3:12 civilian 5:15,18 5:22 128:10 clarify 10:1 99:4 127:12 classification 53:16 75:16,20 classifications 76:1 cleaners 6:3 138:6 cleaning 138:7 138:15 clear 17:18 79:20 88:21 95:11 133:1 146:7 clearly 9:17 clinic 25:10 clinical 35:7 45:7 51:16	80:1 clinician 44:8 44:12 clinicians 60:24 106:14 close 25:10 code 148:5 cofounder 129:13 cohort 5:11,16 5:20,23 6:3 75:11 76:24 128:12 134:1 138:20 141:21 cohorts 137:21 140:10,11 coj 48:5 coj's 50:24 collection 103:22 come 14:25 21:20 54:7 76:7,9 77:17 83:11 94:13 118:1 comes 51:18 comment 123:25 common 79:20 79:23 88:13 91:4,5,8,9 communicati... 13:23 14:8,12 14:16,19	comorbid 94:17 company 27:18 comparable 73:17 74:2 compare 66:3 compared 75:24 81:24 91:2,6 114:9 136:7 comparing 45:1 127:20 comparison 91:5,7 132:2 compensation 23:2 complete 21:3 30:19 64:11 151:15 completely 87:16 complication 49:25 complies 8:5 complying 100:6 compounds 58:14 computer 151:13 concentration 67:18 74:6 concentrations 117:18
--	--	---	--

concept 44:11 44:20,21 conclude 46:4 76:20 101:18 105:14 119:15 concluded 70:19 71:16 conclusion 54:7 99:21 100:3 102:13 condition 96:11 conditions 11:1 94:17 conduct 93:10 conducted 33:11,16,19 103:10 123:20 conducting 54:9 59:8 confidence 126:21 127:25 130:7,8 132:12 132:15,19,23 133:4,7,11,14 133:20 136:22 137:6 connection 23:3 consider 29:21 67:5 82:23 92:20 97:23 121:1,8,11,13 121:16,19,22 125:6,8,11,14	125:17,19,22 128:22,25 131:12,16,18 135:16 138:23 139:13 142:10 142:18 146:23 consideration 20:23 29:12 47:7 67:8 90:6 considered 4:15,18,20,22 4:24 18:10,24 19:6,14,22 20:5,18 21:2,4 21:17 22:1 29:25 30:1 47:10 61:2,5 61:23 62:1,6 62:10,13,19,21 63:14,16 64:19 65:17 66:4,6,8 67:6 73:19 86:11 97:16,20 98:1,5 99:12 100:24 108:20 109:4 111:21 119:24 120:5 120:11 122:6 146:20 147:9 considers 74:19 constraints 53:16 consulted 40:20	consumption 121:23 123:7 125:20 129:11 131:24 135:25 139:11 142:21 contact 15:14 contacted 15:5 15:8 contain 30:23 contained 149:10 contaminants 122:18 contaminated 5:10,13,15,23 73:2 75:10 76:3 78:4 95:7 95:24 123:21 128:11 129:19 contamination 129:19 145:14 context 29:24 44:14 45:25 46:12 51:17,17 53:1 145:10 continued 5:1 6:1 continuing 88:8 contribute 87:8 102:25 contributory 52:1,2	control 6:5 45:18 100:7,10 100:13 128:22 128:25 129:12 129:15 131:12 131:15,18 135:16 138:23 139:13 141:4 141:16 controls 121:4 141:7 conversations 16:14 conversion 69:23 convert 73:11 120:22 copy 21:4 48:8 48:11 147:21 corps 5:20 correct 9:8,9 10:20 15:18 17:23 24:4,11 24:17,20,21 25:14,15 26:15 26:18,21,22,25 27:6,9,23,24 28:17,22 29:3 31:16,17,21 32:2,3,4,5,7,10 32:13,16,19 35:13,16,21,24 36:2,5,7,12,13 36:14,17,20,23
--	---	--	---

37:1,6,10,12,13	95:21,22 96:2	131:23,25	counted 144:18
37:15,16,18,20	96:7 97:1,4	132:14,17,18	couple 114:18
37:22 38:1,3,6	98:18 99:6,7	135:2,5,15,18	course 33:3
38:8 43:5,22	99:10,11,15,19	135:20,22,24	98:8 123:9
43:23 44:1,4	100:1 101:3	136:1,17,24	146:25
46:10 50:8,9	102:15 103:6	137:1 138:17	courses 31:24
53:8,23,24	103:11 104:4	138:22 139:4,6	32:17 33:5,8
54:12,17,17,21	104:18,22,25	139:8,10,12,16	36:3,24
55:14,19,20,21	107:16 108:9	140:25 141:5,9	court 1:1 2:1
56:3,4,6,7,9,10	108:10,14,15	141:15 142:11	7:13 9:13
56:12,13 57:3	108:18 109:6	142:12,19	10:17 42:2
57:9,13,23,24	111:9,16,20	143:18 144:4	craft 54:3,4
58:1,2,4,5,7,8	112:9,13,16,23	144:12,15	crafted 54:1,10
58:10,11,19,20	112:25 113:1	149:9 151:14	csr 1:24 151:25
59:14 62:2,19	113:11,14,16	correction	cubed 70:14
63:17 65:1,2,6	114:25 115:6	150:1	cumulative
65:11,13,21	115:22 116:1	corrections	67:17 70:5
66:6,16,24,25	116:15,22,25	149:7	71:3,3 72:4
67:2,16 68:6	119:1,18	correlate 45:17	74:7 76:5,7,22
71:5,7,8,9,11	120:24 121:9	correlation	77:1,8,12,15
71:12,14,15,19	121:10,12,14	82:11	122:24
72:3,6,7,10,13	121:15,17,18	cost 28:6	cure 114:18
72:15,16,19,22	121:20,21	costly 44:24	current 8:24
73:1,9,10	122:1,7 124:12	costs 25:6,9	28:25 30:17
74:24,25 75:2	125:6,7,10,16	council 64:8	currently 10:23
75:3,15,18,19	125:18,21,23	counsel 3:1	28:8 39:16
75:23 76:13,14	125:24 126:6	7:16,24 11:9	112:7,11
77:23 78:13,16	126:10,23	11:24 12:13	114:22
78:20 79:15,16	127:11,14	13:19,24 14:5	curriculum 5:6
79:21,22,24	128:18,24	16:6 61:14	30:10
82:16 83:7,24	129:2,4,6,8,10	147:21	cv 1:5 2:5 30:14
84:7 89:4,16	129:16,22,25	counseling	30:17 31:2,14
89:18 91:1	130:10 131:11	106:2 107:15	
93:15 95:10,19	131:14,17,20		

d	decade 82:9	deletion 104:8	describe 34:24
d 4:1	decades 114:18	deletions 149:8	40:16 46:13
d.c. 3:14	deceased	delivered	64:24 65:4
data 45:17,18	115:10,13	119:10,25	94:10
47:5 54:5	decide 59:15	demographic	described
60:10,24 73:18	decided 39:19	121:3	104:9
79:6 84:18	decides 54:25	demonstrated	desirous 149:8
109:23 110:9	declaration	137:20 140:9	despite 100:14
117:25 121:3	11:21 14:2	department	detail 95:1
125:3 147:8	149:1	3:11 9:3	detailed 41:8
database 58:24	declarations	depend 25:2	94:16 141:1
59:10	17:24 109:13	dependent 30:2	detected
date 7:7 13:11	declare 149:5	141:21	120:14
15:4,21 23:10	defendant 2:15	depending 52:3	determine 76:2
55:9	3:10 4:13 5:2	129:20	93:11 94:6
david 1:15 2:14	6:2 8:14	depends 81:6	96:9
4:2,14,17,19,21	defendants	deployment	determined
4:23 7:15 8:12	22:19,25	123:23 126:10	113:5 114:17
8:23 18:9,23	defense 22:17	deponent 7:14	determining
19:13 20:4,17	define 65:14	deponent's	92:14 96:12
30:10 148:10	69:23 81:4	149:1	123:5,11,16
149:5,20 150:3	83:10 134:15	deposed 9:7	develop 65:24
150:25	defined 84:17	25:10	82:9 83:16,18
day 25:11 27:2	144:25	deposition 1:14	83:23 84:1
27:4,8,23	defines 87:10	2:14 7:9 9:13	90:20 95:8
51:17,17 70:13	defining 92:23	11:9,20,23	96:1 102:8
83:18 87:6	definition	12:4 14:10,14	110:23
135:10 149:13	40:10 45:22	19:19 22:4	developed
151:22	50:3 65:9 66:7	103:24 107:8	84:18 109:18
death 114:9,20	degree 49:21	109:15 148:10	110:5,18
126:22 127:10	50:7,19 51:2,9	151:8,10,14	124:22 144:21
130:7	106:16 147:16	depositions	developing
	degrees 37:2,5	12:6,8 46:22	21:5 80:9
	37:8,11	64:13 118:1	90:25 91:24

