

CAUSE NO. A-030272CC

ANN STUBBS, Individually) IN THE DISTRICT COURT OF
and as Representative of)
the Estate of BEN L.)
STUBBS, Deceased,)

Plaintiff,)

vs.)

ORANGE COUNTY, TEXAS)

RADIATOR SPECIALTY)
COMPANY; et al.,)

Defendants.)

128TH JUDICIAL DISTRICT)

HERBERT W. WILKINSON and)
PEGGY S. HERBERT,)

Plaintiff,)

vs.)

ORANGE COUNTY, TEXAS)

RADIATOR SPECIALTY)
COMPANY; et al.,)

Defendants.)

128TH JUDICIAL DISTRICT)

ORAL VIDEOTAPED DEPOSITION

HOWARD KUSNETZ

MARCH 3, 2006

ORAL VIDEOTAPED DEPOSITION OF HOWARD KUSNETZ,
produced as a witness at the instance of the Plaintiffs
and duly sworn, was taken in the above-styled and
numbered cause on MARCH 3, 2006, from 10:04 a.m. to
1:05 p.m., before Anne F. Sitka, Certified Shorthand

1 Reporter in and for the State of Texas, reported by
2 computerized stenotype machine at the offices of
3 Fulbright & Jaworski, LLP, 1301 McKinney, Suite 5100,
4 Houston, Texas 77010, pursuant to the Texas Rules of
5 Civil Procedure and the provisions stated on the record
6 or attached hereto.

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APPEARANCES

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1 ALSO PRESENT:

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3 Mr. Ron Mayfield

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10:03:52 1 THE VIDEOGRAPHER: We're beginning this
10:05:15 2 deposition. Today's date is March 3rd, 2006. The time
10:05:19 3 is approximately 10:04 a.m. We're now on the video
10:05:19 4 record.

10:05:27 5 HOWARD KUSNETZ,
10:05:27 6 having been first duly sworn, testified as follows:

10:05:27 7 EXAMINATION

10:05:28 8 BY MS. CLANCY

10:05:29 9 Q. Could you please state your name for the
10:05:30 10 record?

10:05:31 11 A. I'm Howard Kusnetz.

10:05:33 12 Q. I'm Denyse Clancy. And do you understand that
10:05:36 13 I represent the plaintiffs in the Wilkinson and Stubbs'
10:05:38 14 lawsuits against Shell Oil Company?

10:05:39 15 A. Yes, I do.

10:05:40 16 (Exhibit 1, 2 and 3 marked)

10:05:40 17 Q. (By Ms. Clancy) Okay. I'm going to -- just
10:05:44 18 preliminary matters, it's my understanding that you
10:05:46 19 reviewed two documents prior to your deposition today;
10:05:49 20 is that right? And I'm going to enter them as Exhibits
10:05:53 21 1 and 3 and ask you to confirm that those were the
10:05:55 22 documents you reviewed.

10:05:57 23 A. Right. Well, one I produced, which is my CV;
10:06:00 24 and the other one is my deposition in a previous case,
10:06:04 25 yes.

10:06:04 1 Q. Okay. Did you review any other documents in
10:06:07 2 preparation for your deposition today?

10:06:10 3 A. No.

10:06:15 4 MR. YOUNG: And, Denyse, he also looked at
10:06:17 5 that MSD that I handed you.

10:06:17 6 MS. CLANCY: Oh, thank you.

10:06:18 7 THE WITNESS: Oh, I'm --

10:06:18 8 MR. YOUNG: I thought those were the two
10:06:18 9 that you were handing him.

10:06:18 10 MS. CLANCY: I forgot.

10:06:19 11 THE WITNESS: Okay.

10:06:19 12 (Exhibit 4 marked)

10:06:19 13 Q. (By Ms. Clancy) So, I'm going to mark as
10:06:20 14 Exhibit 4 the material safety data, that sheet marked
10:06:27 15 benzene.

10:06:30 16 A. Right, I saw that. I didn't review it, but I
10:06:33 17 saw that this morning.

10:06:34 18 Q. All right. Who gave that to you?

10:06:35 19 A. Mr. Young.

10:06:36 20 Q. Okay. How much are you being paid to testify
10:06:41 21 today?

10:06:42 22 A. My testimony isn't for sale, Ms. Clancy. I'm
10:06:46 23 being paid for my time, and I charge \$600 an hour for
10:06:50 24 that?

10:06:50 25 Q. And who are you charging \$600 an hour?

10:06:54 1 A. I'll send my bill to Shell.

10:07:01 2 Q. Okay.

10:07:01 3 MS. CLANCY: And object to the
10:07:01 4 nonresponsive portions of that answer.

10:07:11 5 Q. (By Ms. Clancy) You're not an employee of
10:07:13 6 Shell, correct?

10:07:14 7 A. That's correct.

10:07:14 8 Q. Okay. And when were you last an employee of
10:07:18 9 Shell?

10:07:18 10 A. The end of February, 1991.

10:07:23 11 Q. Okay. What did you and Mr. Young talk about
10:07:26 12 prior to your deposition today?

10:07:29 13 MR. YOUNG: Object to the form of the
10:07:30 14 question. Don't answer that.

10:07:31 15 Q (By Ms. Clancy) You can answer the question.

10:07:33 16 MR. YOUNG: Denyse, I'm going to have to
10:07:33 17 instruct the witness not to answer.

10:07:35 18 MS. CLANCY: He is not an employee of
10:07:36 19 Shell, he's a paid consultant of Shell. What is your
10:07:39 20 basis for him not answering this question?

10:07:43 21 MR. YOUNG: Your question, as phrased, is
10:07:46 22 broad enough to certainly call for privileged
10:07:47 23 information. It's true that Mr. Kusnetz is not an
10:07:51 24 employee; but in his conversations with us, when he was
10:07:55 25 a Shell employee, are covered by attorney/client

10:07:56 1 privilege. I'm going to instruct him not to answer
10:07:58 2 those questions.

10:07:59 3 Q (By Ms. Clancy) You were last an employee of
10:08:02 4 Shell in 1991, correct?

10:08:03 5 A. Correct.

10:08:04 6 Q. Have you ever had a discussion with Mr. Young
10:08:06 7 prior -- at or prior to 1991?

10:08:10 8 A. No.

10:08:10 9 Q. Okay. What have you talked about with
10:08:13 10 Mr. Young subsequently to the year 1991?

10:08:17 11 MR. YOUNG: Same objection. Howard, you
10:08:19 12 don't have to answer that question.

10:08:21 13 Q (By Ms. Clancy) What have you discussed with
10:08:24 14 Mr. Young subsequent to the year 1991 when you were last
10:08:24 15 an employee with Shell?

10:08:26 16 MR. YOUNG: Same objection. Hold on,
10:08:27 17 Howard. I'm not trying to be combative in any way, but
10:08:31 18 your questions are calling for attorney/client
10:08:35 19 privileged information. They're inappropriate, and I'm
10:08:35 20 not going to let him answer them.

10:08:38 21 MS. CLANCY: Okay. We're going to take
10:08:39 22 this up with the Court. This is clearly not an --
10:08:42 23 currently an employee of Shell. He has never been an
10:08:46 24 employee of Shell when he has had any conversations with
10:08:50 25 you. And he is now paid to be giving testimony today in

10:08:54 1 this case by Shell. So, I am entitled to know
 10:08:57 2 everything that he discussed with you prior to this
 10:08:59 3 deposition. And I'm going to ask the Court that you
 10:09:02 4 produce him again for cost, so, consider yourself
 10:09:04 5 duly -- at your cost -- duly warned.

10:09:07 6 Q. (By Ms. Clancy) I'm going to ask you again:
 10:09:08 7 What did you talk about with the attorneys from
 10:09:11 8 Fulbright prior to your deposition in this case?

10:09:15 9 MR. YOUNG: Same objection. Don't answer
 10:09:16 10 it.

10:09:17 11 Q (By Ms. Clancy) Are you refusing to answer the
 10:09:19 12 question?

10:09:19 13 A. On the basis of Mr. Young's comments, yes.

10:09:26 14 Q. The Shell Exposure Assessment Study that --
 10:09:33 15 that was performed in the years -- in the early 1980's,
 10:09:38 16 that was performed according to the highest state of the
 10:09:42 17 art standards; is that right?

10:09:43 18 MR. YOUNG: Object to the form.

10:09:45 19 A. Yes, as far as we could get it done that way,
 10:09:48 20 yes, that's correct.

10:09:49 21 Q (By Ms. Clancy) Well, you would agree with me,
 10:09:51 22 right, that it was performed to the highest state of the
 10:09:54 23 art, correct?

10:09:55 24 MR. YOUNG: Object to the form.

10:09:56 25 A. We tried to do that, yes, sure.

10:09:57 1 Q. (By Ms. Clancy) Okay. And it was indeed the
10:09:58 2 highest state of the art, correct?
10:10:01 3 MR. YOUNG: Object to the form.
10:10:02 4 Q (By Ms. Clancy) Was it or not?
10:10:04 5 MR. YOUNG: Object to the form.
10:10:04 6 A. Yes, I think I've answered that.
10:10:06 7 Q (By Ms. Clancy) It was the highest state of the
10:10:08 8 art, correct?
10:10:09 9 A. As far as we knew, yes.
10:10:11 10 MR. YOUNG: Object to the form, asked and
10:10:12 11 answered.
10:10:13 12 Q. (By Ms. Clancy) Okay. Would you agree then --
10:10:17 13 I'm going to show you a document labeled --
10:10:20 14 MS. CLANCY: And just for clarification,
10:10:21 15 I've had to -- the documents that I went through in
10:10:25 16 preparation for Mr. Kusnetz' deposition were at that
10:10:26 17 time the ones that were not produced to us that were not
10:10:28 18 bates labeled yet, and so we put in an internal labeling
10:10:34 19 system on them. So, I will just read for the record the
10:10:35 20 number that is on our internal numbering system. And I
10:10:39 21 will, as best I can, identify the document for the
10:10:42 22 record.
10:10:44 23 Q (By Ms. Clancy) I want to show you a letter
10:10:46 24 that you wrote in February 10th, 1984, to Mr. Thorn
10:10:51 25 Octor, the assistant secretary for Occupational --

10:10:58 1 Occupational Safety and Health. I'm going to read you a
10:11:01 2 sentence from it. And I'm going to ask you a question
10:11:04 3 about it. (phonetic)
10:11:04 4 The sentence that you wrote says, we fully
10:11:06 5 believe that the methods used to make the estimates
10:11:09 6 of -- represent the maximum care and highest state of
10:11:12 7 the art of such historic data estimates. And I show you
10:11:17 8 that sentence right here.
10:11:18 9 A. I want to see it in context.
10:11:30 10 Q. Okay. Did you write the words with respect to
10:11:32 11 the historic data assessment study, we fully believe
10:11:37 12 that the methods used to make the estimates represent
10:11:39 13 the maximum care and highest state of the art of such
10:11:41 14 historic data estimates? Did you write those words?
10:11:43 15 A. I believe, if my signature is on the letter,
10:11:46 16 let me just check that, then I wrote the letter.
10:11:50 17 Q. Okay. So, you wrote the words that the --
10:11:52 18 A. That's correct.
10:11:53 19 Q. You wrote the words that the estimates with
10:12:00 20 respect to Shell's historic data -- excuse me -- you
10:12:02 21 wrote the words that the estimates used by Shell in
10:12:05 22 order to do its exposure reassessment represent the
10:12:09 23 highest state of the art; is that correct?
10:12:11 24 MR. YOUNG: Object to the form.
10:12:13 25 A. Yes, it's written there. It's obvious, yes.

10:12:14 1 Q (By Ms. Clancy) Okay. Are you retracting that
10:12:17 2 statement in any way today?

10:12:18 3 A. No.

10:12:18 4 Q. Okay. So, you stand by your statement that you
10:12:20 5 wrote in 1984 that the estimates used by Shell in the
10:12:25 6 exposure reassessment study represent the highest state
10:12:30 7 of the art? You stand by those words, correct?

10:12:31 8 A. Those words, then, sure.

10:12:32 9 Q. Okay. And in order to perform the exposure
10:12:45 10 estimates that Shell did with respect to the historic
10:12:52 11 benzene exposure study, Shell did not rely on actual
10:12:56 12 monitoring data, correct?

10:12:57 13 A. Well, there was -- were no data. That's why we
10:13:01 14 had to go back and estimate.

10:13:03 15 Q. Right. So --

10:13:04 16 MS. CLANCY: Object to nonresponsive
10:13:05 17 portion of that.

10:13:06 18 Q (By Ms. Clancy) You did not rely on actual
10:13:07 19 monitoring data in performing the historic exposure --
10:13:10 20 benzene exposure study, correct?

10:13:11 21 MR. YOUNG: Object to the form. Asked and
10:13:12 22 answered.

10:13:12 23 A. We couldn't. There were no data.

10:13:14 24 Q. (By Ms. Clancy) Okay.

10:13:14 25 A. That's correct.

10:13:14 1 Q. That is correct, right?

10:13:15 2 A. I just said that's correct.

10:13:17 3 Q. Okay. And, further, the method, what you used

10:13:22 4 is, you based your exposure estimates based on

10:13:26 5 inhalation exposures, correct?

10:13:29 6 MR. YOUNG: Object to the form.

10:13:30 7 A. Not correct, no.

10:13:31 8 Q (By Ms. Clancy) Okay. I'm going to read you a

10:13:47 9 sentence from the copy of the historic benzene exposure

10:13:58 10 study that you enclosed in your letter to the assistant

10:14:03 11 secretary for Occupational Safety and Health on

10:14:07 12 February 10th, 1984. And I'm going to ask you a

10:14:10 13 question about that sentence. Okay?

10:14:11 14 A. Fine.

10:14:11 15 Q. Okay. This -- this sentence says under the

10:14:21 16 introduction and background section with respect to the

10:14:23 17 historic benzene exposure study, the study represents a

10:14:27 18 massive undertaking to ascertain probable inhalation

10:14:31 19 exposures of individuals based upon a study of the types

10:14:34 20 of equipment, processes and procedures used in the two

10:14:38 21 petroleum refinery. Can I show you the sentence?