92:21 93:1 125:2 144:9 development 17:17 46:25 47:4,8,17 49:2 49:25 59:25 76:10 80:13,16 81:12,15 82:2 82:6,21 83:6 83:20 92:16 93:7 98:21,23 98:24 99:2 101:9,25 102:5 103:2 114:20 130:13 diabetes 81:14 81:22,23 121:19 125:17 129:9 131:22 135:23 139:9 142:18 diagnosed 83:1 94:14 95:17 100:11 106:20 108:11 127:3 diagnoses 82:18 diagnosing 52:9 diagnosis 82:15 89:23 92:19 94:5,11 96:9 96:15 97:11 99:13,18,25	101:16 107:22 108:9,22 111:19 146:10 dialysis 115:5 die 86:4 124:24 127:4 130:14 died 107:6 124:20 differ 50:20 difference 80:19 different 28:1 47:11,11 49:2 50:21 51:25 60:3 74:2 79:25 80:4,5 83:9 85:8,11 93:18 102:7 117:24 120:18 123:2 differential 89:23 92:18 94:5,11 95:3 96:8,14 97:10 97:21 98:2 99:13,17,24 101:16 107:22 108:8,21 differently 84:22 difficult 45:5 direct 124:6 128:16 138:12	directly 94:24 122:3 137:24 138:19 disagree 32:23 87:4,12 117:16 disciplinary 41:23 42:2 disclose 40:23 disclosed 28:9 33:25 40:19 63:16 disclosing 20:9 disclosure 5:5 27:15 discriminate 54:10 discuss 16:3 40:18 143:15 discussed 13:16 14:4 59:23 92:22 96:5 137:6 discussing 31:6 104:3 discussion 42:17 120:9,10 disease 45:12 51:19 81:19 83:5 92:14,16 94:6,18 96:16 105:8,11 111:18 112:11 113:2,5 114:10 114:21,24	124:18 diseases 47:1 49:3 53:17 122:19 dismantling 151:19 disrupt 24:25 distinct 60:15 80:1 district 1:1,2 2:1,2 7:13,14 9:6 division 3:12 7:6 88:25 doctor 31:18 40:18,21 146:18 147:13 doctors 96:9 document 1:6 2:6 18:8,11,13 19:1,3,13,15,17 20:4,6,8,16,19 20:21 21:23 24:1 26:11 27:14,21 30:9 30:11,13,15,19 30:23 42:22 61:20 62:18 63:13 64:10 75:8 128:9 137:16 documentation 41:8,15,17 90:2 107:6
--	---	--	---

documents 12:10,24 13:19 14:6 16:1,2 18:14 19:4,18 21:13,15,22 22:3 33:25 35:11 42:23 103:23 109:14 doing 11:16 56:14 donor 115:10 115:13 dose 67:25 71:3 72:5 74:7 76:9 85:5 119:10,25 doses 70:12,13 81:7 dr 4:19,21,23 7:15 8:19 12:5 18:7 19:12,13 20:4,10,17,24 20:25 23:23 24:8 26:13 27:14 28:12 30:9 42:16,21 66:11,16 67:2 67:9,11,13 68:8,21 69:5 69:13 70:24 72:1 73:11 74:15 75:25 76:1,15,16 77:22 87:2 101:22 102:6	102:13 103:22 105:25 116:21 116:24 120:19 120:22 122:21 125:5 126:1,5 126:8 134:17 134:25 143:9 145:23 drinking 5:10 5:14,16,19,23 64:9 75:10 122:18 127:9 128:11 145:14 drs 12:5,6 117:2,4,12 drugs 94:20 dry 6:3 138:6,6 138:15 due 53:16 104:16 126:21 141:14 duly 8:14 duration 123:10 133:25 134:4,8,10 135:8 140:21 durham 3:5 duty 132:4	114:19 145:4 earned 25:17 easier 43:17 eastern 1:2 2:2 7:13 9:6 economist 32:2 educational 30:20 effect 130:8 effects 37:15,24 38:2,4,7 127:8 eight 16:2 either 31:4 41:8 54:16 63:15 132:5 143:16 144:2 elderly 121:5 elevated 119:11 employ 94:5,11 employees 5:15 128:10 employment 30:20 encompassing 40:5 engine 55:11 ensure 28:24 entirely 142:3 entitled 18:8,22 19:13 20:4,17 26:11,20 27:14 27:17 30:9 75:8 128:9	environmental 33:5,12,17,20 37:8 41:20 46:25 47:3 90:3 102:4,9 108:17,21 109:1,3 epa 35:9 61:9 63:4,24,25 epa's 33:23 34:3,6 60:25 61:25 64:1 70:10 epidemiologic 53:21 69:3 epidemiologi... 29:18 32:12 45:11 epidemiologist 32:6 epidemiology 32:9,15,18 45:19 60:20 69:6 episodes 100:13 equal 47:8,12 73:23 77:4 84:6 equate 52:24 equipoise 52:22 53:12 equivalent 44:16 73:19
	e e 4:1 57:15,15 earlier 41:2 74:20 94:12 96:6 108:1		

erick 3:12 7:20 9:2 erick.marquina 3:15 errors 126:5 esq 3:4,7,12,13 3:13 established 44:22 estimate 88:19 140:1 estimated 70:12 estimates 126:20 127:7 ethnicity 107:21 etiology 39:22 40:14 86:16 92:14 evaluate 28:19 51:25 54:5,6 124:6,9 128:16 evaluated 38:19 59:23 104:20 evaluating 51:18,20 87:22 evaluation 5:9 5:21 61:25 63:5,25 64:1 75:9 94:13 102:21 113:4 116:13 126:24	127:1 evaluations 101:23 102:24 102:24 event 151:18 everyone's 43:17 evidence 49:18 53:8 112:7,11 114:23 122:7,9 122:17 exact 13:11 15:4,21 23:14 26:24 39:20 64:10 70:5 73:18 79:9 93:3 115:20 exactly 16:7 44:10,18 109:10 examination 4:3 8:17 94:16 145:21 examined 8:15 38:13,16 151:7 example 9:18 23:6 29:18 47:9 49:10 60:16 83:12 84:24 85:7 90:16 92:18 122:13 exception 150:6	exclude 29:12 59:16 60:12,13 92:10 excluded 60:9 excludes 92:6,8 92:9 exclusive 86:17 excuse 27:2 68:5 77:24 104:3 120:17 130:7 132:18 133:11 140:8 140:10 execute 16:16 executed 149:13 exhibit 4:14,14 4:16,16,19,21 4:23,25 5:3,4,5 5:6,7,9,12,13 5:15,18,21 6:3 6:4 18:3,8,9,18 18:23 19:9 20:1,13 23:20 24:5 26:7 27:11 30:5 42:18,23 62:11 62:12,22 75:5 103:18,23 119:2 124:3 128:6 130:20 130:23 134:21 134:24 137:12 140:13,16	145:25 146:2 exhibits 4:12 5:1 6:1 existence 86:17 expect 25:11 expectancy 116:9 expected 115:14 expenses 25:5 28:5 experience 28:16 59:1 88:12 114:4,13 117:22 experiences 59:3 expert 5:4,5,7 8:13 11:22 12:1,5,12 15:17 17:14,15 22:7,11,18,22 23:6 25:17 26:12 27:15 28:13,19,23 29:11,20 32:20 33:18 35:2 39:11,18,22 40:13,19 41:10 41:13 46:21 49:14,17 50:3 52:16 64:12 65:15 117:17 117:25
---	---	--	---

experts 64:12 117:17 explain 34:9 41:7 84:9 123:2 exposed 5:10 5:15,19,22 38:10 51:22 68:24 75:10 78:3 87:16 109:19 110:6 110:13,15,18 110:24 119:9 119:24 120:5 120:12 124:10 127:20 128:10 137:21 138:4 138:20 140:11 exposure 6:4 34:6 38:22 39:4,7 41:4,19 45:12 46:25 47:3,6 60:17 60:18 64:24 65:4,10,13,15 65:19,23 66:3 66:4,11,18,19 67:1,8,14,23,25 69:4,25 70:5 71:3,17 72:5 73:9 74:15,23 75:21,21,22,25 75:25 76:2,7,8 76:9,21,22	77:1,4,5,6,8,9 77:12,13,15,16 77:18,21,22 80:15,23 81:18 90:21 93:12 95:24 98:19 101:19 102:4 102:10 109:5 118:2,12 119:16 120:17 122:3,24 123:1 123:5,6,11,12 123:15,16,21 124:7 128:17 131:10 135:4,7 135:9 137:25 138:12,14 140:21,22,23 140:23 144:10 145:9,12 exposures 39:12 47:5 70:11 76:5 125:23 127:9 129:15 135:10 139:14 142:23 144:22 145:6 145:11 express 144:5,8 extended 6:3 extensive 41:18 90:1,2 101:22 124:18	extensively 84:11,16 extent 13:22 extrapolate 144:16 extrapolating 130:11 144:24 extremely 45:5 f facts 30:10 fact 85:21 101:18,23 102:23 factor 52:2,3 80:9,12,16,18 81:12,15 82:2 82:6,21,24 83:5 84:19,22 86:22 87:14 90:10,12,18,21 97:7,9,20,24 98:3,6,13 99:9 100:16,24 103:2 108:18 109:3,8 143:20 factors 34:6 47:7,10,12,14 47:16,18 51:24 51:25 52:2 56:18 80:20 81:4,17,21 83:9,12,15,22 84:2,5,8,13	85:4 86:9,18 87:8 89:10 90:4,5 93:1 101:11 102:2 107:21,25 108:8,17,21 109:1 144:17 147:4,7 factory 94:23 94:25 failed 123:22 fails 116:12 fair 9:20,21,23 10:3,4,6,7,11 10:21 11:13,14 22:24 24:12,16 26:23 27:2,3 40:21 43:24 46:6,8 55:18 57:8,10 58:21 58:23 64:15 66:17 67:7,22 68:20 70:22 71:24 75:24 77:20 86:7,10 89:6,19 91:2 117:9,11 143:15 144:1,5 fairly 91:4,5,6 fall 15:23 106:14 falling 49:23 familial 106:11
---	---	---	---

familiar 9:10 52:22 143:14 family 51:23 80:11 101:10 106:10 121:16 125:14 129:7 131:19 135:21 139:7 142:13 far 24:3 112:19 farmland 33:21 farrin 3:3 farrin.com 3:6 fast 98:25 favorable 54:11 features 93:16 february 73:4 fee 25:13,19,20 26:20,24 28:3 feel 106:13 fees 26:20 felt 41:17 field 29:2 51:12 68:10 94:22 files 17:4 filled 78:9,12 78:15,18 find 41:14 62:20 104:10 147:10,25 findings 54:11 54:11 94:3 finish 10:5,10	first 8:14 13:15 14:22 15:2,5,8 22:6 23:13 35:1 45:1 51:4 102:22 103:5 103:12 106:16 119:22 120:2,4 120:10 136:14 138:20 five 21:1,2 42:4 104:10 fixed 23:6 focus 23:13 34:13 43:18 55:23 focused 59:7 focusing 42:24 follow 6:3 45:4 141:22 following 144:10,22 150:6 follows 8:15 150:9 foregoing 149:6,9 150:4 151:8 form 17:10 21:7 29:14,22 32:22 44:5 48:1,16 53:18 63:18 66:1 68:14 69:1,15 70:15 73:25	78:23 84:14 89:21 107:4 109:20 110:14 110:25 117:15 123:24 144:23 formal 101:8 101:23 102:23 126:25 formally 15:20 17:1 forming 19:6 54:14 forward 101:24 found 59:24 61:18 119:8 127:19 four 66:22 87:6 126:14 framework 117:18 118:15 124:13 frank 122:21 free 110:12,16 111:18 frequency 123:14 frequently 86:2 front 26:16 full 8:21 27:4 111:25 119:22 120:2,4 122:25 fully 88:5 function 112:17 114:16	further 41:12 113:4 145:17 147:19 151:17 future 113:20
			g
			gained 29:1 gallagher 27:17 28:2 game 40:21 garbarini's 103:24 gender 108:8 gene 101:25 102:1 104:16 general 12:2 22:9 29:24 35:2 40:1 44:11 50:1 66:5,15 68:11 80:25 90:20 92:25 98:24 114:10 116:9 116:20,23 117:17 118:14 124:12 136:7 145:2 generally 52:23 68:9,13 85:8 generate 59:5 generically 54:24 genes 104:8,21 104:24