10:14:46 22 A. No, but what you asked --

10:14:55 23 Q. Well, I haven't asked a question yet.

10:14:55 24 A. Oh, no, you did. And that's when I said not

10:14:57 25 correct. You said was this --

10:14:58	1	THE WITNESS: Could you read the question
10:14:59	2	back?
10:15:00	3	Q. (By Ms. Clancy) There's no question pending.
10:15:02	4	A. Fine.
10:15:02	5	Q. My question is -- I was just showing you that
10:15:05	6	sentence so you could read it as well.
10:15:07	7	A. That's fine.
10:15:08	8	Q. Okay.
10:15:08	9	A. Yeah.
10:15:08	10	Q. May I have that back, please?
10:15:10	11	A. Sure.
10:15:10	12	Q. Okay. Would you agree with me that the
10:15:12	13	sentence there says the study represents a massive
10:15:15	14	undertaking to ascertain probable inhalation exposures
10:15:18	15	of individuals based upon a study of the types of
10:15:23	16	equipment, processes and procedures used in the two
10:15:23	17	petroleum refineries?
10:15:24	18	A. It's exactly what it says.
10:15:25	19	Q. Okay. And the study also used in order to --
10:15:52	20	the study also, in addition to doing a massive
10:15:54	21	undertaking to determine probable inhalation exposures,
10:15:58	22	the study -- well, let me back up. In order to do -- to
10:16:04	23	ascertain probable inhalation exposures, one of the
10:16:07	24	criteria that this study used was estimates of
10:16:14	25	inhalation by use of people's recollection of what

10:16:19 1 benzene odors they smelled; is that correct?

10:16:22 2 MR. YOUNG: Object to the form of the
10:16:24 3 question.

10:16:25 4 A. Not quite. We asked a lot of questions, among
10:16:29 5 which were questions of visual spills and so on.
10:16:32 6 Recollections of what happened. Odor was one of many
10:16:35 7 things we looked at.

10:16:36 8 Q (By Ms. Clancy) Okay. What else did you look
10:16:37 9 at besides odor?

10:16:39 10 MR. YOUNG: Object to the form of the
10:16:40 11 question.

10:16:41 12 MS. CLANCY: Basis?

10:16:41 13 MR. YOUNG: It's in the document that you
10:16:41 14 have in front of you. If you want to know what's in the
10:16:44 15 document, you can read it or the witness can read it.

10:16:50 16 MS. CLANCY: Your objection is based on
10:16:50 17 you're not letting him explain the other criteria they
10:16:53 18 used in the benzene historic exposure analysis because
10:16:54 19 it's in the document in front of me?

10:16:56 20 MR. YOUNG: He can explain it. I didn't
10:16:58 21 instruct him not to answer. I'm just objecting to the
10:17:00 22 question.

10:17:01 23 Q (By Ms. Clancy) Okay. Go ahead, answer the
10:17:02 24 question.

10:17:02 25 A. You guys finished yet?

10:17:04 1 Q. Yes.

10:17:06 2 A. The sentence you read indicates procedures and
10:17:09 3 so on. We looked at engineering drawings. We looked at
10:17:12 4 procedures.

10:17:12 5 Q. Okay. Hold on a second. You looked at
10:17:13 6 engineering drawings?

10:17:15 7 A. Well, I can read that sentence back to you,
10:17:17 8 which indicates what we used.

10:17:18 9 Q. Well, my question is, what criteria did you use
10:17:22 10 to ascertain probable inhalation exposures of
10:17:25 11 individuals?

10:17:25 12 A. As I indicated here --

10:17:27 13 Q. Okay.

10:17:27 14 A. -- in this summary --

10:17:28 15 Q. All right.

10:17:28 16 A. -- we looked at -- study the types of equipment
10:17:31 17 being used. We looked at the processes being used. We
10:17:35 18 looked at the procedures being used. We included in the
10:17:38 19 sentence you didn't read, but the following sentence
10:17:41 20 says, we also included recollection of work practices.
10:17:44 21 We included subjective estimates of benzene odors and so
10:17:50 22 on. And we just kept going at that. Odors were only
10:17:52 23 one of the many items. We would ask did you see leaks,
10:17:55 24 did you see spills, were there incidents of benzene
10:17:59 25 escaping, were there fugitive emissions. I mean -- and

10:18:04 1 those are probably in the body of the report some place.
10:18:08 2 But this is just a summary. But, certainly, the two
10:18:13 3 sentences I read you there, about four or five different
10:18:16 4 criteria.

10:18:16 5 Q. Okay. And one of the -- and the four or five
10:18:18 6 different criteria that you just listed are, you looked
10:18:21 7 at the types of equipment being used?

10:18:22 8 A. Right.

10:18:22 9 Q. You looked at the processes being used,
10:18:24 10 correct?

10:18:25 11 A. Right.

10:18:25 12 Q. You look at recollection of work procedures,
10:18:27 13 correct?

10:18:28 14 A. Right.

10:18:29 15 Q. And that recollection of work procedures was
10:18:34 16 based on individual's recollection of what the work
10:18:37 17 procedures were; is that right?

10:18:38 18 A. Sure.

10:18:38 19 Q. Okay. Also subjective estimates. What did you
10:18:43 20 mean by subjective estimates?

10:18:45 21 A. Just what it says here. What did you think
10:18:48 22 happened? What -- did you -- were there any untoward
10:18:55 23 odors? Did you see spills and so on?

10:18:55 24 Q. Okay. So, you interviewed people as to whether
10:18:55 25 or not they saw spills or leaks for --

10:18:57 1 A. We -- yeah, we interviewed people on a lot of
10:19:00 2 things. What happened -- what was work like when you
10:19:02 3 worked there?

10:19:03 4 Q. All right. And I'm just trying to determine
10:19:05 5 what the -- what kind of questions you're asking in
10:19:06 6 order to do a state of the art exposure assessment.
10:19:08 7 Okay.

10:19:08 8 A. That's correct.

10:19:09 9 Q. Okay. And the things that you asked in order
10:19:12 10 to do a state of the art exposure assessment were, what
10:19:15 11 were the -- and let me back up. At the time that you
10:19:18 12 were conducting this historic exposure assessment, you
10:19:22 13 were the manager of health and safety for Shell?

10:19:25 14 A. For safety and industrial hygiene, correct.

10:19:27 15 Q. Yeah. Okay. So, as manager of safety and
10:19:27 16 industrial hygiene for Shell in the 1980's, when you
10:19:30 17 were conducting a state of the art exposure assessment,
10:19:34 18 the criteria you were looking at included what odors the
10:19:37 19 people recollect smelling; is that correct?

10:19:39 20 A. Well, that's one of the --

10:19:40 21 Q. One of --

10:19:40 22 A. -- minor criteria, sure.

10:19:42 23 Q. You're now testifying that the odor
10:19:44 24 recollection is a minor criteria that you used in --

10:19:44 25 A. We did not -- we did not base our -- I'm

10:19:48 1 testifying that we did not base our estimates on the
 10:19:50 2 odor criteria per se. It had to be taken in context.
 10:19:55 3 Q. Okay. It was one of the criteria that you
 10:19:57 4 used?
 10:19:58 5 A. Sure.
 10:19:58 6 Q. Okay. And other criterias you used were
 10:20:02 7 individual's recollections of spills and leaks they may
 10:20:04 8 have seen; is that correct?
 10:20:05 9 A. Of course.
 10:20:05 10 Q. Okay. And other criteria used is recollections
 10:20:07 11 of the work practices being employed; is that right?
 10:20:10 12 A. Well, not only recollections but whatever
 10:20:12 13 records there may have been of work practices.
 10:20:20 14 Q. Okay. And --
 10:20:20 15 A. I think there are detailed questions and
 10:20:22 16 detailed -- more details of the protocol. All this is a
 10:20:25 17 summary, but that should be in the report.
 10:20:28 18 Q. Well, sir, you're the one -- one of the
 10:20:30 19 people -- the key people who conducted this historic
 10:20:34 20 exposure assessment. And this is my only chance to get
 10:20:34 21 to talk to you prior to going to trial in this case.
 10:20:34 22 So, I would like your expert opinion as to what were the
 10:20:39 23 criteria going into the state of the art exposure
 10:20:42 24 assessment.
 10:20:42 25 A. Fine. As far as I can remember, and I'd be

10:20:45 1 happy to help you, but they're in the report and I'd
10:20:47 2 have to perhaps look to refresh my memory.

10:20:50 3 Q. Well, you can look at it as much as you want.

10:20:51 4 A. Well, that's a thick report. Why don't you go
10:20:54 5 ahead and ask your questions and let's see what we --
10:20:55 6 what we get?

10:20:56 7 Q. Okay. That's what I would like to do.

10:20:58 8 A. Okay.

10:21:02 9 Q. Okay. So, what I have so far is the criteria
10:21:03 10 being used by Shell to conduct a state of the art
10:21:08 11 exposure assessment is types of equipment used, the --
10:21:12 12 one, that's one criteria?

10:21:14 13 A. Right. But that's a broad criteria. It would
10:21:17 14 include engineering drawings. It would include designs
10:21:20 15 and so on.

10:21:21 16 Q. Okay. The processes being used, correct?

10:21:25 17 A. The processes being used, that's correct. What
10:21:27 18 the standards were on when you break a line. What
10:21:29 19 happens when you handle something and so on.

10:21:33 20 Q. The recollection of the work procedures; is
10:21:35 21 that right?

10:21:36 22 A. Sure.

10:21:36 23 Q. Okay. And that would be each -- you
10:21:38 24 interviewed individuals and asked them what they
10:21:41 25 recalled about the work procedures, correct?

10:21:43 1 A. Right.

10:21:43 2 Q. Okay. And you also asked them what they

10:21:46 3 recalled about leaks and spills, correct?

10:21:48 4 A. Right.

10:21:48 5 Q. Okay. And you also asked them what the

10:21:50 6 individuals recalled about odors, correct?

10:21:51 7 A. Right.

10:21:52 8 Q. And you also asked them about what they

10:21:53 9 recalled about seeing any fugitive emissions; is that

10:21:56 10 right?

10:21:57 11 A. Right.

10:21:57 12 Q. Okay. And when you interview people, you not

10:22:00 13 only interviewed them based on their own work practices,

10:22:04 14 but you may have interviewed people additionally based

10:22:05 15 on trying to recollect what happened with respect to a

10:22:08 16 coworker, correct?

10:22:10 17 A. Probably. I don't recall those details. I

10:22:11 18 personally did not get involved in the interviews. So,

10:22:15 19 I'd have to -- whatever I'm giving you is secondhand, is

10:22:18 20 what I believe had happened.

10:22:19 21 Q. Well, some of the folks that you were trying to

10:22:21 22 do an exposure reassessment for were deceased, right?

10:22:26 23 A. Yes.

10:22:27 24 Q. Okay. So, you couldn't talk to them to ask --

10:22:28 25 A. Obviously.

10:22:28 1 Q. Right. So, you had to ask some of their
10:22:30 2 co-workers as to what happened with them, right?

10:22:33 3 MR. YOUNG: Object to the form.

10:22:33 4 A. Well, not necessarily. The questions may have
10:22:36 5 been with regard to individuals. The questions may also
10:22:41 6 have been with regard to the job or the area. And then
10:22:46 7 we would have said, okay, if so and so was in that area,
10:22:48 8 whatever you're telling us about that particular area,
10:22:51 9 it would have applied to him or her.

10:22:54 10 Q. (By Ms. Clancy) I see. So, you could
10:22:55 11 extrapolate what their coworker would testify -- would
10:22:59 12 talk about with respect to the conditions in the area
10:23:02 13 where he worked and then extrapolate that to say what
10:23:07 14 happened to the deceased person, is that correct?

10:23:08 15 A. We would --

10:23:08 16 MR. YOUNG: Object to the form.

10:23:09 17 A. We would try to do that. Yes, that's the only
10:23:10 18 way you can do that.

10:23:11 19 Q. (By Ms. Clancy) Okay. And that -- that was
10:23:12 20 part of the method that you used for an analysis for a
10:23:14 21 state of the art exposure assessment, is you'd -- is
10:23:18 22 you -- is Shell would say, okay, the person's dead, so
10:23:20 23 we're going to ask other folks who worked in the area
10:23:24 24 what were the conditions in that area and then
10:23:26 25 extrapolate from that data what type of exposure the

10:23:27 1 deceased person had; is that correct?

10:23:28 2 MR. YOUNG: Object to the form of the

10:23:28 3 question.

10:23:30 4 A. That's generally what we would try to do, sure.

10:23:33 5 That's a summary of what we could do.

10:23:35 6 Q (By Ms. Clancy) Okay. And one of the criteria

10:25:14 7 used at -- in the Shell historic benzene exposure

10:25:19 8 assessment was the sensory data of the person being

10:25:24 9 exposed; is that correct? And I'll show you a Table 1

10:25:26 10 from the historic exposure assessment.

10:25:29 11 A. That's correct. Let me refresh my memory.

10:25:44 12 Okay. What is the question?

10:25:45 13 Q. Okay. My question is, so, in developing --

10:25:48 14 okay. My question is, with respect to the benzene

10:26:09 15 historic exposure study, one of the problems that you

10:26:16 16 had in doing the benzene exposure study was that no

10:26:19 17 benzene monitoring data was available for either Deer

10:26:24 18 Park or for Wood River for certain of the subjects that

10:26:28 19 you were trying to analyze; is that correct?

10:26:30 20 A. Well, for certain the subjects. I don't know

10:26:32 21 if there were no benzene -- if there were no benzene

10:26:33 22 data at all or not. I don't recall that.

10:26:35 23 Q. But certainly that was one of the problems that

10:26:38 24 you were facing in that study?

10:26:39 25 A. That we -- there was a tremendous lack of data,

10:26:45 1 yeah.

10:26:45 2 Q. Right. Okay. And then in order to provide a
10:26:46 3 consistent basis for the exposure estimates, you had
10:26:50 4 empirical data developed by the industrial hygienists
10:26:55 5 based on sensory perception in order to estimate benzene
10:27:00 6 exposures, correct?

10:27:02 7 MR. YOUNG: Object to the form of the
10:27:03 8 question.

10:27:04 9 A. That was part of what we developed. That was
10:27:06 10 one of the factors as we went over just a few minutes
10:27:09 11 ago.

10:27:09 12 Q. (By Ms. Clancy) Okay. And the table, the
10:27:11 13 sensory perception data that you developed, was
10:27:16 14 developed by review of known exposure conditions and
10:27:20 15 data, correct?

10:27:20 16 A. And also literature references.

10:27:22 17 Q. And literature references?

10:27:25 18 A. Sure.

10:27:25 19 Q. Okay. So, it was generally accepted among
10:27:28 20 peer-reviewed literature as a way to do benzene exposure
10:27:32 21 estimates, correct?

10:27:33 22 MR. YOUNG: Object to the form of the
10:27:33 23 quesiton.

10:27:34 24 A. You're mixing up two things. If you're asking
10:27:36 25 me about this kind of table, we took the best data we

10:27:39 1 could get from the literature extent at the time and
 10:27:41 2 with our consultants. And that's how we developed it.
 10:27:43 3 Q (By Ms. Clancy) And you wouldn't just take it
 10:27:45 4 from any literature. I mean, you wouldn't take it from
 10:27:48 5 somebody scribbling on a cocktail napkin, right?
 10:27:48 6 A. No, no. This is review -- peer-reviewed
 10:27:49 7 literature.
 10:27:49 8 Q. All right. So, you developed your benzene
 10:27:52 9 exposure estimates using sensory data such as odor
 10:27:57 10 events based on peer-reviewed literature, correct?
 10:28:01 11 MR. YOUNG: Object to the form of the
 10:28:01 12 question.
 10:28:02 13 A. We -- no. We developed our benzene exposure
 10:28:03 14 data partly on odor and partly on all of the other items
 10:28:07 15 that I've cited.
 10:28:09 16 Q. (By Ms. Clancy) Right. I --
 10:28:09 17 A. The exposure estimate was not on odor alone.
 10:28:12 18 Q. Right. But with respect to the odor portion,
 10:28:14 19 that was developed from peer-reviewed literature,
 10:28:17 20 correct?
 10:28:18 21 A. With respect to that portion, that's correct,
 10:28:19 22 as the table shows.
 10:28:21 23 Q. Okay. So, the table -- table 2-A basis for
 10:28:25 24 sensory perception for benzene exposure estimates, which
 10:28:30 25 Shell used in its state of the art benzene exposure

10:28:34 1 assessment study, this table was developed from
10:28:37 2 peer-reviewed literature with respect to how to best
10:28:41 3 analyze a person's exposure based on a sensory
10:28:45 4 perception; is that correct?

10:28:47 5 A. Well, this is a different table from what you
10:28:50 6 showed me here. Yeah.

10:28:51 7 Q. Okay. So, it's Table 1 then?

10:28:53 8 A. Well, you showed me Table 1. And that's what I
10:28:54 9 commented on.

10:28:55 10 Q. Okay.

10:28:55 11 A. And Table 2 seems to be a -- a -- an outgrowth
10:29:03 12 of Table 1.

10:29:04 13 Q. Okay. And Table 1 was based on peer-reviewed
10:29:08 14 literature?

10:29:09 15 A. Yes. And the references are given right at the
10:29:11 16 bottom of that table.

10:29:12 17 Q. Okay. So, let me back up then. So, the basis
10:29:16 18 for Shell's development of exposure estimates based on
10:29:21 19 sensory perception, such as odor, were developed from
10:29:27 20 sources such as peer-reviewed literature, correct?

10:29:31 21 MR. YOUNG: Asked and answered five times.
10:29:33 22 Object to the form.

10:29:34 23 A. That's correct.

10:29:34 24 (Exhibit 5 marked)

10:29:34 25 Q (By Ms. Clancy) Okay. I'm going to hand you

10:30:24 1 what is an exposure description worksheet. And I'm
10:30:32 2 going to mark it as Exhibit 5 to the deposition. My
10:30:40 3 first question is very simple, which is -- well, let me
10:30:44 4 give you a chance to review that.

10:31:06 5 A. Okay. What's your question?

10:31:08 6 Q. First question is very simple: One of the
10:31:11 7 criteria used to analyze the degree of exposure were
10:31:16 8 looking at signs of headaches, nausea or dizziness; is
10:31:17 9 that correct?

10:31:18 10 A. Well, yeah. Let me just ask about this. There
10:31:21 11 is no identification on this as to where it came from.
10:31:23 12 All it says it's an exposure description worksheet. Are
10:31:26 13 you saying this came out of the --

10:31:28 14 Q. Yes.

10:31:28 15 A. -- benzene exposure study?

10:31:29 16 Q. Yes.

10:31:29 17 A. Okay.

10:31:30 18 Q. I can show it to you where it comes out of it,
10:31:33 19 if you'd like.

10:31:34 20 A. Okay. Well, no, that's fine. If it comes to
10:31:35 21 bear --

10:31:35 22 Q. I just pulled it straight from the --

10:31:38 23 A. Okay.

10:31:38 24 Q. -- benzene exposure study.

10:31:40 25 A. I haven't looked at that study for 20 years, so

10:31:42 1 I need some refreshing.

10:31:45 2 Q. Okay. Well, take as much time if you need it.

10:31:45 3 A. Okay. Go ahead.

10:31:46 4 Q. Okay. So, my question is -- my first question
10:31:49 5 is very simple, which is, were one of the criteria used
10:31:52 6 to analyze the degree of exposure headaches, nausea or
10:31:59 7 dizziness?

10:32:00 8 A. There were eight classes. One of them -- one
10:32:04 9 of the classes included headaches, nausea, dizziness.
10:32:09 10 It also included tiredness, loss of coordination, drunk
10:32:12 11 or high feeling. It's all in that one criterion.

10:32:14 12 Q. Okay. So, if you had narcotic effects such as
10:32:20 13 headaches, nausea, dizziness, tiredness, loss of
10:32:24 14 coordinance, drunk or high feeling -- or high feeling,
10:32:27 15 if you had one of those effects, that would put you in a
10:32:31 16 degree of exposure F, right?

10:32:33 17 MR. YOUNG: Object to the form.

10:32:35 18 A. According to this, if -- if the individual
10:32:38 19 reported that, then it would be listed under Column F,
10:32:41 20 that's correct.

10:32:41 21 Q (By Ms. Clancy) Okay. And "F" on the degree of
10:32:45 22 exposure is towards the higher end of exposure, correct?

10:32:51 23 MR. YOUNG: Object to the form.

10:32:53 24 A. Yes.

10:32:53 25 Q (By Ms. Clancy) Okay. A -- "A," if we're

10:32:54 1 looking at this, there's -- you're -- "A" seems to say
 10:32:58 2 closed system, no odor, which would mean the lowest
 10:33:01 3 amount of exposure or perhaps none at all, correct?

10:33:05 4 A. That is correct.

10:33:06 5 Q. Okay. Which would mean that, according to the
 10:33:14 6 state of the art historic exposure assessment performed
 10:33:19 7 by Shell, that Shell classified getting headache or
 10:33:24 8 getting nausea as a sign that your exposure, the
 10:33:27 9 person's potential exposure, was on the higher end of
 10:33:31 10 exposure, correct?

10:33:32 11 MR. YOUNG: Object to the form.

10:33:34 12 A. Within that range, it's at the higher end of
 10:33:36 13 the range.

10:33:37 14 Q (By Ms. Clancy) It's the higher end of the
 10:33:39 15 exposure range, correct?

10:33:41 16 A. Of -- of the criteria that we had here, yes.

10:33:43 17 Q. Okay. Now, you mentioned earlier that you used
 10:33:53 18 eight different criteria in order to assess exposure on
 10:33:57 19 the exposure description worksheet, correct?

10:34:01 20 A. Right.

10:34:02 21 Q. When they're interviewing the person?

10:34:02 22 A. They go from "A" through "G," plus a "U" for
 10:34:06 23 unknown.

10:34:07 24 Q. Okay.

10:34:07 25 A. That's eight.

10:34:07 1 Q. And in this exposure description worksheet, the
 10:34:10 2 person has to talk about the job that they were on,
 10:34:14 3 correct?
 10:34:22 4 A. Right.
 10:34:22 5 Q. And what area they were working in, correct?
 10:34:22 6 A. That's correct.
 10:34:22 7 Q. And what years that work covered, right?
 10:34:22 8 A. Right.
 10:34:22 9 Q. Okay. And then the amount of time spent on the
 10:34:26 10 job task, correct?
 10:34:27 11 A. Correct.
 10:34:28 12 Q. Okay. And once you got that information, then
 10:34:31 13 what you would look at is, well, what were your sensory
 10:34:35 14 perceptions while you were in that job; is that right?
 10:34:39 15 A. Only for purposes of this worksheet.
 10:34:41 16 Q. Right. And this is the worksheet, interviewing
 10:34:44 17 the person to assess their own individual exposure,
 10:34:47 18 correct?
 10:34:48 19 MR. YOUNG: Object to the form of the
 10:34:49 20 question.
 10:34:50 21 A. This is a worksheet that was done. This total
 10:34:52 22 assessment of the exposure included this plus all of the
 10:34:56 23 other criteria that I've already described.
 10:34:59 24 Q (By Ms. Clancy) Okay. But what I'm asking you
 10:35:00 25 in your individual interviews, this exposure description

10:35:05 1 worksheet, in your individual interviews with the
10:35:08 2 people, what other worksheets did you use to interview
10:35:10 3 them? I mean, what other -- because there aren't any
10:35:14 4 other in this packet.

10:35:16 5 A. I think --

10:35:16 6 MR. YOUNG: Object to counsel's testimony.

10:35:18 7 A. What you have is what's in the packet. I think
10:35:21 8 the worksheet speaks for itself. I'm answering your
10:35:25 9 questioning which you asked in terms of making the
10:35:27 10 exposure assessment. And all these other things that we
10:35:31 11 talked about earlier went into making the exposure
10:35:33 12 assessment. This represents the sensory reactions, as
10:35:37 13 you put it.

10:35:38 14 Q (By Ms. Clancy) Okay. And let me back up. I
10:35:40 15 understand that you testified earlier that when Shell,
10:35:45 16 in performing its exposure assessment, looked at types
10:35:50 17 of equipment and processes being used, that Shell could
10:35:55 18 independently look at that. And my question is, in
10:35:57 19 reviewing the benzene historic exposure assessment
10:36:04 20 report, it appears that when one was interviewing the
10:36:10 21 actual workers, that these exposure description
10:36:15 22 worksheets were the criteria used to interview the
10:36:19 23 individual workers as to assess their own individual
10:36:23 24 recollections as to what type of exposure occurred; is
10:36:24 25 that right?

10:36:24 1 MR. YOUNG: Object to the form of the
10:36:24 2 question.

10:36:27 3 A. Okay. That's a pretty complex question. You
10:36:28 4 said independently. Shell didn't do anything
10:36:28 5 independently. You know, you put it all together. It
10:36:30 6 wasn't one thing. But, yes, when we interviewed
10:36:34 7 employees for that portion of our data collection,
10:36:38 8 that's the worksheet we used.

10:36:41 9 Q. (By Ms. Clancy) And that portion of the data
10:36:42 10 collection was the individual employee's own
10:36:46 11 recollection of what types of exposure the individual
10:36:49 12 employee had; is that right?

10:36:50 13 A. That's --

10:36:51 14 MR. YOUNG: Object to the form of the
10:36:52 15 question.

10:36:52 16 Q. (By Ms. Clancy) Is that correct?

10:36:53 17 A. That's all we have to go on, yes.

10:36:55 18 Q. Okay. And all you had to go on with respect to
10:36:57 19 the individual employees' own recollection of their
10:36:59 20 exposure was looking at their sensory perception Labeled
10:37:05 21 A through U on this exposure description worksheet; is
10:37:09 22 that right?

10:37:09 23 A. No, because we had also asked the employees did
10:37:13 24 you see spills, did you see other things. It's not on
10:37:16 25 this sheet. And that would be part of the interview.

10:37:19 1 Q. Okay. Well --

10:37:20 2 A. What did you see -- you know, did your wife,
10:37:21 3 you know -- did you get covered over with liquid? Well,
10:37:26 4 I guess one of the criteria here liquid contact. Did
10:37:29 5 something spill on you and so on. But those were all of
10:37:33 6 the kinds of things we were trying to get at to form
10:37:36 7 some opinion of what exposure could have been.

10:37:38 8 Q. Okay. Well, that's fair. So, in addition,
10:37:41 9 your testimony today is that in addition to the
10:37:44 10 questions asked of the individual employee on the
10:37:45 11 exposure description worksheet, including sensory
10:37:45 12 perceptions such as odor, visible liquid, eye
10:37:52 13 irritation, respiratory irritation, narcotic effects,
10:37:55 14 and liquid contact, you also asked, well, did you see
10:37:58 15 any leaks and spills?

10:38:00 16 A. Yeah. Or were there any other unusual events
10:38:03 17 that would have caused the exposure.

10:38:06 18 Q. Such as what?

10:38:08 19 A. Well, a break in a line. I guess that would
10:38:09 20 include a leak or a spill. A break -- break in a line,
10:38:12 21 an emission. You know, anything that would be of
10:38:15 22 significance to the employee answering the questions.

10:38:19 23 Q. Okay. And so that was -- and then you took
10:38:21 24 that criteria. And then you combined that. You said
10:38:26 25 that was one part of the analysis. Once you got that

10:38:29 1 information from the employee, what other criteria would
10:38:32 2 you combine that with?

10:38:32 3 A. As I said, and I think this is now the eighth
10:38:35 4 time I've said that, we took the engineering drawings,
10:38:38 5 the procedures, the records that we had of turnarounds,
10:38:41 6 if we had records of line openings, whatever records we
10:38:46 7 had, even spills that they might not have remembered
10:38:50 8 that we might have had. All those were put together.
10:38:52 9 It was just not the sensory perception that let us come
10:38:55 10 up with a conclusion as to what the exposure might have
10:38:59 11 been.