genetic 85:15 85:17 86:2 100:15,18,22 101:2,6,8,12,13 101:14,22,23 101:25 102:2,7 102:21,25 103:1,3,9 104:19 105:14 106:1 107:15 121:13 125:11 129:5 139:5 142:10 genetically 101:19 geneticist 35:13 36:9 genetics 35:18 35:24 36:4 102:14,18 142:17 getting 87:17 93:8 109:22 gibbons 3:13 7:22,22 give 8:7 11:6 60:16 61:6 66:7 88:18 97:17 137:3 144:25 given 30:2 58:13 100:11 102:23 124:11 135:10 147:15	gives 136:5 giving 96:13 go 9:11 10:11 40:10 41:12 71:21 76:22 77:25 83:16,18 87:19 105:18 124:3,23 127:4 130:4,14 135:10 143:1 145:25 goes 98:25 going 9:10 13:21 40:17 42:6 50:14 54:25 79:3 98:25 116:5,6 116:11 125:2 141:20 143:3 145:19,25,25 148:2,8 golkow 7:6 good 8:19,20 44:25 105:17 106:9 goodman 12:6 google 54:24 55:4 109:11 gotten 125:3 grade 113:16 113:17 greater 77:6,7 ground 9:12	group 7:18 8:1 82:19 141:4 grows 82:8 guarantee 79:1 79:2 83:23 114:13 guaranteed 65:24 guarantees 78:22,24,25 79:4,5 guidance 33:24 35:11 53:2 guidelines 34:3 70:11 h hadden 12:5 hadnot 72:21 73:3 129:24 half 27:2,23 88:20 89:2 hand 8:4 151:22 handbook 34:7 handed 18:21 18:22 19:12,13 20:16 42:25 75:8 103:22 119:6,6 128:9 130:23 134:24 137:16 handing 18:7	hanley 3:13 7:22 happen 116:11 124:19 happens 85:17 happy 77:25 hard 81:7 harder 81:4 hatten 116:21 117:2,4,12 hatton 66:16 hazard 76:6,9 77:11,18 127:12,19 131:8 132:9,19 132:25 133:11 134:4,7,10,13 137:3,5 hazardous 117:6 head 9:20 health 33:11,16 33:19 37:9 96:10 healthy 87:16 hear 9:25 11:9 heard 14:24 heavy 98:16 held 7:9 42:17 142:24 help 43:6,9,10 helpful 147:10 hereditary 103:1 105:1,4
--	---	--	---

107:17 hereto 18:4,19 19:10 20:2,14 23:21 24:6 26:8 27:12 30:6 42:19 75:6 103:19 119:3 128:7 130:21 134:22 137:13 140:14 heterogeneous 79:18 high 75:21 76:8 77:6 119:24 120:5 134:10 higher 83:1 95:12 96:4 108:12 hills 1:16 2:16 7:1,10 hippel 102:1 103:5,13 104:3 hired 15:17 historically 21:9 34:22 history 51:21 51:23 80:11 85:1 90:1,11 90:14 94:15,16 94:17,19 95:2 99:5 101:10 106:11,17 121:16 125:14 129:7 131:19	135:21 139:7 142:13 146:14 hodgkin 95:18 95:21 hold 32:20 50:6 147:15 home 81:9 hoppe 20:10 hour 12:19 13:8 25:24 26:1 hourly 23:6,8 hours 24:16,23 24:24 140:22 howard 4:15 5:4 7:19 12:8 17:20 18:10 19:21 21:6 23:13 26:12 38:14 43:7,14 43:22 45:24 46:18 47:19,23 54:20 55:13 59:12 61:2 62:7 63:15,23 66:19 67:23 68:23 69:11 70:21,25 71:17 73:7 76:20 77:1 78:3,5 95:6,17 96:3 97:11 98:6 99:5,13 100:25 108:14,22	109:2,9,18 110:11,22 111:18,24 112:8,12,20 114:13,23 122:14 124:23 127:18 134:19 144:3,9,20 147:14 howard's 14:17 23:10,24 24:3 24:13 26:14,21 28:9 43:3,18 43:19 54:23 55:16,23 56:2 56:24 62:2 64:24 65:6 73:9 74:16 76:2 77:8 93:11 95:16,21 97:1 98:18 99:17 101:3,6 111:8 112:2,14 113:12,15 114:6 116:15 144:6 hp 72:21 129:18,23 hr 126:20 127:7,12 huh 9:20 74:22 100:21 119:21 136:4 138:10	human 33:11 33:16,19 45:18 86:1 humans 117:6 husband 72:24 hypertension 82:1,12 94:18 99:9,16,23 100:5,6,8,11 121:11 125:8 129:3 131:16 135:19 139:3 141:18 142:16 hypertensive 99:22 100:13 i idea 106:9 ideal 147:5 identifiable 84:2 86:9,18 86:22 87:14 90:10 147:6 identification 18:4,19 19:10 20:2,14 23:21 24:6 26:8 27:12 30:6 42:19 75:6 103:19 119:3 128:7 130:21 134:22 137:13 140:14
---	---	--	--

identified 89:11 97:6 99:8 100:15 104:9 108:16 identify 65:19 65:23 87:23 88:9 90:13 96:10 142:6 idiopathic 86:11,13,13,16 86:24,25 87:1 87:3,7,11,19 idiosyncratic 83:9,10 il 113:3 imaging 31:11 94:3,4 implicated 102:2 implications 49:1 important 28:13 29:10,20 92:20 123:5,11 123:15 impossible 56:17 115:19 incidence 5:18 125:4 126:25 130:12,17,25 133:24 143:10 143:13,16 incidental 94:3	include 31:2 34:13 55:17,20 56:3,5,8,11,25 57:6 58:3,9,18 59:16 64:6,19 92:10 124:21 132:22 included 21:10 21:17 31:5 46:9 55:12 56:2,18,24 57:16,25 60:6 60:8,25 61:22 61:25 62:18 63:14,19,21,22 103:7 128:1 includes 92:3,8 93:7 94:16 104:7,14 128:3 132:15,20,23 133:7,20 136:25 137:5 including 11:22 19:18 20:23 40:11 90:22 140:23 income 25:16 increase 84:25 94:1 increased 28:5 28:6 82:10 93:22 108:3 137:21 140:10 141:2	increases 120:13 independent 28:20 68:21 102:17 117:10 117:12,20 118:1 independently 48:19 78:11,17 index 56:20 58:1,3,9 142:16 indicated 126:21 indicates 113:19 127:7 indication 107:2 individual 47:10 65:24 83:25 104:15 122:3 124:8,10 138:3,15 individualized 131:9 135:3 individuals 17:6,21,23 38:10 67:5 84:22 104:7 119:16 124:7 128:17 industrial 5:19 33:21	influenced 142:5 information 15:13 20:11 29:12 31:1 41:21 126:2 ingested 67:15 68:8 94:20 ingestion 67:20 81:5 inhalation 70:13 143:22 144:2 inherent 147:1 initial 15:14 16:20,24,24 96:20 injury 96:10 114:6 insight 122:25 instance 45:9 instruct 13:22 40:18 instructed 48:5 instructs 11:10 intensities 140:24 intensity 123:4 interested 102:21 151:17 internet 54:25 interpret 60:24 interpretation 46:20 47:4
--	---	--	---

54:6,7 79:6 87:9 117:24 118:2 interpreting 147:7 interval 127:25 132:12,15,20 132:23 133:4,7 133:14,20 136:22 137:6 intervals 126:21 130:8 intervention 44:22,24 45:1 interventions 45:3 introduce 7:16 introduced 93:17 invasive 44:24 investigator 32:11 36:18 invoice 4:25 5:3 16:8 23:23 24:8 invoices 23:16 involve 38:22 39:2,4,7 involved 28:8 39:19 41:3,11 57:1 involving 39:11 41:4	irving 102:13 island 3:8 isolate 56:17 isolating 59:3 isolation 29:25 issue 66:22 117:6,13 issuing 53:7 it'd 81:7 it'll 16:7 items 31:13 j j 4:17 18:24 jacqueline 4:17 5:8 7:19 14:20 17:20 18:24 19:7 146:1 james 3:3 january 72:25 jessica 3:13 42:11,14 job 1:25 jobs 142:24 joined 42:13 josephson 1:15 2:14 4:2,14,17 4:19,21,23 7:15 8:12,19 8:23 18:7,9,23 19:12,13 20:5 20:17 23:23 24:8 26:13 27:14 28:12	30:9,10 42:16 42:21 103:22 105:25 143:9 145:23 148:10 149:5,20 150:3 150:25 journals 34:20 june 1:17 2:18 7:1,7 72:24 115:4 151:22 juris 31:18 justice 3:11 9:3 43:13,21 44:4 46:21 48:9,20 48:23 49:1 53:14 k kelly 20:24 66:11 67:2,9 67:11,13 68:8 68:21 72:1 120:19 key 53:23 kidney 6:5 15:1 17:17 31:11 37:24 38:2,4,7 38:10,20 39:17 39:22 40:1,2,4 40:7,12,14,24 47:4 55:18,22 57:7 65:25 76:3,10 77:14 79:11 80:9,12	80:13,17,20 81:1,12,15,19 82:2,6,8,9,15 82:22 83:1,5,6 83:15,16,22,23 84:1,2 86:23 87:17,23 88:2 88:4,9,12,16 89:3,7,8 90:9 90:20,25 91:3 91:11,14,19,24 92:3,21 93:1,6 93:11,16,18,19 94:14,18 95:8 96:1 97:7,10 98:18,23 99:9 99:17,24 100:16 101:3,7 101:10,11,15 102:3,5,19 103:2 105:15 107:10 108:3 108:12,18 109:12,18 110:5,18 111:8 111:16,19,22 112:12 113:22 114:6,7,10,20 114:21,24 115:7,13,16,20 115:25 117:7 117:19 118:5,6 118:12 119:11 119:24 120:5
---	---	---	--