10:38:59 12 Q. So, for example, if the employee maybe didn't
10:39:05 13 remember an event or didn't remember seeing anything,
10:39:09 14 but you had a record of some spills and leaks arising in
10:39:14 15 a turnaround, would you, then, adjust the data upward to
10:39:18 16 show that there was a possibility of exposure?

10:39:21 17 A. Well, let me answer that a little bit more
10:39:23 18 specifically. If an employee didn't remember an event
10:39:25 19 but he was on Job X and two other employees were on the
10:39:28 20 same job at roughly the same time and they remembered
10:39:31 21 things that he didn't, we wouldn't try to bring that all
10:39:35 22 together. We were not -- you know, we were trying to
10:39:38 23 see the best estimate we could make with all the
10:39:41 24 available information we could find as to what exposures
10:39:43 25 might have been 30, 40, 50 years ago.

10:39:47 1 Q. Okay. And what I'm understanding you have just
 10:39:50 2 testified is one way that you would make that best
 10:39:53 3 estimate is if one employee didn't necessarily remember,
 10:39:57 4 but two other employees, you would factor that in the
 10:39:58 5 analysis, that two other employees saw spills and leaks
 10:40:01 6 in the same area and we're going to factor that in even
 10:40:05 7 though the third employee didn't remember it; is that
 10:40:06 8 correct?

10:40:07 9 A. Might not remember it if he was there at the
 10:40:08 10 same time, sure.

10:40:09 11 Q. Okay. And, so, again, you were relying on
 10:40:14 12 coworkers, then, to help establish data points of
 10:40:20 13 possible exposures; is that right?

10:40:21 14 MR. YOUNG: Object to the form of the
 10:40:22 15 question.

10:40:23 16 A. We were relying on anybody who'd give us any
 10:40:30 17 information we could use.

10:40:30 18 Q. (By Ms. Clancy) Okay. And relying on
 10:40:30 19 co-workers and relying on the individual employees was
 10:40:31 20 all part of the criteria that you used to do the state
 10:40:32 21 of the art historic exposure assessment, correct?

10:40:34 22 A. Those were among the techniques that we used,
 10:40:37 23 correct.

10:41:07 24 Q. Okay. Oh, I apologize. I know you've given a
 10:41:10 25 deposition before, but if at any time you need to take a

10:41:12 1 break, please do not hesitate to tell me.

10:41:17 2 A. Oh, I'll let you know in a few minutes.

10:41:17 3 Q. Okay. And then the only time that the rules
10:41:17 4 would request that you not take a break is when a
10:41:21 5 question's pending. If we just finish the answer and
10:41:22 6 then --

10:41:23 7 A. Not a problem. Excuse me. Sorry. Okay.

10:41:26 8 Q. Okay. One of the considerations that you took
10:42:01 9 into account in creating your data points for the
10:42:04 10 exposure assessment was olfactory fatigue, correct?

10:42:09 11 A. Olfactory fatigue, yes.

10:42:10 12 Q. Okay. So, explain that to me, how that works.

10:42:13 13 A. Olfactory fatigue generally says that if the
10:42:17 14 nose, the olfactory nerves, are overwhelmed with some
10:42:22 15 odor, whether it's perfume or bacon grease cooking or
10:42:24 16 something, whatever it is, eventually the nerves deaden,
10:42:27 17 they tire and you will not be able to smell what you're
10:42:32 18 smelling, what you had been smelling.

10:42:34 19 Q. Okay. So, then how did that work in terms of
10:42:37 20 taking into consideration olfactory fatigue and
10:42:40 21 developing your data points for the historic exposure
10:42:43 22 assessment?

10:42:44 23 A. I'm not quite sure what you mean by the
10:42:46 24 question.

10:42:46 25 Q. Well, given that you know -- given that one of

10:42:49 1 the criteria was, for your analysis, was sensory
10:42:54 2 perception, such as you'd ask people what they smelled
10:42:57 3 and what they recollected the odors were and you also
10:43:01 4 knew that there could be the phenomenon of olfactory
10:43:04 5 fatigue, how did you, then, take that into consideration
10:43:08 6 for the -- to adjust for the olfactory fatigue?

10:43:08 7 A. Well, olfactory fatigue occurs only when there
10:43:11 8 are -- are a series of odors. You have to have contact
10:43:14 9 with the odor no matter what it is before you can have
10:43:19 10 the fatigue.

10:43:21 11 Q. Right.

10:43:21 12 A. And if somebody said, you know, the odors were
10:43:25 13 overwhelming and I got dizzy or something like that, the
10:43:29 14 fact that olfactory fatigue may have occurred, it would
10:43:30 15 be immaterial because we already have a heavy kind of
10:43:37 16 event. You know, I got dizzy. On the other hand,
10:43:39 17 olfactory fatigue only occurs, as I understand it, after
10:43:45 18 there is prolonged hours, 20, 30 minutes, four or five
10:43:52 19 hours of the odor. And ultimately it depends upon what
10:43:56 20 the odor was to begin with. So, there's no general way
10:43:59 21 to answer your question with a simple term. It had --
10:44:03 22 you know, it had to have -- we would have had to look at
10:44:07 23 the individual comment before we could factor in
10:44:11 24 olfactory fatigue. But if he said he smelled it for a
10:44:15 25 couple of hours and while he was still there and the

10:44:17 1 liquid was on the ground and he didn't smell it anymore,
10:44:19 2 we'd say, okay, you were still getting what you were
10:44:20 3 getting.

10:44:20 4 Q. Okay. So, what you're saying is that -- is it
10:44:30 5 even at some points where a person may not be smelling
10:44:33 6 the benzene, if -- if you -- if that person had
10:44:40 7 previously been exposed to the benzene and smelling it
10:44:43 8 and then initially they're -- and initially they were
10:44:46 9 smelling it and then they became unable to smell it, in
10:44:49 10 doing the historic exposure assessment, you took that --
10:44:53 11 took olfactory fatigue into account, right?

10:44:55 12 MR. YOUNG: Object to the form of the
10:44:56 13 question.

10:44:56 14 A. Well, when you say previously, you have to
10:44:57 15 understand it's immediately previously. It doesn't mean
10:45:01 16 that he smelled it yesterday and can't smell it today.
10:45:03 17 It had to have been immediate. So, if he was saying he
10:45:06 18 smelled benzene for a two-hour period and all of a
10:45:10 19 sudden it stopped and the source didn't go away, we
10:45:12 20 would say, okay, it was still there.

10:45:15 21 Q. (By Ms. Clancy) I see. So, let me just use an
10:45:18 22 example to make sure I understand. Let's say a worker
10:45:21 23 starts his day in the ARU unit.

10:45:27 24 A. Okay.

10:45:27 25 Q. And -- no. Let's make that the BEU unit.

10:45:34 1 A. Okay.

10:45:34 2 Q. Okay. As the worker starts his day in the BEU
10:45:39 3 unit and for the first couple of hours he says, you
10:45:41 4 know, when I first got there, I really could smell
10:45:45 5 benzene. And -- and he's working on -- let me back up.
10:45:47 6 He's working on a turnaround at the BEU unit and
10:45:51 7 historically you know that there can be leaks and spills
10:45:54 8 at turnarounds at the BEU unit. Assume that for me,
10:45:54 9 okay?

10:45:54 10 A. I'll make the assumption.

10:45:55 11 Q. Okay. So, then, the worker reports, well,
10:45:59 12 after two hours, I didn't really smell the benzene
10:46:02 13 anymore. Now, is that one of the ways that you could
10:46:06 14 take into consideration olfactory fatigue and say, well,
10:46:10 15 we know that he was working in the unit on a turnaround
10:46:13 16 where historically there have been spills and leaks of
10:46:17 17 benzene, but he smelled it for the first two hours, but
10:46:18 18 given olfactory fatigue, he likely was still being
10:46:22 19 exposed to it in the remaining hours of his workday but
10:46:26 20 couldn't smell it because of olfactory fatigue? Is that
10:46:26 21 an example?

10:46:27 22 MR. YOUNG: Object to the form.

10:46:28 23 A. That could be. It would depend upon what else
10:46:31 24 he was doing. Did he leave the area? Did he smell it
10:46:34 25 because he saw a spill on the ground and was the spill

10:46:38 1 still there? Or we would say, well, was the spill
 10:46:42 2 cleaned up. If he said the spill was not cleaned up and
 10:46:45 3 it was still sitting there in a puddle after three hours
 10:46:45 4 and I couldn't smell it any more, then, we'd say, well,
 10:46:48 5 you probably were getting what you had been getting when
 10:46:52 6 you could smell it. So, it depends upon the entire
 10:46:56 7 complexity of the situation. I -- you know, there's --
 10:46:59 8 Q. Right.
 10:47:00 9 A. -- no simple answer.
 10:47:00 10 Q. But basically olfactory fatigue means that you
 10:47:04 11 can still be working around benzene and not necessarily
 10:47:07 12 be able to smell it because you may have, as you
 10:47:11 13 testified earlier, your sensory ability to smell it may
 10:47:17 14 have been cut off; is that right?
 10:47:18 15 A. Well --
 10:47:18 16 MR. YOUNG: Object to the form.
 10:47:19 17 A. -- what I also said was that you have to have a
 10:47:22 18 fair shot at whatever is producing the odor, whatever
 10:47:24 19 the odor is. Just walking into a room and -- and -- or
 10:47:27 20 any place, odors in general, just having an odor or not
 10:47:38 21 smelling, it doesn't mean you automatically have
 10:47:38 22 olfactory fatigue. You have to have an overload to be
 10:47:38 23 fatigued.
 10:47:38 24 Q. (By Ms. Clancy) Right. And I'm not arguing
 10:47:38 25 with you on that point.

10:47:40 1 A. Okay. And, so, if he couldn't smell it and the
10:47:43 2 situation were that we were estimating he was in the
10:47:44 3 1-part-per-million level and then couldn't smell it, the
10:47:50 4 inference could be that there was nothing more there to
10:47:54 5 smell. If he was in -- or we made an inference that he
10:47:57 6 was in the 50-part-per-million level, say, and then he
10:47:57 7 couldn't suddenly smell it, the inference would be,
10:48:01 8 well, it was still there but olfactory fatigue had set
10:48:07 9 in. I mean, I'd have to look at the entire situation to
10:48:08 10 see how we factor it in.

10:48:09 11 Q. Right. I understand. Well, I'm just reading
10:48:12 12 from a sentence in the report that says Deer Park took
10:48:15 13 olfactory fatigue into account in the aromatics unit,
10:48:18 14 where there were mixed exposures by upgrading the 2-B
10:48:20 15 sensory data level by one, i.e, the reported A exposure
10:48:21 16 was upgraded to a B level?

10:48:24 17 A. Okay.

10:48:27 18 Q. Okay. That's what I'm trying to understand.

10:48:30 19 A. Okay. Which meant that in that case we were
10:48:33 20 not trying to minimize what he had, but trying to say,
10:48:36 21 okay, well, we'll maximize what he might have had.

10:48:41 22 Q. Okay. So, what you were saying, then, is the,
10:48:42 23 for example, in the aromatics unit -- well, let me back
10:48:47 24 up. First of all, was it your testimony that you
10:48:50 25 classified individual areas by, for example, you said 1

10:48:54 1 part per million or, for example, a 50 part per
10:48:58 2 million -- my point being, not to pin you down in exact
10:49:02 3 numbers, but to say that different areas were classified
10:49:03 4 for higher or lower potential levels of exposure; is
10:49:05 5 that right?

10:49:05 6 A. No, no, no, I didn't say that.

10:49:07 7 Q. Okay.

10:49:07 8 A. I was giving that as an example as to how one
10:49:10 9 would look at olfactory fatigue.

10:49:13 10 Q. Okay.

10:49:13 11 A. What -- and I think what you read is exactly
10:49:15 12 what was done there. And that explains it better than I
10:49:19 13 can.

10:49:19 14 Q. Okay. But what I'm trying to understand is,
10:49:21 15 when they say Deer Park, which is -- are you aware that
10:49:27 16 both plaintiffs in this case worked as contractors at
10:49:30 17 Deer Park?

10:49:31 18 A. That's my understanding, yes.

10:49:32 19 Q. Okay. Deer Park took olfactory fatigue into
10:49:36 20 account in the aromatics unit where there were mixed
10:49:37 21 exposures by upgrading the 2-B sensory data level by
10:49:41 22 one, i.e., the reported "A" exposure was upgraded to a
10:49:42 23 "B" level. Can you, as one of the persons who conducted
10:49:47 24 the Shell historic exposure assessment, can you explain
10:49:52 25 to me what that sentence means, how that works?

10:49:55 1 A. Okay. What that said is that if we had reason
10:49:59 2 to believe that the individual was smelling something
10:50:03 3 and then it couldn't and given other factors that we
10:50:06 4 figured that, for whatever reason, we figured he stopped
10:50:12 5 smelling because of olfactory fatigue, we wouldn't hide
10:50:16 6 under, saying, hey, it's a low number because you can't
10:50:19 7 smell it. We would say, fine, we'll assume that your
10:50:24 8 level is higher than not smelling it.

10:50:29 9 Q. Okay.

10:50:29 10 A. In other words, what we didn't want to do is to
10:50:31 11 be accused of or even have the impression of that we
10:50:36 12 were trying to hide or minimize numbers. And, so, if we
10:50:41 13 were erring in this case and we had to make a guess,
10:50:44 14 we'd try to err on the high side.

10:50:44 15 Q. Okay. Because there is a phenomenon where if
10:50:50 16 you -- and -- well, let me back up. The reason that you
10:50:52 17 did that is because there's a phenomenon whereby if you
10:50:56 18 are around benzene for a long enough period, you can
10:51:00 19 have olfactory fatigue and lose the ability to stop
10:51:04 20 smelling it; is that correct?

10:51:04 21 MR. YOUNG: Object to the form of the
10:51:06 22 question.

10:51:07 23 A. You could --

10:51:07 24 MR. YOUNG: Misstates the testimony.

10:51:07 25 A. You could.

10:51:08 1 Q. (By Ms. Clancy) I mean, why else would Deer
10:51:08 2 Park have done this in their state of the art study, why
10:51:08 3 else would they have taken into consideration olfactory
10:51:11 4 fatigue?