120:11,13 121:14,17 124:20,22,24 125:4,12,15 127:3,4,25 129:5,7 130:13 131:19 132:8 134:3 135:21 136:9 137:21 139:5,7,22 140:10 141:14 142:13 144:9 kilogram 70:12 kind 41:16 45:15 51:21,22 54:6 86:14 94:21 113:6 126:23 141:25 know 10:8 23:14 50:14 55:9 61:19 74:9 76:15 86:15 87:18 89:15 91:8 93:3 146:5 knowing 102:21 knowledge 28:16 59:2 114:3 150:5 known 47:16 59:4 72:17 88:2 89:1,7 90:5 92:4,12	101:25 102:25 107:7 117:6 147:6 l labeled 18:8 42:23 lack 126:2 127:6 138:13 141:22 lacked 126:20 lacking 41:21 language 46:9 48:9,12 49:14 104:7,14 late 15:22 116:10 latency 120:12 120:14 law 3:3 10:17 31:18,24 lawyers 16:3 lay 40:7 leadership 7:18 8:1 leaving 110:16 left 126:19 legal 31:22 44:4,7 45:8,13 45:15,21 46:23 48:6 49:16,19 49:20 50:2,3 50:15,16,17,21 51:14	lejene 5:20 lejeune 1:5 2:5 5:10,16,23 7:11 9:4 14:13 14:23 38:11 43:13,21 44:3 46:20 48:9,20 48:22,25 49:1 53:13 64:9,25 65:5 66:20 72:23 75:11 76:3,17,24 90:22 92:6 95:7,25 109:5 109:8,19 110:6 110:13,24 122:18 123:22 126:9 127:20 128:12 132:3 133:25 134:5,8 134:11 136:6 136:16 144:10 144:22 level 77:3,4 levels 99:1 102:9 117:5,13 118:4,10 119:16 129:19 licensing 41:23 life 82:10 110:12 116:9 lifespan 115:17 115:20	lifetime 91:23 92:3 93:6 116:7 143:10 143:13,16 146:17 likelihood 144:9 likely 43:20 44:3,9,15,19 45:7,10 46:5 46:11,17 47:24 47:25 49:7 50:4,25 51:7 51:13 52:4,8 52:11,15,18,24 53:3,7 95:8,12 95:13,25 96:4 96:5 110:22 126:6 144:16 144:21 145:1 limitation 126:1 130:5,11 141:7,15 limitations 124:16 126:13 138:16 141:20 141:24 142:6 146:20,23 147:1,9 limited 67:8 104:24 139:18 lindau 102:1 103:5,13 104:3
--	---	---	--

line 77:3,25 78:1 94:24 150:9 lines 102:1,1,7 102:25 104:10 link 60:18 117:19 linked 81:1,23 83:19 list 4:15,18,24 18:10,14,25 19:4,14,18 20:18 21:2,11 21:17,22,25 22:1 41:18 53:17 61:2,5 61:23 62:2,6 62:10,13,19,21 63:14,16 90:2 99:8 109:13 listed 21:19 53:9 62:9 76:11 122:14 125:13 144:12 150:7 lists 64:20 liter 68:1 69:17 70:6 71:4 72:5 73:9,12,13,13 73:15,15,23,24 74:6,12 76:17 76:23 literature 18:15 29:18	32:15 35:24 36:22 37:15,24 44:9,14 49:10 52:5,20 53:22 53:22,25 54:5 54:9,18,22 55:2 56:18 58:13 59:8 60:2,14 61:17 63:7 69:9,12 69:13 70:1,2 74:12 105:13 105:16 108:25 109:7 141:25 147:8 litigation 1:5 2:5 7:12 9:5 14:13,23 40:23 50:11 little 11:25 41:12 lived 51:21 94:19 110:12 lives 43:17 long 12:18 13:7 81:6 90:15 94:21 98:20 116:3 141:22 146:16 longer 99:1 longstanding 100:4 look 42:21	looked 21:10 looking 146:4 loss 114:7 lot 9:10 106:13 130:12 141:20 low 75:21 76:8 77:4 113:20 134:4 141:6 lower 46:2 81:22,23 102:9 113:22 lumped 56:16 lung 83:18 87:6 112:24 113:10 113:13 lymphoma 95:18,21	make 9:15 43:17 142:14 146:7 making 149:9 male 108:14 malignancies 113:23 malignancy 106:2,17 107:3 107:14 113:9 113:20,22 malignant 113:13 mandell 3:7,7,7 7:25,25 12:21 manserian 3:17 7:5 manufacturing 94:23 manuscripts 34:21 march 115:4 marine 5:20 134:1 marine's 123:23 marines 5:9,18 5:22 75:9 76:17 132:3 136:6 mark 18:2 marked 18:3 18:18 19:9 20:1,13 23:20
		m	
		m 3:7 m.d. 1:15 2:15 4:2 8:12 30:10 148:10 149:5 149:20 150:3 150:25 made 11:13 102:8 111:25 149:7 magnitude 127:8 magnum 3:4 majority 88:1 127:3 129:17	

24:5 26:7	128:8 130:22	92:11 95:1	115:24 116:15
27:11 30:5	134:23 137:15	100:9	116:18 147:16
42:18 75:5	140:15 143:1,8	meaning	medication
103:18 119:2	145:3,16	111:10	100:7,12,14
128:6 130:20	147:20	meaningful	medications
134:21 137:12	mass 67:14,17	120:13	10:23 81:5
140:13	67:24 68:7	meant 97:23	95:2 100:12
marquina 3:12	69:19 107:7	measure 69:17	medicine 37:12
4:4 7:20,20	142:16	122:3 137:24	44:11 79:8
8:18 9:2 13:3	massachussetts	measured	medium 71:17
14:3 17:11	5:14	67:15 68:1	75:21 76:8,20
18:1,6,17,20	masses 79:17	69:20 71:4	77:5,9,13,16,18
19:8,11,24	106:5,7,23,25	123:19	134:7
20:3,12,15	materials 4:15	measurement	meeting 12:16
21:12 23:18,22	4:17,19,21,23	74:13	12:17,18,20
24:7 26:10	18:10,24 19:14	measures	13:4,6,7,10,12
27:13 29:16	20:5,17 21:2,4	120:17 130:8	13:16,20
30:4,7 33:1	21:17 22:1	mechanism	meetings 12:13
41:1 42:4,11	61:1,4,23 62:1	84:17	12:25
42:15,20 44:13	62:6,8,10,13,19	mechanisms	member 34:12
48:4 53:20	62:21 63:14,16	88:6	90:19 92:25
61:15 62:12,15	64:19	med 50:17	members
63:1,20 66:9	math 24:15	media 14:24	138:19
68:18 69:2,18	matter 7:11 8:8	median 82:14	membership
70:18 74:4	15:6,9 16:19	medical 5:12	139:15
75:7 79:7	17:9 96:20	11:1 17:3,4,15	memory 10:24
84:20 90:8	mbmjustice.c...	19:20 22:15	11:2
103:16,20,21	3:9	41:18 44:8,14	men 108:11
105:17,24	mccabe 12:7	45:16 49:19	mention 78:3
107:12 110:1	mean 17:2	50:2,7,15,19	129:12
110:10,20	29:24 40:3	51:2,9,23	mentioned 41:2
111:2,6 118:3	41:20 46:14	52:19 60:14	43:20,25 46:16
118:22,23	54:25 55:5	90:1 94:17	47:19 74:20
119:4 124:2	59:20 91:9	111:16 112:18	83:4 84:4 98:9

108:1 114:14 127:18 meta 55:10 metastatic 112:11 113:2,5 meter 70:13 method 58:21 60:11 methodology 45:20 53:10 58:14,25 60:4 60:9,12,13,15 60:22 69:23 76:12,16 77:21 92:13 96:25 97:3 99:20 100:2 101:5 104:10 124:1 metric 69:4 micro 69:14 micrograms 67:15,25 68:1 69:16,20 70:6 70:13 71:4 72:5 73:13,14 73:23 76:16,23 microphone 61:14 mid 33:2 middle 146:8 midweek 13:11 military 33:21 mill 93:19	milligrams 70:12 119:11 119:11 120:18 120:23 mind 91:22 minimal 98:19 minute 42:4 minutes 143:2 missing 41:17 misunderstood 64:3 modalities 31:11 model 72:11,15 modeling 67:19 molecular 35:15,20 36:1 36:6,11 moment 23:18 75:4 122:10 130:3 137:4 moments 10:13 monitoring 138:12 monotonic 134:13 monte 34:9 month 15:24 68:1 71:4 72:6 73:24 months 12:11 73:15 76:17,23 142:24	morning 8:19 8:20 mortalities 140:1 mortality 5:9 5:15,21 6:3 75:9 124:15,17 124:19 126:24 127:11 128:10 128:20 130:10 134:18,25 135:14 136:5,9 138:5 139:21 mother 107:3 107:13 mp 72:11 mt3dms 72:14 multifactorial 79:12 multifocal 105:2,8 106:5 106:23 multiple 79:14 140:9 mutated 86:4 mutation 104:8 mutations 85:15,17,19,21 86:2 mutually 86:17 myong 1:23 2:19 8:2 151:4 151:25	n n 4:1 name 7:5 8:2 8:21 9:2 57:22 58:6 named 39:17 151:8,11 names 12:2,7 39:20 national 64:7,8 nature 30:3 135:7,9 147:7 navy 5:9,18,22 75:9 132:4 134:1 136:6 necessarily 48:25 need 78:2 116:6 147:21 148:5 needed 45:3,4 needs 69:24 negative 54:2,4 60:18 103:13 neoplastic 106:11 nephrectomy 111:25 112:3 112:14 never 31:24 32:11,14,17 35:22,23 36:3 36:18,21,24 37:14,23 87:15
--	--	--	---

109:19 110:5 110:12,23 new 88:9 91:11 91:15,19 newly 94:14 nodules 112:21 112:24 113:7 113:10,13 non 95:18,21 134:13 noncancerous 113:7 nonexposed 127:21 noninferiority 44:21 45:6 nonsmoker 146:15,16 nope 139:2 142:22 normal 66:4 99:1 101:25 112:17 north 1:2 2:2 3:5 7:14 9:6 note 45:24 138:18 140:20 noted 64:23 141:6 142:3 notes 16:13 126:20 127:6 129:17 138:12 nuanced 95:1	null 139:22 140:23 151:21 number 8:3 21:18 23:14 45:3 46:21 62:11,14 77:3 80:23,23 82:13 103:16 124:21 144:13,25 145:1 146:2 numbers 126:22 130:6	117:15 123:24 144:23 objection 11:10 11:12 13:2,21 110:7 111:4 objective 109:23 110:9 145:1 objectively 28:20 observed 104:15 136:13 obtained 60:10 109:24 obviously 21:8 30:2 108:20 occupation 94:21 occupational 6:4 37:11 39:1 39:3 41:19 125:23 129:15 139:14 142:23 145:6,11,12 occur 82:18 85:19,21 occurred 13:10 126:6 occurrence 114:2 offer 17:16 78:21,25 79:4 79:5 148:5	offered 22:16 39:11,22 40:13 office 28:4 94:25 offices 3:3 officially 16:21 oh 64:3 97:22 132:18 okay 7:4 18:1 18:17 27:10 42:9,16 59:15 62:17 63:3 64:5 67:11 89:6 98:9 105:19 128:5 133:20 136:15 143:3 145:16 146:7,18 148:6 old 82:8,19 87:15 115:8 older 82:10 olympic 2:16 7:10 omitted 31:14 106:19 once 16:10 oncologist 22:14 40:4,8 117:22 oncology 35:8 ones 60:6 137:20 ooo 148:12
	o		
	o 3:14 35:7 oath 10:14,17 151:9 obesity 80:25 81:11,18,25 82:12 121:8 125:6 129:1 131:13 135:17 139:1 141:18 object 17:10 21:7 29:14,22 32:22 40:17 44:5 48:1 53:18 63:18 66:1 68:14 69:1,15 70:15 73:25 78:23 84:14 89:21 107:4 109:20 110:14,25		

opine 48:5 49:20 opinion 17:16 19:23 28:20 39:11,22 40:13 41:15 43:14 46:15 47:22 49:14,17 54:14 54:15 65:16 68:4 73:20 86:16 95:6,23 102:17 118:9 118:11 opinions 19:6 21:5 22:15 45:25 46:12 47:2 48:2 50:6 68:21 95:4,15 95:20 111:7,15 116:14,17 117:2,12 118:4 134:18 147:11 147:13,14,16 opposed 47:24 oral 70:12 order 16:21 ordering 148:4 origin 86:24 original 146:10 151:20 originally 113:1 outcome 25:3 45:12	outcomes 79:6 114:14 132:2 output 56:20 56:21 58:12,15 60:3 outside 45:21 57:17 86:9 116:12 145:13 overall 114:9 139:22 own 21:9 54:6 117:20,23 118:1 <p style="text-align: center;">p</p> p 3:14 p.m. 2:18 7:2 105:21,21,23 143:4,5,5,7 148:3,9 pace 9:23 pack 80:22 84:24 85:1,7,8 90:10,14 99:5 packs 80:23 83:18 87:6 page 4:3,13 5:2 6:2 26:17,19 27:20 43:19 45:23 62:4,5 62:20 63:22,23 70:20,23 71:22 71:23 73:7,8 75:17 78:6	100:20 104:1 119:19 120:3,8 121:5 125:25 126:4,4,15,18 127:16,17 129:17 130:4 132:1 133:23 136:2 137:2 138:8 139:17 139:24 140:19 141:10 146:4,8 150:9 pancreatic 91:8 panel 104:20 104:24 papers 34:15 34:17 papillary 79:23 133:10,12 paragraph 119:22 120:3,4 120:10 126:16 127:6 139:24 146:9,13 paragraphs 126:14 park 3:8 part 16:20 17:8 33:14,25 34:22 35:10 51:4 53:9 94:15 95:3 98:1 126:12 142:7	participants 137:25 139:14 participation 141:3 particular 27:25 96:10 129:20 parts 73:22 74:5,12 past 12:11 39:18 93:23 114:18 pathologist 35:15 36:11 pathology 35:20 36:1,6 patient 51:18 60:17 81:6 83:8,11,12,23 84:25 85:2 86:18,21 94:13 106:1 124:20 patient's 38:20 41:10 90:9,11 patients 40:24 52:9,12 59:2 60:21 78:22 83:15,17 87:13 87:22 88:13 89:5 106:15 117:23 124:21 145:5,5,9 payment 25:2
--	--	---	--

<p>pce 37:17 38:2 39:2 41:4 55:20,21 56:3 56:15 57:2,7 57:22 59:22 66:23 68:22 71:8 72:11,14 77:15,18 109:11 118:12 119:9 137:22 138:3 140:11 141:13 145:6 145:10</p> <p>peer 32:14 34:16,17,20 35:10,22,23 36:21 37:14,23 52:5 74:11</p> <p>peers 29:1</p> <p>pelvis 91:3,11 91:24 132:9 134:3 136:10</p> <p>penalties 10:18</p> <p>penalty 8:7 149:6</p> <p>pending 9:5 10:10 31:4,4,9</p> <p>pendleton 127:21 132:3 136:17</p> <p>people 86:12 100:10,10 127:3 138:5</p>	<p>percent 22:23 22:24 25:18 82:17 91:15,25 92:2,21 93:2,5 93:6,23 113:25 141:4 144:17 144:18,21</p> <p>percentage 22:21 25:16 88:15,18 144:11</p> <p>percentile 119:10,17</p> <p>perchloroeth... 57:23,25 61:11 63:5 64:2 140:21</p> <p>perfect 141:19 147:2</p> <p>perform 16:18 16:25 54:22 131:4</p> <p>performed 22:18 23:24 54:18 70:24 72:1 77:20 102:22 131:10 135:4</p> <p>perjury 8:7 10:18 149:6</p> <p>permanent 114:6</p> <p>person 13:12 13:17 87:5</p>	<p>91:20 124:10</p> <p>personal 106:10</p> <p>personally 38:13,16</p> <p>personnel 5:9 5:18,22 75:10 127:20 132:4 136:6</p> <p>persons 119:9</p> <p>perspective 45:8,8,14</p> <p>pertains 44:6</p> <p>pharmacology 37:5</p> <p>phenotype 104:15</p> <p>phone 13:12</p> <p>phrase 50:10 51:1,8 95:12 143:19</p> <p>physician 28:13 29:5,11</p> <p>physicians 14:17,20 22:17 28:18,23 51:12</p> <p>pi 117:23</p> <p>place 151:11</p> <p>placed 71:17 138:13 151:8</p> <p>plaintiff 3:2 4:14,17 18:10 18:24 22:17</p>	<p>plaintiffs 7:18 7:18 8:1 11:24 14:13 16:6 17:17,19 22:19 22:22</p> <p>planned 113:8</p> <p>plastics 94:23 94:25</p> <p>please 7:16 8:21,24 9:22 10:1,5,10 11:11 61:6</p> <p>plugged 77:13</p> <p>point 72:21 73:3 129:24</p> <p>points 73:18</p> <p>policy 148:1</p> <p>population 114:10 116:10 136:7</p> <p>position 68:16 70:17</p> <p>positive 54:1,4 60:18</p> <p>possibility 109:22 141:13 142:4</p> <p>possible 90:19 109:17,21 110:4 114:15 114:17</p> <p>postoperative 112:3</p>
--	---	--	--

potent 84:13 potential 88:9 89:8,14,20 90:21 96:16,21 125:22 129:15 potentially 114:8 ppb 73:9,12,13 73:15 practice 38:9 38:19 78:21 87:21 88:15 94:6,11 pre 142:17 precision 126:20 127:7 predict 115:20 116:3 predispose 113:23 predisposing 114:19 predisposition 100:16,22 101:2,6,12,14 105:14 114:8 121:14 125:12 129:5 139:5 142:11 predominantly 121:4 prefer 114:15 114:16	preparation 12:14 13:5 18:15 49:8 prepare 11:19 14:9 17:22 43:6,9,10 prepared 26:14 27:16 30:15 43:1,4 66:12 preparing 21:13,16 24:10 46:18 48:20,23 54:19 118:25 preponderance 49:18 present 3:17 87:13 presentations 31:3 presented 31:4 presenting 40:24 89:23 presents 107:18 preserve 114:16 presumption 53:17 prevalent 84:8 84:10 previously 42:22 49:13,16 price 23:6	primary 55:11 102:5 107:9 145:12 principal 32:11 36:18 97:6 99:9 100:16 103:1 108:17 prior 14:25 16:6 22:8,9 25:21 26:2 41:18 49:3 59:2,2 102:20 109:14 139:14 151:7 probability 49:21 144:6 probably 16:2 16:7 22:10 23:17 60:9 81:7 88:20 89:2 91:8 113:25 116:6 124:25 125:2 145:24 problems 51:23 proceedings 151:15 process 56:14 96:9 produce 54:1 produced 8:13 profession 29:5 professional 34:12	profile 51:24 51:25 101:22 profiles 47:11 prognostic 80:5 progressed 112:24 proliferate 86:5 pronounced 125:3 127:2 130:12 proof 46:1 49:17 properly 9:16 propriety 111:15 prostate 31:10 91:7 94:14 prove 45:5 provide 28:20 48:8,11 65:9 122:25 provided 11:23 12:24 15:13 18:15 19:5 20:10,22 45:25 46:22 48:18 56:19 62:17 65:16 67:19,22 90:3 109:13,14 providence 3:8 prudent 106:9 pt1 113:15
--	--	--	--