10:51:13 5 MR. YOUNG: Objection to form, asked and
10:51:13 6 answered.

10:51:14 7 A. Because olfactory fatigue was already part of
10:51:19 8 the overall look that we did. Since you were talking
10:51:23 9 about sensory perception, that all had to fit in to how
10:51:28 10 we handled it. We're trying to -- we were trying to
10:51:31 11 look -- given the state of the art at the time, we were
10:51:33 12 trying to look at what is known, what could be known.
10:51:37 13 In the absence of monitoring data, we tried to take a
10:51:42 14 very conservative view on what exposure could have been.
10:51:48 15 And that's the only way I can answer that question.

10:51:49 16 Q (By Ms. Clancy) Okay. And one of the -- and
10:51:55 17 Shell did the best estimate possible based on the best
10:51:58 18 state of the art available to it, correct?

10:52:00 19 A. That's correct.

10:52:00 20 Q. Okay. And Shell decided that, using the best
10:52:07 21 state of the art, we've got to take into consideration
10:52:10 22 olfactory fatigue, correct?

10:52:12 23 A. That's one of the things that we took into
10:52:14 24 consideration, yes.

10:52:14 25 Q. Okay. And Shell used the phenomenon of

10:52:17 1 olfactory fatigue to say in certain circumstances, even
 10:52:20 2 when an individual can't -- isn't reporting that they're
 10:52:22 3 smelling the substance, we may decide to bump them up a
 10:52:26 4 level of exposure; is that correct?

10:52:28 5 MR. YOUNG: Object to the form of the
 10:52:29 6 question.

10:52:30 7 A. Well, that's essentially what you have read in
 10:52:32 8 that -- from that criteria on that sheet.

10:52:36 9 Q. (By Ms. Clancy) And what I've read is from the
 10:52:38 10 Shell exposure assessment report?

10:52:39 11 A. That's correct.

10:52:41 12 Q. Okay. And the reason that you would bump a
 10:52:42 13 person up is because olfactory fatigue is a phenomenon
 10:52:47 14 by which a person initially may be able to smell the
 10:52:51 15 benzene, but after a certain time period and a certain
 10:52:54 16 duration of exposure, loses the ability to smell it; is
 10:52:57 17 that right?

10:52:58 18 A. We would bump them up to make sure that we were
 10:53:02 19 not trying to hide and pull things back. We were trying
 10:53:05 20 to give the most honest estimate we would get. And
 10:53:08 21 that's why we would bump them up.

10:53:08 22 MS. CLANCY: Okay. Object as
 10:53:09 23 nonresponsive.

10:53:09 24 Q (By Ms. Clancy) My question is olfactory
 10:53:12 25 fatigue is the phenomenon by which a person initially

10:53:17 1 can smell benzene for the first time period of exposure
10:53:21 2 and then loses the ability to smell it after a enough
10:53:27 3 duration and time of exposure; is that right?

10:53:29 4 MR. YOUNG: Object to the form of the
10:53:30 5 question.

10:53:30 6 A. The way you have said it, and I think you've
10:53:33 7 characterized what I have said, if the exposure is long
10:53:36 8 enough for any odor and high enough, you tend to lose
10:53:40 9 the ability to continue to smell that particular odor
10:53:43 10 until you're out of the area and recover and then you
10:53:46 11 can re-smell it, of course.

10:53:52 12 Q (By Ms. Clancy) Okay. And the way that Shell
10:53:52 13 accounted for it in its historic exposure assessment is
10:53:52 14 they said there may be times when a person is not
10:53:55 15 reporting a smell of benzene odor, but we're going to
10:54:00 16 determine that indeed they were being exposed to benzene
10:54:02 17 at that time, correct?

10:54:03 18 MR. YOUNG: Object to the form of the
10:54:04 19 question.

10:54:04 20 A. That would be based on the other criteria.
10:54:06 21 Were there spills around, were other people complaining
10:54:06 22 or stating it and so on.

10:54:10 23 Q. (By Ms. Clancy) Right. Exactly. So, my
10:54:13 24 question was -- and perhaps it would help you if I said
10:54:18 25 that even though a person was an employee of Shell, was

10:54:23 1 not reporting an odor, Shell might, by looking at other
10:54:27 2 criteria, such as, were there spills and leaks around
10:54:31 3 them, what were the other folks reporting, Shell might
10:54:36 4 still determine that that person was indeed still being
10:54:36 5 exposed to benzene; is that correct?

10:54:36 6 A. Not the way you're putting it. Just because a
10:54:39 7 person doesn't report an odor, the person would have to
10:54:43 8 had reported an odor and then said it stopped. That's
10:54:46 9 the phenomenon of olfactory fatigue. If somebody says I
10:54:49 10 was in that unit and didn't smell anything and never had
10:54:49 11 smelled anything that day --

10:54:53 12 Q. Okay.

10:54:53 13 A. -- that would not be an indication of olfactory
10:54:54 14 fatigue.

10:54:54 15 Q. Okay. So, an indication of olfactory fatigue
10:54:58 16 is, for example, where an employee intermittently might
10:55:05 17 smell exposure?

10:55:06 18 MR. YOUNG: Object to the form.

10:55:07 19 Q (By Ms. Clancy) In the morning they might smell
10:55:08 20 exposure and in the afternoon, maybe not, right?

10:55:08 21 MR. YOUNG: Object to the form of the
10:55:08 22 question.

10:55:09 23 Q. (By Ms. Clancy) Because you said they
10:55:09 24 initially have to show exposure; is that correct?

10:55:12 25 A. No.

10:55:12 1 Q. Okay.

10:55:12 2 A. No. The way you put it, no. If they were in
10:55:14 3 the morning, they went off to lunch, they were out at
10:55:18 4 the area, whatever it is, and then came back and didn't
10:55:19 5 smell it, that would not be olfactory fatigue. There
10:55:20 6 would have been time for recovery. Olfactory fatigue is
10:55:20 7 a continuous phenomenon. You're in a high odor
10:55:28 8 environment.

10:55:30 9 Let me give you a different example, that
10:55:32 10 may do that. You walk into a bathroom on an airplane.
10:55:40 11 And you may not like what you're smelling. And after a
10:55:43 12 while, you don't smell it any more. You walk out, and
10:55:48 13 an hour later into the flight, you walk back in, the
10:55:52 14 odor is back there again. Olfactory fatigue is a
10:55:57 15 continuing phenomenon. If you've taken a break, the
10:56:00 16 nerve endings have a chance to recover and you're back
10:56:00 17 in business again, so to speak.

10:56:02 18 Q. Okay. So, olfactory fatigue, then, therefore,
10:56:06 19 is the phenomenon by which you have reported exposure
10:56:13 20 based on odor for the first few hours, the person stays
10:56:18 21 in the same situation and then suddenly stops reporting
10:56:21 22 the odor. You would take into consider olfactory
10:56:24 23 fatigue in that situation, by saying, look, they've
10:56:27 24 never taken a break, they're in the same situation,
10:56:30 25 based on all the other criteria, the folks working

10:56:32 1 around them, the spills and leaks that we know are
10:56:33 2 occurring there, we're going to say that even though
10:56:36 3 they've lost the ability to smell it in this situation
10:56:37 4 because of olfactory fatigue, we're going to say that
10:56:39 5 they were still being exposed even though they can't
10:56:42 6 smell; is that correct?

10:56:43 7 A. We would give them the same exposure -- we
10:56:46 8 would bump them, as you've used the term, yes.

10:56:49 9 Q. Okay.

10:56:50 10 A. You could put that down, sure.

10:56:50 11 Q. Okay.

10:56:50 12 MR. YOUNG: Howard, you want to take a
10:56:50 13 quick break?

10:56:50 14 THE WITNESS: Yeah, why don't we do that?
10:56:50 15 Are we between questions?

10:56:50 16 MS. CLANCY: We're between. Thank you.

10:56:59 17 THE VIDEOGRAPHER: Now going off the
10:57:01 18 record. The time is approximately 10:56. We're now
10:57:04 19 ending tape one.

10:57:11 20 (Recess taken)

11:04:58 21 THE VIDEOGRAPHER: We're now back on the
11:04:59 22 record. The time's approximately 11:04. We are
11:05:04 23 starting tape two.

11:05:05 24 Q. (By Ms. Clancy) Okay. Now, the benzene
11:05:08 25 historic exposure assessment, what the ultimate data

11:05:13 1 produced in order to help you determine -- well let me
11:05:18 2 back up. Let's put this in context. The benzene
11:05:22 3 historic exposure assessment was -- was prompted by the
11:05:26 4 initial epidemiological results showing increase
11:05:31 5 incidence of leukemia at Shell Wood River and Deer Park;
11:05:34 6 is that correct?

11:05:36 7 A. I'm not sure. I don't recall whether that was
11:05:38 8 it or whether -- as in any epidemiologic study, you need
11:05:43 9 exposure data, environmental data. And whether that was
11:05:45 10 planned first, I just honestly don't recall the
11:05:48 11 sequence.

11:05:49 12 Q. Are you saying that the -- are you saying that
11:05:52 13 the epidemiological study was done in -- hand and hand
11:05:58 14 with the historic exposure assessment?

11:06:01 15 A. Well, eventually they were hand in hand. I'm
11:06:04 16 saying I don't recall whether we had -- we started the
11:06:08 17 epidemiology study and at the same time said we should
11:06:15 18 prepare for an environmental study. But no epidemiology
11:06:19 19 study is valid without environmental data.

11:06:20 20 Q. Okay.

11:06:24 21 A. I just don't recall the sequence.

11:06:26 22 Q. Okay. But you're not saying that the
11:06:30 23 epidemiology study was done after the Shell historic
11:06:34 24 exposure assessment, are you?

11:06:36 25 A. Well, the medical part was done -- started

11:06:39 1 before and continued through. So, we're all part of a
11:06:42 2 whole.

11:06:43 3 Q. Okay. And the medical part being the
11:06:46 4 classification of diseases, correct?

11:06:48 5 A. Yes.

11:06:48 6 Q. Okay. And from which facility the diseases
11:06:51 7 were arising from; is that right?

11:06:53 8 A. I believe so, yes.

11:06:53 9 Q. Okay. And then the Shell historic exposure
11:06:55 10 assessment worked to analyze whether or not folks who
11:07:00 11 had, for example, leukemia, were actually exposed to
11:07:05 12 benzene; is that right?

11:07:07 13 MR. YOUNG: Object to the form.

11:07:08 14 A. As I said, any epidemiologic study needs the
11:07:12 15 environmental data. And, so, that's the only way we
11:07:15 16 could provide it, was to make some estimates of what
11:07:17 17 those exposures were.

11:07:19 18 Q. (By Ms. Clancy) Right. And what -- I'm just
11:07:20 19 trying to speak on a very basic level, which is that you
11:07:23 20 were trying to say, okay, we know these folks have
11:07:26 21 leukemia, we know they worked at, for example, Wood
11:07:32 22 River or Shell and now we're going to see what their
11:07:36 23 actual exposure to benzene may have been; is that right?

11:07:37 24 MR. YOUNG: Object to the form.

11:07:37 25 A. Well, no. We also looked at people who didn't

11:07:39 1 have leukemia. I mean -- and so on. So, the patients
11:07:42 2 with leukemia or the employees with leukemia were
11:07:46 3 included, but we looked at a number of other people.

11:07:48 4 Q. (By Ms. Clancy) Okay. I'm going to show you
11:09:44 5 what has been marked as Minnehan Shell 9577. And it is
11:10:00 6 entitled from D.S. McGraw at Shell Oil Company, dated
11:10:10 7 June 1st, 1982. Subject, Deer Park epidemiology study.
11:10:14 8 And it says the attached is a packet of information for
11:10:19 9 your review in preparation for the June 7th meeting
11:10:22 10 about the Deer Park epidemiology study. And you are one
11:10:27 11 of the persons, H.L. Kusnetz, on the "To" line. Let me
11:10:32 12 show you that. Let me mark my page before I --

11:10:37 13 A. Okay.

11:10:39 14 Q. Okay. And one of the information in the packet
11:10:45 15 is a slide show, a transparency about how the advantages
11:10:54 16 or disadvantage of conducting epidemiology study changed
11:10:59 17 with different outcomes of the study. I'll show you the
11:11:03 18 sentence. You see that sentence where it says the
11:11:04 19 advantages or disadvantages of the study changed based
11:11:10 20 on the different outcomes of the study.

11:11:23 21 A. Let me read the whole paragraph.

11:11:24 22 Q. Okay.

11:11:24 23 A. I don't know what that means, but that's what
11:11:26 24 it says.

11:11:26 25 Q. Okay. And, further, with respect to the

11:11:28 1 epidemiological study, it says that, in general, the
 11:11:33 2 study will affect three areas: Health information,
 11:11:34 3 employee relations and litigation.

11:11:38 4 A. I think that's what it said, yes.

11:11:39 5 Q. Okay. So, litigation was one of the areas that
 11:11:43 6 this memo was talking about is one consideration and
 11:11:49 7 what the study would affect, correct?

11:11:51 8 A. Well, apparently Ms. McGraw thought -- that's
 11:11:54 9 what she put in, that's what it was. I don't know
 11:11:57 10 whether she just wrote the memo or who wrote the
 11:11:57 11 attachments. So, I don't know who wrote the attachment.

11:11:58 12 Q. Well, do you have any reason -- was Miss -- do
 11:12:03 13 you have any negative opinions about Ms. McGraw?

11:12:06 14 MR. YOUNG: Object to the form.

11:12:07 15 A. Ms. McGraw was on the medical staff, I believe.
 11:12:12 16 I don't know whether she made that attachment up or just
 11:12:14 17 got it from somebody. I just don't recall.

11:12:15 18 Q. (By Ms. Clancy) Okay. But you're not
 11:12:15 19 disputing that the attachment attached to Ms. McGraw's
 11:12:18 20 memorandum says, in general, this study effects areas:
 11:12:22 21 Health information, employee relations and litigation.

11:12:22 22 A. Well, it looks like a 20 or 30 page attachment;
 11:12:26 23 and that's one paragraph in it, yes.