pt1b 113:17	q	r	134:13 137:3
public 40:7	qualified 41:9	r 57:15,15	rcc 55:18 57:7
63:24 66:5	41:13	r.j. 27:17	rdds 120:6
90:20 92:25	quality 30:3	race 82:21	reach 99:20
publication	quantifiable	107:21 121:1,2	100:2 102:13
21:10 61:16	81:8	121:3	reaching 43:14
69:22 122:11	quantified	races 83:2	read 11:21 12:8
publications	80:21,22,24	radiation 80:16	33:23 34:3,6
19:5 21:18	81:3	raise 8:4	48:24 49:12
30:24 55:1,7	quantify 65:13	random 90:12	64:10,11 87:1
109:12	66:18 81:7	randomly	101:21 121:24
published 31:5	138:2	85:19,22	133:16 146:13
32:14 34:16,18	question 9:18	ranges 128:1	148:8 149:6
35:23 36:21	10:1,2,6,10,11	ranging 132:12	150:4,9
37:14,23 53:2	11:11,12 29:8	133:4,14	readily 87:23
61:9 63:4 69:9	33:14 50:13	136:22	reading 46:6,21
74:11 147:8	59:7 70:17	rarely 87:1	102:20 120:1
pubmed 54:19	76:18 92:17	104:7	reads 120:11
54:23,24 55:2	110:3,21 111:3	rate 27:8 28:8	reason 11:5
55:3,5,7,8,11	111:14 118:16	93:22 141:3,7	27:25 61:22
58:22,23 59:9	118:18 132:22	143:10,13	93:25 113:12
63:11 109:11	145:23	rates 83:2	reasonable
117:21	questionable	108:12 143:16	9:22 49:21
pull 55:1	107:8	rather 9:19	50:6,19 51:2,9
pulls 55:7	questions 9:17	ratio 77:19	96:15 147:16
pulmonary	11:15 71:22	127:13,19	reasonableness
112:21	145:17,19	132:9,19,25	111:8,10
purdue 140:2,5	146:19 147:19	133:12 134:4,7	reasons 45:2
140:17 141:12	quickly 121:24	134:10 136:5,9	recall 12:3,7
142:3	quit 98:20 99:2	136:18,21	13:9,11 15:2,3
purely 59:4	quote 120:4	137:5 139:21	15:21 16:7,9
put 55:6 77:9		ratios 76:6,10	21:23 23:9
82:13 86:21		77:11 131:8	34:2,23 35:3
96:22			38:12 39:1,6,9

39:19 49:12 52:17 61:20 70:2,4 112:19 126:11 145:15 146:21 received 23:2 112:21 115:1,7 115:10 recent 28:15 112:18 115:23 recess 42:8 105:21 143:5 recognize 18:11 19:1,15 20:6,19 30:11 recollection 39:15 61:5 record 8:22 9:12,14,15 17:18 35:5 42:10,13,17 71:2 99:4 105:18,22 143:1,6 146:8 records 5:12 17:3,4,15 19:20 41:18 107:6 112:18 115:24 recovery 111:25 recurrence 112:7,15 113:24	reduced 151:12 refer 21:1 73:8 106:1,15 107:15 128:13 reference 77:3 122:12 127:23 129:23 references 122:15 referencing 46:3 referred 75:17 109:3 128:13 referring 17:19 47:15 49:5 62:3 64:1 66:11 75:1,14 75:21 89:17 103:4 refers 127:12 refined 55:8 86:14 reflect 21:3 24:1 30:19 134:13 reflected 16:8 25:13 67:24 71:10,13 72:20 121:5 reflecting 24:9 29:19 reflective 25:23 28:5	reflects 26:20 27:22 28:25 70:23 71:3,25 72:4 132:2 133:24 reframe 17:12 refresh 61:5 regarding 16:18 17:16 22:15 37:15,24 41:10 56:23 67:4 68:22 95:6 102:14 103:12,24 104:19 109:11 111:7 116:14 117:5,13 118:4 118:9 123:21 145:14 reimbursed 25:5,11 rejected 115:24 relate 22:16 related 19:20 19:21 20:11 31:10,10 39:16 40:23 47:2 49:22 72:6 98:23 112:3,11 114:6,11 130:2 relates 1:6 2:6 49:6 50:11 113:10,20	relationship 46:4,24 59:24 60:7 85:5 125:1 relative 66:5 98:24 106:17 119:10,25 relatively 139:19 relevance 31:11 relevant 29:2 29:12 31:6,7 47:7 59:17,19 reliable 92:13 reliably 76:19 relied 68:4 69:10 74:20 102:12 117:1,4 117:17 122:6 130:17 134:17 137:9 140:2 rely 66:17 67:1 105:13,16 109:7 relying 66:10 109:23 remains 111:18 112:17 remembering 41:5 remission 111:21
--	--	--	--

remote 3:7,13	45:23,24 46:1	reporter's	research 21:9
renal 39:24	46:9,18,21	151:1,20	21:21,25 31:10
40:6,9,11	48:20,23,24	reporting 53:9	44:12 45:11,14
55:17,21 57:7	49:4,5,8,11	74:18	45:16 48:19,22
59:25 79:15,17	55:13,16 56:25	reports 11:21	59:9 64:7
79:21 80:1,5	57:4,17 60:16	11:23 12:2,4,6	117:20,24
82:18 88:22	62:8 64:9,16	14:24 17:16,22	142:7
91:3,11,24	64:19 67:6,11	17:24 19:19	researchers
93:22 105:1,4	68:4,9 69:5	20:22,24 21:5	60:23
106:2,5,7,11,17	70:21,23 71:16	21:16 41:20	researching
106:23,25	71:19,21,24	43:4 46:13	15:1
107:3,7,9,14,17	73:6 76:11,13	47:19 48:10,17	resided 72:23
112:17 113:21	78:5,8,14 87:2	54:19 59:5,16	residency
114:16 115:1	87:9,10 89:20	60:3 64:14	133:25
132:8 133:1	100:15,19	65:8,15 66:3,3	resource 54:23
134:3 136:10	101:21 102:13	66:10,13,15	respective
render 22:15	102:20 108:7	69:7,11 70:4	74:17
41:15 151:20	116:20,24	74:23 108:16	respond 9:19
rendering	118:25 120:21	117:1,5,25	9:20
19:22 49:14,17	121:2 127:18	122:15 128:14	response 85:5
67:6 68:4	131:7 137:9,19	143:17,24	141:6
69:10 117:2	140:3,7,7,8	144:8	responsibility
134:18	144:2 146:1	represent 9:4	17:13
repairs 86:2	147:14,14	34:1 63:2	result 104:2
repeat 33:15	reported 1:23	64:22	resulted 130:7
51:6 143:11	69:25 70:7	representation	results 54:2,4
rephrase 86:19	74:3,8 100:5	30:20	127:1 133:24
89:9	124:21 130:15	represented	139:21 142:5
report 4:14,16	reporter 2:19	67:14	retained 12:12
5:4,8 18:9,23	7:24 8:2,3,6	require 70:11	15:20 16:6,14
24:10 26:5,12	9:13 61:14	96:17	16:19,22 17:1
26:13 27:16	103:17 118:21	requires 96:15	33:18 49:20
30:3 43:1,6,10	147:21,24	96:18	50:2
43:18,19,22,25	148:4 151:5		

retainer 16:16	reynold's 73:11	99:14,18,25	135:14,17
retrospective	120:22	100:17,25	136:7,10,23,25
5:11,16 75:11	reynolds 12:5	101:16,20	137:6,10,17,22
128:12	20:24 27:17	103:10,14	137:25 138:16
returning	66:11,18 67:2	104:21 107:15	138:21,24
141:21	67:9,11,13	108:3,5,24	139:23 140:3
reveals 13:23	68:8,22 69:5	109:5 111:19	140:11 141:4,8
review 12:1,10	69:13 70:24	111:25 112:15	141:14,24
13:19 14:5	72:1 74:15	112:22 113:10	142:5 144:11
15:15,25 16:2	75:25 76:6,15	113:13,18	144:14,19
16:20,25 17:3	77:22 120:19	114:7,14 115:2	145:7,18,23
17:4,8,15	rhode 3:8	115:5,11	146:8 148:2
21:13 34:21	right 8:4 12:7	116:18,21,24	risk 5:13 32:21
35:4,10 41:21	15:23 26:17	117:7 118:25	33:6,8,12,17,20
43:13 52:19	28:16,21 29:2	119:14,17,23	33:23 34:4,10
59:8 61:1,4,10	29:7,13 31:20	119:25 120:3	34:13,15,17,21
63:10 64:7	31:25 32:6,9	120:14,19,23	35:4 47:11,16
109:14	32:12,15,18,21	121:5,23 122:3	47:18 51:24,25
reviewed 11:22	35:18 36:4,9	122:13 123:12	54:13 61:25
12:4 21:15	36:16,19,22,25	123:17 124:7	63:5,25 64:1
32:14 34:17	37:3,9,25 41:5	124:11,14,15	70:10 80:9,12
35:23 36:21	42:24 54:2,14	125:9,12 126:3	80:16,18,20
37:14,23 39:18	54:20 55:13	126:22 127:10	81:4,11,14,17
48:10 49:4,6	61:3 64:20	127:13,21	81:21 82:2,5
49:13 52:5	65:10 71:4,6	128:1,3,14,17	82:10,21,23
63:11 64:11	71:18 72:9,12	129:1,21,24	83:5,9,12,15,22
66:14 74:11	72:18,25 75:22	130:4,9,18,24	84:2,5,8,12,19
102:22 116:20	78:6,9,12,15,18	131:10,13,16	84:21,25 85:1
116:23 118:20	82:15 84:9	131:21 132:6	85:4,8,12
118:24 134:17	88:10 90:13,22	132:10,13,16	86:18,22 87:14
146:24	92:7 93:2,12	132:23 133:2,5	89:10 90:3,4,5
reviewer 35:1,3	95:9,13,18	133:8,12,15,21	90:10,12,18,21
reviewing	96:1,6,24 97:7	134:1,5,8,11,14	90:25 91:23
39:16 61:20	97:11 98:10	134:19 135:1,7	92:3,15,20,23