11:12:27 24 MS. CLANCY: Okay. Object to
 11:12:28 25 nonresponsive portion of it.

11:12:28 1 A. That's what it says. Okay.

11:12:30 2 Q. (By Ms. Clancy) But that sentence says that it

11:12:32 3 would affect those three areas, correct?

11:12:35 4 A. Yes.

11:12:35 5 Q. Okay.

11:12:35 6 A. That's what it says.

11:12:37 7 Q. All right. And then it goes on to show a

11:12:42 8 transparency where it says, well, if there is no excess

11:12:49 9 of increased leukemia, then the advantages of that

11:12:55 10 are -- the past exposure levels have no demonstrable

11:12:59 11 effect on mortality and current practices are probably

11:13:04 12 adequate to protect the health and -- the health of

11:13:05 13 current and future of employees. Do you see where it

11:13:10 14 says no excess advantages?

11:13:10 15 A. It is no excess, yeah.

11:13:14 16 Q. Right. If the epidemiological study doesn't

11:13:18 17 show any excess of a certain disease arising from a

11:13:21 18 certain area, then that can show -- be used as evidence

11:13:25 19 that we've been conducting safe work practices, correct?

11:13:25 20 A. That's --

11:13:26 21 MR. YOUNG: Object to the form.

11:13:27 22 A. That's correct. That's how I would read that.

11:13:29 23 Q. (By Ms. Clancy) Yeah. Okay. Now, it does go

11:13:32 24 on to say that if there's an excess of increased

11:13:51 25 leukemias, there could be advantages and disadvantages.

11:13:57 1 Do you see where it says that?

11:14:00 2 A. Yes. I have to see the previous page.

11:14:02 3 Advantages. If there is an excess.

11:14:04 4 Q. Yes.

11:14:05 5 A. Okay. The study may provide useful

11:14:07 6 information. It says if the advantages that --

11:14:11 7 proactive stance would get us more in control of the

11:14:15 8 issue. And by -- if we identify it early, we can reduce

11:14:20 9 the number of cases.

11:14:21 10 Q. Right.

11:14:22 11 A. Of all positive advantages. If there is an

11:14:26 12 excess, then we know where to look to try to correct the

11:14:29 13 excess.

11:14:29 14 Q. Exactly.

11:14:29 15 A. That's what that means.

11:14:29 16 Q. Right. And, similarly, it also said, well,

11:14:30 17 there are going to be some disadvantages if we just

11:14:34 18 foresee that there's an excess of leukemia arising

11:14:37 19 from --

11:14:38 20 A. Right.

11:14:38 21 Q. -- the Wood River and Shell facilities.

11:14:40 22 A. Yes.

11:14:40 23 Q. Okay.

11:14:40 24 A. There are two that are listed there.

11:14:40 25 Q. Okay. And what are the two disadvantages

11:14:42 1 listed?

11:14:42 2 A. Well, it says in the short term, there's an
11:14:45 3 adverse employee relations impact.

11:14:49 4 Q. And what does that mean?

11:14:49 5 A. It says people aren't going to be happy when
11:14:52 6 they find out there's a lot of leukemia.

11:14:53 7 Q. Okay.

11:14:53 8 A. And then it says in the short term this study
11:14:56 9 may stimulate the filing of worker's comp claims and
11:15:01 10 even litigation.

11:15:01 11 Q. Okay.

11:15:02 12 A. I'd like to know -- I was curious who -- what
11:15:04 13 the title is, who wrote the attachment, if I may.

11:15:07 14 Q. You can take as much time.

11:15:11 15 A. Okay. I'm just trying to see who wrote the
11:15:15 16 attachment for that particular one or the presentation.
11:15:15 17 I don't know who gave the presentation. Okay.

11:15:18 18 Q. You don't recall who gave this presentation?

11:15:20 19 A. I don't -- no. I got that -- I don't even
11:15:24 20 know -- recall if I sat there or not now.

11:15:26 21 Q. You just know that your name is listed as one
11:15:27 22 of the recipients?

11:15:27 23 A. That's all I can remember now.

11:15:28 24 Q. Okay. And then it goes on to say, well, hey,
11:15:32 25 let's do some preplanning for consequences. You see

11:15:35 1 where it says preplanning for consequences?

11:15:37 2 A. That's the title of section seven, right.

11:15:39 3 Q. Okay. And it says, well, look, if there's

11:15:52 4 negative results, we won't take any action, correct? Do

11:15:57 5 you see where it says negative, no action?

11:15:59 6 A. That's correct.

11:16:00 7 Q. And, in fact, the only thing we'll do is we'll

11:16:02 8 disseminate information. We'll let everyone -- hey,

11:16:04 9 there's no problem with excess leukemias. Do you see

11:16:06 10 where that says that?

11:16:08 11 A. That's right.

11:16:08 12 Q. Disseminate information? Okay.

11:16:08 13 A. That's right.

11:16:08 14 Q. Okay. And, then, do you see in the preplanning

11:16:10 15 stage for the epidemiological study, what happens if

11:16:15 16 there are positive results? They also have a preplan

11:16:16 17 for the positive results. Do you see that?

11:16:21 18 A. Yes, I do.

11:16:21 19 Q. Okay. And do you see that where one of the

11:16:22 20 preplans where they say, well, what happens if the

11:16:24 21 excess is statistically significant and believe

11:16:27 22 occupational, the action would be to do a case-control

11:16:31 23 study. Do you see where that is -- says that?

11:16:34 24 A. That's one of the things they say.

11:16:35 25 Q. Yes. And also they say develop a public

11:16:39 1 relations strategy and an employee relations legal
11:16:42 2 position.

11:16:43 3 A. Well, but it also says included in that same
11:16:46 4 rubric, it says not only do we do a case-control study,
11:16:49 5 we do a toxicology study, we do a risk assessment and
11:16:52 6 risk exposure study. So, all of those are included.
11:16:57 7 So, the risk exposure and case control and tox all go
11:17:02 8 together if there's a positive access.

11:17:04 9 Q. Okay. And that's indeed what happened, isn't
11:17:07 10 it, is that the Cole reported excess of leukemia at --
11:17:11 11 from the Shell facilities. And then Shell took the
11:17:15 12 positive action of conducting a case-controlled study;
11:17:18 13 is that correct?

11:17:18 14 A. Well, I think Cole, in his first -- yeah, in
11:17:21 15 his first draft thought there was an increase, right,
11:17:27 16 and excess.

11:17:29 17 Q. Okay. And then where the Shell historic
11:17:32 18 exposure assessment study or the case-control study was
11:17:43 19 done to then verify the data showing what types of
11:17:43 20 exposure underlay the data being produced --

11:17:43 21 A. Well, all -- Cole did a study on morbidity --
11:17:47 22 or mortality, I believe.

11:17:49 23 Q. Right.

11:17:49 24 A. And given his initial findings --

11:17:51 25 Q. Right.

11:17:51 1 A. -- his initial findings, then all of the other
 11:17:54 2 things that are listed here were done.
 11:17:55 3 Q. Right. That what Shell had preplanned for at
 11:17:57 4 that point kicked in, correct?
 11:17:59 5 A. That's right.
 11:17:59 6 Q. Okay. And one of the things that they
 11:18:00 7 preplanned for, if there was positive results of the
 11:18:03 8 study, is that Shell would conduct a case-controlled
 11:18:05 9 study; is that right?
 11:18:06 10 A. Right.
 11:18:06 11 Q. Okay. And the -- which was the Shell historic
 11:18:10 12 exposure assessment; is that correct?
 11:18:12 13 A. Well, Shell historic exposure assessment is
 11:18:15 14 parallel to and an adjunct to the case controlled study.
 11:18:20 15 Q. It encompassed the case-controlled study; is
 11:18:22 16 that correct?
 11:18:23 17 A. No. It would probably be the other way around.
 11:18:26 18 The case controlled study probably would have
 11:18:27 19 encompassed the risk assessment study, the exposure
 11:18:27 20 study. Case control means you're looking at the
 11:18:31 21 individuals and you're looking at their health and
 11:18:33 22 illness. And the exposure goes along with that.
 11:18:35 23 They're parallel.
 11:18:36 24 Q. I see. Okay. I think I've got it. So, in
 11:18:39 25 order to conduct the case-control study --

11:18:42 1 A. No, no. In order to conduct a full
11:18:44 2 epidemiologic study, there was a case-control study.
11:18:47 3 There is an exposure study and parallel.

11:18:53 4 Q. Okay. But this says first we conduct the
11:18:55 5 epidemiologic study. And then if the results are
11:18:59 6 positive, then we do the case-controlled study; is that
11:19:01 7 right?

11:19:01 8 A. No. That says -- no. We've looked at the
11:19:03 9 morbidity and mortality analysis. And if that is high
11:19:06 10 and that is positive, then we do all these other things.

11:19:09 11 Q. Okay. And you're calling it a morbidity and
11:19:12 12 mortality analysis. And the person who wrote the memo,
11:19:16 13 S.K. Phillips, called it the proposed Deer Park
11:19:20 14 epidemiology study. Do you see where that's written
11:19:20 15 right there --

11:19:20 16 A. No.

11:19:21 17 Q. -- epidemiology study?

11:19:23 18 A. S.K. Phillips is an attorney. I can't be
11:19:26 19 responsible for the words attorneys use. I'm sorry.

11:19:28 20 Q. But a Shell employee called it the Deer Park
11:19:30 21 epidemiology study?

11:19:31 22 A. A Shell lawyer called it a Deer Park
11:19:33 23 epidemiology study.

11:19:34 24 Q. Do you say that the Shell lawyers are less
11:19:36 25 informed than the other Shell employees?

11:19:40 1 A. No, I --

11:19:40 2 MR. YOUNG: Object to the form of the
11:19:40 3 question.

11:19:41 4 A. I'm not even going to get into the idea of what
11:19:41 5 attorneys --

11:19:41 6 Q. (By Ms. Clancy) I'm just wondering why you
11:19:42 7 qualified it as a Shell lawyer?

11:19:44 8 MR. YOUNG: Object to the form of the
11:19:44 9 question.

11:19:45 10 A. No, it was written by --

11:19:45 11 MR. YOUNG: Object to the form of the
11:19:46 12 question.

11:19:47 13 A. I'm being partly facetious. This was written
11:19:51 14 by an attorney. He called them epidemiology study.
11:19:52 15 Epidemiology has a whole -- as I said earlier already,
11:19:57 16 epidemiology study includes morbidity, case-control
11:20:01 17 exposure. It's a whole panoply of items in the case
11:20:04 18 control study.

11:20:06 19 Q. (By Ms. Clancy) Okay. So, he's one Shell
11:20:08 20 employee on -- on this document, labeled Minnehan Shell,
11:20:09 21 9582, is calling it the proposed Deer Park epidemiology
11:20:11 22 study. You're calling it the proposed morbidity study.

11:20:14 23 A. No, that's not what I said.

11:20:14 24 Q. But whatever it is --

11:20:19 25 A. Whatever it is, it --

11:20:20 1 Q. It was conducted. There were positive results.

11:20:24 2 And as a result of those positive results, the case

11:20:26 3 control study was performed; is that right?

11:20:26 4 A. No, that's not what --

11:20:27 5 MR. YOUNG: Object to the form of the

11:20:28 6 question.

11:20:30 7 A. That's not what I said. An epidemiology study

11:20:31 8 includes morbidity, mortality, case-control exposure and

11:20:34 9 so on. You do part one first to determine what is the

11:20:38 10 rest. And from what you've shown me here and what I

11:20:43 11 seem to recall from reading this, is that if part one

11:20:47 12 comes out positive, then you do parts two, three, four,

11:20:49 13 X, however many there are.

11:20:51 14 Q. (By Ms. Clancy) Okay. And part one, which

11:20:52 15 you're calling the morbidity study, came out positive?

11:20:55 16 A. That's right.

11:20:55 17 Q. And by positive, there was an -- there was an

11:20:57 18 observation of increased excess of leukemias?

11:21:02 19 A. The initial draft said there seemed to be --

11:21:04 20 and you're right.

11:21:05 21 Q. Okay. And then according to this document,

11:21:07 22 phase two kicked in, which was, okay, we're going to do

11:21:11 23 a case-controlled study, correct?

11:21:13 24 A. Now, this document isn't -- this is a

11:21:15 25 suggestion and this document kicked in and said now

11:21:19 1 we're going to do all of the things that are listed
11:21:21 2 here. It didn't say -- excuse me. It didn't say just
11:21:23 3 the case controlled study, it said whatever is listed
11:21:27 4 including --
11:21:28 5 Q. All right.
11:21:28 6 A. -- the exposure assessment.
11:21:28 7 Q. And in fairness it said, well, once the
11:21:32 8 positive results kick in -- and positive meaning excess
11:21:35 9 of leukemia, we'll do a case-controlled study, if
11:21:35 10 feasible, a toxicology study, risk assessment, risk
11:21:40 11 response, prenatal, certain of the exposure, and
11:21:43 12 clarification studies.
11:21:45 13 A. Right.
11:21:45 14 Q. Okay.
11:21:46 15 A. Right.
11:21:47 16 Q. Did I read that correctly?
11:21:48 17 A. That's correct.
11:21:49 18 Q. Okay.
11:21:50 19 A. Well, I'm not sure if clarification studies
11:21:51 20 refer to this or that's the heading for the next
11:21:51 21 section.
11:21:57 22 Q. Okay.
11:21:57 23 A. Okay.
11:21:57 24 Q. But at a minimum -- at a minimum, if it were
11:21:59 25 positive, you would -- Shell decided to do case

11:22:02 1 controlled studies if feasible. Toxicology studies and
 11:22:02 2 risk assessment slash risk response, correct?
 11:22:06 3 A. That's correct.
 11:22:07 4 Q. Okay. And encompassed within that was the
 11:22:09 5 Shell historic exposure assessment study, correct?
 11:22:12 6 A. It says here of exposure, right.
 11:22:14 7 Q. Okay. Encompassed in the response to the
 11:22:19 8 initial study being positive, correct?
 11:22:22 9 A. That's correct.
 11:22:22 10 Q. Okay. The Shell historic exposure assessment
 11:22:44 11 did not take into consideration any dose that could be
 11:22:48 12 received by means of dermal contact, correct?
 11:22:52 13 A. No, that's not correct. If you look here, for
 11:22:59 14 example, Item G on the sheet you gave me, which is
 11:23:01 15 Exhibit 5, Item G says liquid contact.
 11:23:17 16 Q. Okay. I realize that it says -- Item G says
 11:23:20 17 liquid contact as to whether or not the person may have
 11:23:23 18 been around benzene, but I'm asking specifically as to
 11:23:27 19 whether or not dermal contact with benzene was
 11:23:32 20 considered in terms of making a dose estimate?
 11:23:35 21 A. May I see that?
 11:23:36 22 Q. Yes. And I'm going to show you page 11 from
 11:23:40 23 the Shell Oil Company's historic exposure assessment.
 11:23:45 24 And let me, before I show it to you, let me -- I'm going
 11:23:48 25 to point you to the paragraph that I'm looking at.