92:25 93:1,6 97:6,9,20,23 98:2,6,13,24 99:9 100:16 101:11 107:21 107:25 108:3,8 108:17,17,21 109:1,3,8 113:20,22 119:12 120:13 123:1,5,11,16 124:8 125:1 136:18,21 137:21 140:10 141:2 143:22 144:2,6 145:13 147:4,6 robotic 22:14 role 102:14,18 117:23 rough 148:4,6 148:7 roughly 91:19 routes 101:25 routine 112:21 routinely 94:9 row 3:8 rule 89:19 96:17,18,20,21 101:5 109:8 141:12 142:4 ruled 97:10 98:9,17 99:16 99:23 101:2,14	102:25 rules 9:12 ruling 96:15 run 93:19 s s 35:7 safari 55:6 sample 139:19 satisfy 46:1 saw 53:9 saying 44:18 69:16 86:14 89:10 says 77:2 100:22 104:7 104:14 136:16 scale 138:14 schedule 25:13 25:19,20 26:20 26:24 28:3 scheme 53:16 scholar 54:24 55:4 school 31:19,24 science 79:9 88:8 89:17 sciences 64:8 scientific 28:25 45:16 50:7,19 51:2,9 108:25 109:7 scientist 117:23	scope 17:13 116:12 145:13 scott 3:3 se 83:19 114:11 search 53:22 54:1,5,8,9,19 54:22 55:6,8 55:11,12,15,16 56:1,2,5,8,11 56:14,24 57:5 57:16,19 58:1 58:3,9,18,21,24 58:25 59:5 60:3 61:17 63:8,12 109:11 117:21 second 44:23 61:6 97:14 106:16 131:5 139:24,25 section 26:19 49:6 58:14,15 120:10 126:14 see 16:3 18:2 56:17 77:3 98:15 100:23 104:1 122:1 133:17 146:11 seeing 136:11 seen 44:15 67:4 74:8 88:16 143:24 selected 53:15	selection 142:4 sense 78:24 sentence 120:4 120:9,9 126:15 139:25 separate 17:24 21:2 59:1 83:11 september 15:7 services 23:5 serving 25:17 52:15 132:4 set 28:11 56:22 71:22 113:2 122:5 128:5 130:16 134:16 137:8 sex 108:8 shake 9:19 shields 20:24 shorthand 2:19 8:3 151:4,11 show 45:11 46:24 47:6 75:4 145:25 shut 73:3 130:1 side 22:17 119:23 120:3 126:19 130:4 sign 148:8 signature 26:16 151:24 significance 80:6 131:4,8
---	--	--	---

significant 80:18 97:17 100:4 121:7 similar 119:16 single 55:10 147:3 sir 87:7 site 33:20,21 107:10 situation 87:18 87:22 six 12:11 16:1 sixth 82:9 size 113:15 139:19 slope 143:19 small 126:21 130:6 139:19 smoke 83:17 smoked 87:5 90:15 94:19 smoker 97:18 98:16 smoking 41:19 80:8,22 81:18 81:25 82:12 83:19 84:24 85:7,8 86:22 90:10,14 97:6 97:9 98:6,17 98:22 99:5 126:2 128:23 138:24 141:18 142:16 146:14	smrs 136:13 social 51:21 94:18 95:2 societies 34:13 society 34:23 34:25 35:7 soft 82:7 106:8 sole 122:22 solemnly 8:6 solvents 5:19 6:5 138:15 sorry 24:25,25 64:3 91:9 97:22 98:25 118:21 120:1 sort 79:4 sought 22:15 sound 9:10 15:23 south 3:4 speak 16:5 speaking 52:23 spec 107:10 specific 5:4,7 12:2 17:6,21 21:23 26:11 29:15,24 33:13 33:20 34:23 35:3 40:6 41:16 50:12 51:15 67:3 68:3 69:6,21 75:1 89:25 109:2 122:8,19	126:22 127:9 138:1,13 144:7 specifically 13:9 19:21 21:19,21 28:7 38:12 45:20 46:24 47:2 48:13 50:25 54:3 55:16 59:8 70:3 75:17,20 117:4 145:15 specifics 39:1 speculate 116:5 speculative 116:2 spell 35:5 107:23 spelled 21:21 44:10 48:13 spelling 57:14 spent 126:9 stadler 12:6 stadler's 87:2 stamped 104:1 standard 43:21 43:24 44:3,4,7 44:15 45:7,10 45:15,16,22,24 46:12,18,23 47:24,25 48:6 49:7,21,24 50:4,16,22,25 51:1,8,13 52:5	52:9,12,15,19 52:25 53:3,7 53:12 68:16 69:22 74:6 96:4,5 106:1 106:14,18 107:14 136:5,9 139:21 standards 22:16 28:25 standpoint 45:13 start 22:11 69:19 started 35:2 starts 146:9 state 8:6,21,24 119:8 137:19 141:12 149:15 151:5 stated 102:6 statement 32:24 51:11 87:4 150:4,5 states 1:1 2:1 7:12,13,21,23 9:3,4 42:14 91:16 104:25 129:22 stationed 72:24 126:9 132:5 statistical 131:4,7
--	---	---	--

statute 49:9 51:14 statute's 48:12 statutes 50:3 statutory 49:13 step 53:5,23 69:8 70:9,19 73:20 81:20 95:16 stepping 81:9 steven 116:24 street 3:4 9:1 strike 21:14 25:25 34:16 35:22 43:9 46:16 58:22 60:12 67:12 85:24 88:24 109:1,16 117:3 117:10 strong 81:16,17 82:23 stronger 60:4 81:24 strongest 60:7 strongly 83:19 studied 81:25 84:10,16 studies 45:18 45:19 59:15,17 69:4 123:20 140:9 141:17 141:20 146:20 146:24 147:10	study 5:11,15 5:17,20,24 6:5 32:12 36:19 44:23 55:9 56:16 60:20 61:22 63:7 74:21 75:12,13 75:16,18 76:1 76:7,21 118:24 119:5,8,17,20 120:17 121:1,8 121:11,13,16 121:19,22 122:2,22 124:4 124:6,9,10,14 124:17 125:5,8 125:11,14,17 125:19,22,25 126:2,18,19 127:5,11,15,19 128:10,12,16 128:19,22,25 129:14,17 130:6,11,15,18 130:24,25 131:3,9,12,15 131:18 133:24 134:18,25 135:3,6,13,16 136:2 137:2,10 137:17,20,24 137:25 138:2,3 138:5,9,11,16 138:18,20,23	139:13,18,22 140:2,4,5,8,17 140:20 141:3,7 141:10,12,15 141:17,19 142:3,10,18 146:25 147:2 subdivision 88:23 subject 10:17 41:22 42:1 subjects 138:13 submitted 34:21 subsection 46:2 46:3 subsequent 47:8 substance 47:6 59:21 substantial 64:25 65:5,6 65:10,13,14,17 65:20 66:6,7 90:18 98:13 107:24 substantive 17:1,2 28:15 97:23 98:2 subtype 88:25 subtypes 79:25 80:4 88:24 sufficient 46:4 47:5	suggestive 141:1 suggests 106:11 suite 2:16 3:5 superfund 33:24 superior 45:5 supplemental 4:19,21,23 19:14 20:5,11 20:17 63:15 supply 73:2 129:18 support 141:25 supporting 147:10 sure 9:15 10:5 16:22 21:20 23:16 29:8,17 33:15 45:16,21 46:14 53:14,19 54:3 55:25 58:16 59:6 61:7,24 67:21 69:8 70:8 76:25 82:13 86:20 88:3 92:17 96:19 97:15 98:4 99:3 102:11 110:2,16 116:11 118:16 120:2 121:25 122:10 123:3
--	--	---	--

131:6 136:19 136:21 142:1 142:14,15 146:7 148:1 surgeon 22:14 surgery 79:2 surprisingly 102:23 surrogate 124:17 surveillance 112:15,22 surveys 141:21 susan 1:23 2:18 8:2 151:4,25 susceptibility 100:18 101:13 susceptible 101:19 102:8 sworn 8:14 syndrome 103:5,13 104:4 106:12 synonymously 86:13 system 75:20 129:18 systemic 113:3	table 76:22 77:2,10,12,16 77:18 127:15 127:17,23 132:1,2,8 133:1,10,23 136:3,5,12,13 137:3 142:14 take 10:8,17 16:4,22 25:8 42:4,21 62:24 91:21 92:1,15 96:22 100:12 116:8 126:11 taken 2:15 29:23 33:2,5 69:24 90:5 120:12 151:10 151:15 talk 9:22 45:20 103:3 talked 109:10 117:21 talking 39:24 39:25 40:1 122:9,11 147:3 147:4 tarawa 73:3 taught 31:24 32:17 33:8 36:3,24 tce 37:15,24 38:23 39:17 41:4 55:17	56:15,17,21 58:3 59:22 65:23 66:23 68:22 71:6 72:8 77:14 109:11 118:5 145:6,10 tce's 58:6 techflo 72:11 technologies 94:4 tell 10:1,14 52:1 68:16 69:21 146:13 telling 14:4 ten 30:24 85:7 term 44:10 50:18 51:15 52:22,24 55:6 56:3,20 57:10 57:17,19,25 59:5,19 65:9 66:5 80:25 82:7 85:16 86:12,14,25 87:1,18,20,21 141:22 143:14 143:22 145:1,2 terms 50:1 54:9 55:12,15,16,20 56:1,2,5,8,11 56:24 57:5,6 58:18 60:7,23 67:19 79:5	80:22 88:25 96:12,13 98:2 111:10 135:8 terrace 73:3 test 103:12,13 104:2,17,19,20 104:23 tested 104:8,16 testes 94:15 testified 8:15 145:4 testify 11:2 28:14,19,23 151:9 testifying 28:13 29:11 testimony 8:7 10:20,24 11:6 11:22 12:1 27:1,5,8,23 28:1,24 29:6 64:12 65:15 86:23 107:8 144:20 149:10 150:9 testing 103:3 104:6,9,14 131:4 tests 93:10 tetra 57:20 tetrachloreth... 138:14,21 tetrachloroet... 5:13 56:6
t			
t 57:15,15,15 57:15 tab 26:5 30:4 130:16			