11:23:51 1 You're welcome to read the whole page. But specifically
11:23:52 2 I'm referring to where it says dose estimates were not
11:23:55 3 made for benzene absorbed through the skin when direct
11:23:55 4 contact may have occurred. This is based on part on the
11:24:01 5 fact that protective clothing reduced such exposures,
11:24:02 6 coupled with the absence of a valid method for making
11:24:05 7 such estimates.

11:24:06 8 MR. YOUNG: Denyse, what's the Bates
11:24:08 9 number of that page?

11:24:10 10 MS. CLANCY: Well, it's from one of the
11:24:11 11 documents you gave us that weren't bates labeled, but
11:24:14 12 it's page 11 of the historic exposure assessment.

11:24:45 13 A. Okay.

11:24:45 14 Q. (By Ms. Clancy) Okay. Do you see where I read
11:24:46 15 that?

11:24:46 16 A. I see the paragraph you read, yes.

11:24:50 17 Q. Okay.

11:24:50 18 THE WITNESS: You want to see it?

11:24:53 19 MR. YOUNG: Sure. Go ahead.

11:24:53 20 THE WITNESS: Go ahead.

11:24:53 21 MS. CLANCY: I'll wait because I have
11:24:53 22 another question.

11:25:08 23 Q. (By Ms. Clancy) Okay. So, dose estimates in
11:25:09 24 the historic benzene exposure assessment study were not
11:25:15 25 made based on any benzene absorbed through the skin,

11:25:17 1 correct?

11:25:19 2 MR. YOUNG: Object to the form of the
11:25:20 3 question.

11:25:20 4 A. Apparently that seems to be so.

11:25:23 5 Q (By Ms. Clancy) okay. And, I mean, if you
11:25:23 6 believe what the words say here in this study, dose
11:25:23 7 estimates were not made for benzene absorbed through the
11:25:26 8 skin when direct contact may have occurred, that would
11:25:30 9 then say that the study did not make dose estimates for
11:25:30 10 any benzene absorbed through the skin, correct?

11:25:34 11 A. Apparently that's what it says.

11:25:36 12 Q. Okay.

11:25:36 13 A. Well, you just have to take it at what it says.

11:25:37 14 Q. Okay. Well, you were one of the participants
11:25:38 15 in the historic exposure assessment. Do you disagree
11:25:40 16 now with the written language of the --

11:25:43 17 A. If that's what it says, that's what it says.

11:25:45 18 Q. Okay. But you don't dispute, do you, that
11:25:47 19 benzene is toxic by all routes of exposure, including
11:25:52 20 derma contact, correct?

11:25:54 21 MR. YOUNG: Object to the form of the
11:25:55 22 question.

11:25:56 23 A. I don't know that benzene has ever been shown
11:25:59 24 to cause AML, leukemia that you were talking about
11:26:06 25 solely by route of dermal contact. I can't think of

11:26:11 1 anything in the literature that I can think of that
11:26:14 2 shows that. There are effects in effect in -- in your
11:26:20 3 exhibit number, whatever it is, 2 over here or 4, 3 --
11:26:23 4 no. Where is it? Shell does say what the results are
11:26:28 5 by skin contact. But -- yeah, it says prolonged or
11:26:41 6 repeated liquid. Yeah. Okay.

11:26:44 7 Q. Okay. Let me -- thank you for referring that
11:26:45 8 to me. That is Exhibit 4, which is the Shell Material
11:26:47 9 Data Sheet?

11:26:49 10 A. That's correct.

11:26:52 11 Q. Okay. And this says that prolonged or repeated
11:26:55 12 liquid contact with benzene can result in defatting and
11:26:59 13 drying of the skin, which may result in skin irritation
11:27:03 14 or dermatitis. Do you see where it says that?

11:27:05 15 A. That's correct.

11:27:05 16 Q. Okay. Well, my question is actually different
11:27:07 17 as to whether or not benzene causes -- benzene exposure
11:27:10 18 causes defatting or drying of the skin. My question is
11:27:16 19 specifically whether or not benzene can be toxic by the
11:27:20 20 root of exposure through skin absorption.

11:27:23 21 A. Well, toxic is a general term. And just as
11:27:28 22 this says, toxic means it can have an adverse effect on
11:27:32 23 the body. And by skin absorption, that can be an
11:27:35 24 adverse effect on the body. Whether that adverse effect
11:27:36 25 is the same as inhalation, I can't tell you.

11:27:40 1 Q. Okay.

11:27:42 2 A. On the other hand, if there is enough on the
11:27:45 3 skin that way, the inhalation is going to be there
11:27:49 4 whether you have the odor or you can smell it or not.
11:27:50 5 You get enough, you know, on the skin, you ought to be
11:27:55 6 able to smell it, too.

11:27:56 7 Q. Okay. Well, I want to show you a memorandum,
11:27:59 8 which you were the recipient of in January 23rd, 1979
11:28:05 9 from Dr. Joyner, Corporate Medical -- oh, excuse me.
11:28:10 10 You were one of the authors of this. It's a memorandum
11:28:14 11 that you were one of the authors of in January 23, 1979.
11:28:19 12 And you write, as you know, comma, this chemical,
11:28:21 13 benzene, is known to be, quote, unquote, toxic by all
11:28:26 14 roots of exposure, pren, inhalation, ingestion, skin
11:28:30 15 absorption, providing the level of exposure is
11:28:35 16 significantly high. You then go on to say that benzene
11:28:37 17 may cause serious injury to blood-forming organs. What
11:28:39 18 is most important, however, is that benzene is suspected
11:28:42 19 of being carcinogenic in humans if the exposure is high
11:28:48 20 enough and lasts long enough. I'll show you the
11:28:51 21 memorandum.

11:28:51 22 A. That's -- yeah, I remember this because this
11:28:54 23 has been given to me in other cases. But that's
11:28:56 24 correct. Now, what's the question?

11:28:59 25 Q. My question is, do you dispute that you wrote

11:29:02 1 in 1979 that benzene is known to be toxic by all means
11:29:05 2 of exposure, including dermal absorption?

11:29:10 3 A. Sure. But I also wrote -- put the word toxic
11:29:13 4 in quotation marks. And the actions that I read to you
11:29:17 5 on the material safety data sheet are toxic. I didn't
11:29:21 6 define toxic and neither did Dr. Joyner or I define
11:29:25 7 toxic. Providing the level is high. So, there are a
11:29:27 8 lot of qualifications. But given the right set of
11:29:30 9 circumstances and recognizing that the word toxic means
11:29:36 10 an adverse effect on the human body, then benzene is
11:29:39 11 known to be toxic by all routes of exposure.

11:29:42 12 Q. Okay. Does your memo anywhere -- your
11:29:45 13 memorandum that you wrote in 1979 talks about how most
11:29:51 14 important is that benzene is suspected of being
11:29:53 15 carcinogenic in humans.

11:29:56 16 A. That's --

11:29:56 17 Q. Do you see where you wrote that?

11:29:56 18 A. Yes, that's correct.

11:29:56 19 Q. Okay. Where did you write in this memo that,
11:29:58 20 oh, by toxic I could just mean it may be defatting or
11:30:03 21 skin irritation?

11:30:04 22 A. No, this memo wasn't meant to do that. This
11:30:07 23 was a memo that was meant to alert, in this particular
11:30:12 24 case, the vice-president. And I don't see who else got
11:30:16 25 copies. To alert the Shell officials why we are doing

11:30:19 1 this. This is just a very quick summary. This is not a
11:30:24 2 lecture, and it's not a manual on the toxicity of
11:30:29 3 benzene. It is toxic by all routes. The most serious
11:30:35 4 effect that we can think of is -- is carcinogenicity.
11:30:40 5 And that's why we're going ahead with this study.

11:30:40 6 Q. Okay. But nowhere in that memo did you write,
11:30:43 7 well, it's more toxic by one route than another, did
11:30:47 8 you?

11:30:48 9 A. It wasn't necessary, and it wouldn't apply to
11:30:48 10 this memo.

11:30:48 11 MS. CLANCY: Object as nonresponsive.

11:30:49 12 Q. (By Ms. Clancy) No where in that memo did you
11:30:51 13 write it is more toxic by one route than another, did
11:30:54 14 you?

11:30:55 15 MR. YOUNG: Object to the form of the
11:30:56 16 question.

11:30:56 17 Q. (By Ms. Clancy) Did you write that in there?

11:30:59 18 A. No. I think one could infer it from here; but,
11:31:02 19 no, we didn't write that -- those specific words.
11:31:05 20 That's correct.

11:31:06 21 Q. Okay. Where can one infer from that memorandum
11:31:06 22 that it is more toxic by one root of exposure than
11:31:09 23 another?

11:31:10 24 A. Because when we're talking about what level of
11:31:12 25 exposure is toxic and when we talk in parts per million,

11:31:15 1 the implication and the inference that anyone would take
11:31:17 2 reading this is that it was by inhalation.

11:31:20 3 Q. Okay. You can't have parts per million by
11:31:23 4 volume?

11:31:25 5 A. On benzene on the skin, one never talks about
11:31:32 6 that in industrial hygiene. And that never would enter
11:31:32 7 into it. Parts per million by volume means you've got a
11:31:33 8 mixture of solvents or something like that on the skin.

11:31:37 9 Q. Right.

11:31:38 10 A. Nothing is known about that as far as -- and
11:31:39 11 then -- even then wasn't known.

11:31:41 12 Q. Nothing --

11:31:41 13 A. When you talk about PPM, you're talking about
11:31:42 14 averaged over an eight-hour day parts per million by
11:31:42 15 volume of liquid doesn't fit. The rest of the paragraph
11:31:49 16 talks about inhalation. Any one familiar with
11:31:54 17 industrial hygiene, familiar with exposure, would take
11:31:58 18 that as inhalation. And that's all --

11:31:59 19 Q. What was Mr. Deisler's position?

11:32:01 20 A. Deisler --

11:32:01 21 MR. YOUNG: Object to the form the
11:32:03 22 question. Calls for speculation.

11:32:04 23 A. Deisler was a vice-president at the time. And
11:32:07 24 he -- all of the four signatures on that letter reported
11:32:10 25 to him.

11:32:11 1 Q (By Ms. Clancy) Okay. And what department did
11:32:12 2 he work in?

11:32:13 3 A. He was the vice-president for Health, Safety
11:32:15 4 and Environment.

11:32:16 5 Q. Okay. And was he an industrial hygienist?

11:32:20 6 A. No.

11:32:20 7 Q. So, you wrote to a nonindustrial hygienist and
11:32:23 8 you asked him to infer, even though you wrote benzene is
11:32:28 9 known to be toxic by all routes of exposure, inhalation,
11:32:31 10 ingestion and skin absorption, your testimony today is
11:32:33 11 you're asking this nonindustrial hygienist to infer
11:32:37 12 that, oh, really, it's really just inhalation?

11:32:40 13 MR. YOUNG: Object to the form.

11:32:40 14 Q. (By Ms. Clancy) Is that your testimony?

11:32:43 15 A. No, it is not.

11:32:44 16 Q. Okay.

11:32:45 17 A. Dr. Deisler is -- was a very well educated and
11:32:49 18 PhD who had been a vice-president of Health, Safety and
11:32:52 19 environment for several years at the time this was
11:32:54 20 written. I think he would make that inference, yes.

11:32:57 21 Q. Okay. Well --

11:32:59 22 A. I think any technically
11:33:00 23 well-trained technical -- technically-trained person
11:33:03 24 would make the same inference by those words, that we
11:33:07 25 were really concerned about inhalation primarily.

11:33:10 1 Q. Okay. Even though you never wrote we are
11:33:12 2 really concerned about inhalation primarily.
11:33:14 3 A. We -- I -- we didn't have to write, right.
11:33:15 4 Q. But --
11:33:15 5 MS. CLANCY: Object as nonresponsive.
11:33:15 6 Q. (By Ms. Clancy) You never wrote we were really
11:33:18 7 concerned about inhalation primarily, did you?
11:33:21 8 A. I think --
11:33:21 9 Q. Did you write those words?
11:33:22 10 A. Those words were not in that memo.
11:33:24 11 Q. Okay. In fact, what you did wrote is that the
11:33:26 12 chemical is --
11:33:26 13 A. What I did write?
11:33:26 14 Q. -- known to be toxic by all routes of exposure,
11:33:26 15 pren, inhalation, ingestion and skin absorption,
11:33:30 16 correct, that is what you wrote?
11:33:32 17 A. That's part of the memo, that's correct.
11:33:34 18 Q. Okay. And, yet, you didn't take into
11:33:37 19 consideration in calculating dose any skin absorption in
11:33:41 20 performing the Shell exposure assessment, correct?
11:33:45 21 MR. YOUNG: Object to the form of the
11:33:46 22 question. Asked and answered.
11:33:47 23 A. You're talking apples -- you're talking apples
11:33:48 24 and oranges.
11:33:49 25 Q (By Ms. Clancy) I'm talking what this says.