57:14 61:10 thank 18:5 26:9 103:20 137:14 146:18 thanks 26:5 145:18 theoretical 109:22 110:9 theory 29:4,6 therapy 113:3 113:8 thing 18:21 81:10 147:1 things 17:4 80:21 think 19:24 23:19 25:7 29:23 40:8 49:19 50:1,12 50:16 51:14 52:1 57:5 60:19 62:4,13 67:3,17 68:15 70:16 74:1,18 81:23 83:4 84:4,15 86:12 88:23 90:1,4 92:24 94:2,12 96:17 100:19 105:17 106:8 106:18 107:8 107:24 108:1 109:23 110:8 111:13 113:12	117:16 122:13 124:12 144:24 145:4 146:25 third 4:21 9:1 20:5 126:15 thought 28:25 59:17 97:22,22 113:1 thousand 60:20 three 56:25 57:1 83:18 threshold 65:19,23 118:8 118:11 time 7:7 10:20 18:1 25:12 28:4 42:7,10 45:3 52:15 53:16 72:14 79:2 90:15 98:20,20 105:17,19,23 115:15 126:9 129:20 135:6,9 143:4,7 146:9 148:3 151:11 times 16:5,11 16:12 tobacco 27:17 40:23 today 11:3,7,16 12:14 13:5 22:4 31:6 108:23 110:16	147:15 today's 7:7 11:20 together 56:16 tom 3:4 7:17 took 10:14 16:1 81:6,7 top 70:23 torts 3:12 total 24:2,9,13 24:16,18,22 67:14,17,24 68:7 69:19,25 71:6,8,11,14 72:8 77:15 totals 71:17 town 27:7 toxic 39:11 93:12 toxicologic 53:21 toxicological 36:19 toxicologist 36:13 toxicology 33:2 36:16,22,25 60:25 61:10 68:10 toxin 45:12 toxins 47:3 64:25 65:4 101:19 109:5 117:6	training 22:13 28:15 31:22 36:8 78:4 126:10 transcribe 9:14 transcribed 9:16 transcript 20:9 147:22 149:7 149:10 151:15 151:20 transcription 151:13 transcripts 19:19 transplant 115:1,7,11,21 115:25 116:3 116:12 transplants 115:14,16 travel 25:10 27:7 treat 78:25 treated 38:9 111:11,13 145:5,9 treating 14:17 14:20 52:12 88:12 117:22 treatment 111:9,16 116:7 trend 134:14
--	---	---	---

tretra 57:20	67:23 68:23	103:25 119:19	u
tretrachloroet...	69:11 71:22,24	120:8 126:18	u.s. 3:11
57:6,11	72:1,23 74:17	127:15 132:1	uh 9:20 74:22
trial 27:1,4,8	76:13 77:21	133:23 136:2	100:21 119:21
27:23 28:1	93:14 95:23	137:2 138:8	136:4 138:10
45:6	97:4,13 98:7	139:17,24	unable 11:5
trials 117:24	98:10 99:14,24	140:19 141:10	138:19
tribunal 42:2	100:20,25	turning 24:18	unbalanced
trichloroethyl...	101:15,18	55:15 73:7	54:14
55:17 58:7	102:14,18,19	95:23	unbinding
61:1 62:1	103:4,24	twilmoth 3:6	151:19
63:25	104:19 105:7	two 12:16 15:3	uncertainty
true 93:14	105:10,15	16:11,12 17:6	127:7
144:14 149:9	106:20 107:13	17:21,22,24	uncommon
150:5 151:14	107:22 108:5	28:7 42:23	91:6,7
truth 8:8,8,9	108:22 109:2,9	89:25 99:5	uncontrolled
10:14 151:9	110:3,4 111:3	101:10,23	100:5,8
truthful 11:6	111:14,15	102:7,23	under 8:6
trying 44:23	115:1,5,24	144:17 147:11	26:19 44:3
tukes 4:17 5:8	116:3,18	type 16:25	47:24 76:21
5:12 7:19 12:9	118:25 119:15	44:23 55:9	112:15 120:8
14:20 17:20	120:22 122:14	60:22 79:20	126:13,14
18:24 19:7,21	124:23,23	types 40:12	132:8,25 133:1
21:6 24:10,18	134:19 137:9	79:15	133:10 134:3
26:24 28:9	137:19 140:3	typewriting	136:2,13,13
38:17 43:1,11	144:3,14,20	151:12	149:5 151:9
43:15,25 46:9	146:1,14	typically 50:17	undergo 113:7
46:19 47:20,23	147:13	55:5 82:9	understand 9:7
54:20 55:13,22	tumor 113:15	107:18	9:25 10:13,16
57:4,5,17 58:1	turn 26:19	typo 57:11,13	29:8 51:4
58:18,24 59:13	27:20 43:19	57:16	92:17 97:19
61:2 62:19,21	45:23 57:4		understanding
63:15,23 65:3	70:20 73:6		50:10,18 98:22
65:7 66:20	95:4 100:19		

understood 10:2 57:21 88:5 underwent 103:4 104:20 unexplained 88:13 unfavorable 54:11 union 139:15 unit 69:17 74:6 74:13 120:23 143:23 144:2 united 1:1 2:1 7:12,13,21,22 9:3,4 42:14 91:16 units 68:8,12 69:13 70:5 73:17 74:2 120:18 universe 89:6,8 unknown 86:8 86:11,13 87:19 87:25 88:16 89:1,20 90:4,6 92:4,12 93:7 94:1 unremarkable 112:4 unsealing 151:19 updated 25:22	urologic 22:14 40:4,8 117:22 urothelial 39:25 40:5 usdoj.gov 3:15 use 44:17 50:3 51:16 54:6,9 55:4,5 58:22 59:4 60:12,13 60:24 68:12 86:12,25 87:1 87:18,21 95:11 96:3,9 99:20 100:2 101:5 129:20 141:23 143:25 144:1 used 25:19,20 34:9 45:10 52:4,8,11,14 53:6 55:4 57:17,19 58:24 59:5,10 60:22 68:9 69:13 75:16 76:5,12 76:15 77:11 96:25 97:3 100:18 103:23 118:14 120:19 143:24 uses 120:17 using 44:19 45:15,17,18 54:22 65:14 66:2 70:6	72:11,14 74:12 77:21 93:4,5 144:25 145:1 usmc 5:10,16 5:23 75:11 128:11 usually 40:8 55:6 56:15,16 56:21 98:25 106:19 utilized 76:6,8 utuc 40:11	verifying 78:19 veritext 7:6 versus 50:20 54:11 video 7:9 147:24 videographer 3:17 7:4,6 42:6 42:9 105:19,22 143:3,6 148:2 videotaped 1:14 2:14 vinyl 37:19 38:4 39:5 56:11,15 57:2 58:9 66:23 68:23 71:10 72:17 118:18 vitae 5:6 30:10 void 151:21 volume 67:19 volumes 117:25 von 102:1 103:5,12 104:3 vs 7:12 27:17
		v	
		va 53:17 vacuum 141:24 value 118:6,13 variable 81:23 141:16 147:3 variables 76:23 81:24 123:18 131:8 variant 104:16 varied 129:19 variety 45:2 47:1,9 51:24 60:3 vary 115:17 varying 135:6 135:9 vc 71:10 72:17 verbally 9:17 verify 78:11,17	
			w
			w 4:15 18:10 walk 76:19 want 13:15 95:4 146:7 148:6,7 wanted 81:9 145:24

warning 49:7	week 13:6,20	21:7 29:14,22	70:16 74:1
washington	weekly 140:22	32:22 40:17	78:24 84:15
3:14	weeks 16:2	44:5 48:1	89:22 107:5
water 1:5 2:5	weigh 81:22	53:18 62:11,22	109:21 110:8
5:10,14,16,19	weight 30:2	63:18 66:1	110:15 111:1,5
5:23 7:11 9:5	47:12,13 52:3	68:14 69:1,15	117:16 123:25
14:13,23 38:11	60:19,23 74:19	70:15 73:25	137:14 144:24
64:9,25 65:4	80:19 90:6	78:23 84:14	151:7,22
75:10 76:3	96:13,23 97:17	89:21 107:4	witnesses 28:24
78:4,4,8,12	101:9,12 102:4	109:20 110:7	women 108:12
90:22 92:6	107:24	110:14,25	word 62:24
95:7,24 109:5	weights 74:17	111:4 117:15	91:21 126:11
109:8,19 110:6	welcome 61:4	123:24 144:23	wording 44:18
110:13,19,24	wells 73:3	145:18,22	words 90:24
122:18 123:22	129:18,20	147:19,23,25	113:9
127:9 128:11	west 2:15 7:10	148:7	work 16:18,21
144:10,22	9:1	wish 10:8	16:23,24 17:1
145:14	whatsoever	withdraw 29:9	22:18,21,25
way 26:4 44:10	87:14	110:21	23:3,10,24
51:16 54:10,16	white 121:4	witness 4:2 5:4	34:24 50:15,17
60:10 69:22	wholeheartedly	5:5,7 8:5,5,10	94:25
78:19 86:21	87:3	8:13 13:22,25	worked 94:22
87:10 110:17	wide 126:21	14:2 15:18	94:22 138:6,6
123:2	130:7	17:14 18:5	workers 5:19
wayne 14:17	widely 29:4	21:8 22:7,12	5:22
17:20	wider 45:19	22:22 25:17	working 15:5,8
ways 74:2	widespread	26:9,12 27:15	22:6,11
we've 18:22	60:20 94:2	28:14,19 29:11	world 147:5
19:12 60:2	willing 15:15	29:15,23 32:23	worries 25:1
114:17 117:21	16:4	40:22 44:6	written 48:3
weaker 60:5	wilmoth 3:4 4:5	48:2 52:16	50:5
82:11 85:13	7:17,17 12:21	53:19 62:14,24	wrong 24:15
wednesday	13:2,21 14:1	63:19 66:2	70:8
2:18 7:1	15:10 17:10	68:15 69:16	

x	zmandell 3:9 zoom 7:24 13:14,17,18 42:14
x 4:1	
y	
y 4:14,17 18:9 18:23 30:10 yeah 48:14 54:18 80:21 87:25 90:17 93:24 97:25,25 126:4 136:13 146:3 year 82:19 84:24 85:1,9 90:10,14 91:20 93:23 99:5 years 15:3 21:20 30:24 50:13,16 80:23 80:23 85:7 87:6,15 93:23 111:18 115:8 115:14 116:4,5 yesterday 12:17 younger 106:3 106:21 107:18 114:9	
z	
zachary 3:7 7:25 zareh 3:17 7:5	