11:33:50 1 Dose estimates were not made for benzene absorbed
11:33:54 2 through the skin when direct contact may have occurred.
11:33:55 3 A. Right.
11:33:56 4 Q. Does the exposure assessment say that?
11:33:59 5 A. That says that, but the exposure assessment was
11:34:01 6 to try to find out what was the body burden that could
11:34:04 7 have caused cancer.
11:34:06 8 Q. Right.
11:34:07 9 A. Could have caused leukemia. And what that says
11:34:10 10 is that we did not know and, therefore, we did not
11:34:13 11 include and there was nothing known and there was no
11:34:16 12 evidence that skin absorption was part of that
11:34:18 13 mechanism. It was inhalation that we were concerned
11:34:18 14 about.
11:34:19 15 Q. Okay.
11:34:20 16 A. And that's all it says.
11:34:20 17 Q. And if there were to be evidence that one could
11:34:24 18 get benzene absorption through the skin, would you then
11:34:30 19 say that that should be included as part of total body
11:34:35 20 burden?
11:34:35 21 A. Well, you're mischaracterizing what I just
11:34:35 22 answered. I say there's no evidence, and I don't even
11:34:38 23 think there's evidence today, that exposure through the
11:34:41 24 skin is a proximate cause of cancer in -- exposure
11:34:48 25 through the skin of benzene is a proximate cause of

11:34:50 1 cancer. And the same thing would hold.

11:34:55 2 Q. Okay. That wasn't my question. My question
11:34:56 3 is, assume for me that one of the ways by which a person
11:35:01 4 can ingest benzene into the body and add to the total
11:35:05 5 body burden of benzene is by through the skin. Can you
11:35:08 6 assume that for me?

11:35:09 7 A. No, I can't.

11:35:10 8 Q. Why not?

11:35:10 9 A. Because the assumption has to say what's going
11:35:13 10 to happen when it's in the body. And I can't just say
11:35:16 11 adds to the body burden. The effect of benzene inhaled
11:35:20 12 may be different from the effect on the body of -- from
11:35:24 13 the effect on the body of dermal absorption.

11:35:28 14 Q. Okay.

11:35:28 15 A. So, I can't make that assumption as you're
11:35:28 16 putting it.

11:35:29 17 Q. Fair enough. Can you assume for me that
11:35:31 18 assumption of benzene through the skin could be
11:35:36 19 carcinogenic? Can you make that assumption for me?

11:35:40 20 A. I will not make that assumption. No, I can't.
11:35:41 21 I don't think there's any evidence for that assumption.

11:35:42 22 Q. Okay. I'm not asking you if there's evidence.
11:35:44 23 I'm just asking you to assume that for me?

11:35:46 24 A. I will not assume that because it's totally
11:35:49 25 incorrect, and I can't make that assumption. If you ask

11:35:52 1 me a question to make an assumption that the earth is
 11:35:54 2 flat and you're going to ask me a question on that, I
 11:35:57 3 cannot make the assumption and will not make the
 11:35:58 4 assumption that the earth is flat.
 11:35:59 5 Q. Okay. I just want to clarify. Your testimony
 11:36:03 6 as the former -- what was your title?
 11:36:05 7 A. I was manager of safety and industrial hygiene.
 11:36:06 8 Q. Okay. And how many years were you manager of
 11:36:08 9 safety --
 11:36:09 10 A. That particular title was since 1977 to 1991.
 11:36:13 11 Q. Okay. Your testimony is as the former manager
 11:36:17 12 of industrial health and safety -- is that right?
 11:36:22 13 A. Safety industrial hygiene.
 11:36:23 14 Q. Safety industrial hygiene for Shell. And how
 11:36:28 15 many employees were you responsible for?
 11:36:30 16 A. Well, my department was responsible for the
 11:36:32 17 whole company.
 11:36:32 18 Q. For the whole company. Okay. Responsible for
 11:36:34 19 the whole company, your testimony, as you sit here
 11:36:36 20 today, is that there is no evidence that exposure by --
 11:36:40 21 of benzene through the skin can be carcinogenic? Is
 11:36:46 22 that your testimony?
 11:36:47 23 MR. YOUNG: Object to the form. Misstates
 11:36:48 24 his testimony.
 11:36:49 25 A. I'm saying now, regardless of what my position

11:36:51 1 was with the company, as I sit here today, I know of no
11:36:55 2 evidence of literature that says that benzene absorbed
11:36:59 3 through the skin is carcinogenic, that it could cause
11:37:04 4 leukemia.

11:37:04 5 Q. Okay. And was that one of the reasons that you
11:37:07 6 didn't use benzene absorbed through the skin in your
11:37:11 7 historic exposure assessment data?

11:37:11 8 A. I don't know -- I don't know what -- whoever
11:37:14 9 wrote that paragraph and even if -- I probably reviewed
11:37:18 10 the paragraph, if I didn't write it -- I don't know what
11:37:21 11 the purpose was.

11:37:32 12 But, basically, we were concerned with
11:37:32 13 inhalation, even though there were other effects; and we
11:37:32 14 dealt with the other effects. We were looking at
11:37:34 15 carcinogenicity. We were looking at mortality or --
11:37:37 16 we're looking at morbidity and mortality from -- of
11:37:41 17 leukemia. And that was one we did not know how to
11:37:45 18 characterize. There was nothing in the literature that
11:37:48 19 led us -- would give us -- let us have a dose. And, so,
11:37:52 20 we just decided we would note it but not include it in
11:37:56 21 the calculation.

11:37:56 22 Q. Okay. And, so, what you did include in the
11:37:59 23 calculation in terms of total dose was just inhalation;
11:38:03 24 is that right?

11:38:03 25 A. Inhalation, yes, essentially, right.

11:38:05 1 Q. Any other roots of exposure besides inhalation?

11:38:09 2 A. As far as -- in terms of trying to estimate --
11:38:11 3 no, because when we're talking about reporting a dose
11:38:14 4 and trying to estimate part per million years, that's
11:38:18 5 inhalation, per se.

11:38:19 6 Q. Okay. All right. So, the only route of
11:38:20 7 exposure that you analyzed in calculating employee
11:38:25 8 dosage for purposes of the Shell work exposure
11:38:25 9 assessment was inhalation?

11:38:27 10 MR. YOUNG: Object to --

11:38:26 11 Q. (By Ms. Clancy) That was the route of exposure
11:38:28 12 that you used?

11:38:28 13 A. That's the --

11:38:28 14 MR. YOUNG: Object to the form, asked and
11:38:30 15 answered.

11:38:31 16 A. -- route of -- that is the standard by which,
11:38:33 17 even if we had monitoring data, is what we would do --
11:38:38 18 the exposure monitoring would be inhalation monitoring.

11:38:41 19 Q. (By Ms. Clancy) Well, I'm just trying to
11:38:42 20 understand because your paragraph says that chemical is
11:38:46 21 toxic by all roots of exposure, inhalation, ingestion
11:38:48 22 and skin absorption. So, I'm just trying to narrow down
11:38:50 23 for purposes of the Shell exposure assessment study, you
11:38:55 24 only used the inhalation for purposes of characterizing
11:38:59 25 dose; is that right? You didn't -- you didn't use

11:39:03 1 ingestion and skin absorption to characterize dose, did
11:39:03 2 you?

11:39:04 3 A. Not dose the way we did inhalation, right.
11:39:06 4 Inhalation was separate, yes.

11:39:09 5 Q. What does that mean, not those the way we did
11:39:11 6 inhalation?

11:39:13 7 A. Well, I've tried to explain the four or five
11:39:16 8 times already. Let me see if I can find another set of
11:39:17 9 words, like I say, the --

11:39:18 10 Q. Well, let me ask you very simply: Was
11:39:20 11 inhalation the only root of exposure that was used to
11:39:25 12 calculate dose in the Shell exposure assessment study?

11:39:29 13 MR. YOUNG: Asked and answered. Object to
11:39:30 14 the form.

11:39:31 15 A. When we report exposure in terms of equivalent
11:39:34 16 part per million years, that means inhalation.

11:39:39 17 Q (By Ms. Clancy) Okay. And --

11:39:40 18 A. And when anyone in any exposure study reports
11:39:44 19 part per million years, that refers to inhalation.

11:39:47 20 MS. CLANCY: Okay. Object as
11:39:48 21 nonresponsive. Can you show me my question again?

11:39:48 22 Q. (By Ms. Clancy) My question is very simple.
11:39:48 23 Was the inhalation the only root of exposure was -- that
11:40:00 24 was used to calculate dose for purposes of the Shell
11:40:03 25 exposure assessment study?

11:40:06 1 MR. YOUNG: Object to the form.

11:40:08 2 A. The calculation of dose is an inhalation type
11:40:13 3 of calculation. That's what I'm trying to say.

11:40:16 4 Q (By Ms. Clancy) Okay.

11:40:16 5 A. In part per million years, as we reported, is
11:40:19 6 an inhalation measurement. We took into account and
11:40:24 7 noted in our forms, as we had them here, other
11:40:28 8 routes that -- that we talked about. That when you
11:40:33 9 report part per million years, you report exposure dose,
11:40:38 10 you're talking about inhalation. That is the industrial
11:40:42 11 hygiene principle. That's not something that Shell did
11:40:44 12 or didn't do. That was a state and is a state of the
11:40:47 13 art.

11:40:48 14 MS. CLANCY: Okay. Object as
11:40:50 15 nonresponsive.

11:40:56 16 MR. YOUNG: Can I see that?

11:40:56 17 THE WITNESS: Yes.

11:40:56 18 MR. YOUNG: Go ahead.

11:40:52 19 MS. CLANCY: Object as nonresponsive.

11:40:56 20 Q. (By Ms. Clancy) Let me break it down even more
11:40:58 21 simply. You reported your results in part per million
11:41:02 22 years; is that right?

11:41:03 23 A. I think we made our estimates in part per
11:41:03 24 million years, right.

11:41:03 25 Q. Okay. You made your estimates in part per

11:41:06 1 million years, correct?

11:41:07 2 A. Correct.

11:41:07 3 Q. As is it your testimony, then, that inhalation
11:41:10 4 assessments are what is used to make estimates in part
11:41:13 5 per million years; is that right?

11:41:13 6 A. Pretty much, yes.

11:41:14 7 Q. Okay. And, therefore, since you reported your
11:41:18 8 results in part per million years in the Shell exposure
11:41:21 9 assessment, inhalation was what you used to determine
11:41:25 10 the total dose; is that correct?

11:41:29 11 A. I'm sorry. Shouldn't have -- please, I hate to
11:41:33 12 make you repeat that question or have the reporter read
11:41:35 13 it back.

11:41:36 14 Q. Okay. Well, let's go over -- what we just
11:41:40 15 established was, the results were reported in part per
11:41:43 16 million years, correct, in the Shell --

11:41:45 17 A. That's correct.

11:41:45 18 Q. Okay. And your testimony is that in order to
11:41:47 19 report results in part per million years, you need to
11:41:50 20 analyze the inhalation of the person -- person's
11:41:52 21 inhalation of benzene; is that correct?

11:41:55 22 A. That's correct.

11:41:55 23 Q. Okay. You're not analyzing dermal contact to
11:41:58 24 establish a part-per-million-years' result, correct?

11:42:00 25 A. That's correct.

11:42:00 1 Q. You're not analyzing ingestion to derive a
11:42:03 2 parts-per-million-years' result, correct?

11:42:03 3 A. That's correct.

11:42:04 4 Q. Okay. Therefore, the only criteria that you
11:42:08 5 used to establish dose in determining your
11:42:10 6 part-per-million-years' results was the root of
11:42:13 7 inhalation; is that correct?

11:42:15 8 MR. YOUNG: Object to the form. Asked and
11:42:16 9 answered.

11:42:17 10 A. Yes, again. But if there is dermal contact and
11:42:23 11 there was enough liquid contact, we can give that an
11:42:24 12 inhalation equivalent because the stuff is sitting on
11:42:26 13 the skin, sitting on the clothing, you're inhaling it
11:42:28 14 there.

11:42:29 15 Q. (By Ms. Clancy) You can, but you didn't for
11:42:30 16 purpose of this study?

11:42:31 17 A. No, I didn't say that.

11:42:32 18 Q. Well, I'm -- I'm --

11:42:33 19 A. No.

11:42:33 20 Q. Let be clear. I'm just --

11:42:35 21 A. For purposes of this study, if somebody said my
11:42:37 22 clothes were soaked with benzene, you know, there may
11:42:41 23 have been a skin contact; but we would also say if your
11:42:46 24 clothes was soaked with benzene, there was an inhalation
11:42:48 25 contact and we would give it an inhalation number.

11:42:50 1 Q. Right. You would say, okay, person says
11:42:54 2 clothes soaked with benzene. Surely they inhaled some
11:42:57 3 of the benzene.

11:42:58 4 MR. YOUNG: Object to the form.

11:42:57 5 Q. (By Ms. Clancy) We're going to give it an
11:42:59 6 inhalation number; is that right?

11:42:59 7 A. That's what I just said.

11:43:00 8 Q. Okay. But you wouldn't say, okay, person's
11:43:03 9 clothes are soaked with benzene. They may have had both
11:43:07 10 benzene by dermal absorption and benzene by inhalation
11:43:10 11 absorption, correct?

11:43:12 12 A. Yeah, I don't know how to characterize that
11:43:15 13 even today as to what equivalent you give to that.

11:43:18 14 Q. So, my -- the answer to my question is yes,
11:43:20 15 right? I mean, you would have said, if a person came to
11:43:22 16 you, I was doused in benzene, please analyze my exposure
11:43:27 17 assessment, you would say, well, we will analyze what we
11:43:30 18 think you might have inhaled, but we're not going to
11:43:33 19 analyze what you might have gotten by dermal contact; is
11:43:33 20 that correct?

11:43:35 21 MR. YOUNG: Object to the form of the
11:43:43 22 question.

11:43:43 23 A. I would say that we can't analyze what you got
11:43:43 24 dermally to make it equivalent to the inhalation.

11:43:43 25 MS. CLANCY: Okay. Object as

11:43:43 1 nonresponsive.

11:43:43 2 Q. (By Ms. Clancy) My question is not whether you

11:43:45 3 can or can't.

11:43:47 4 A. That's the only way I can answer it.

11:43:47 5 Q. My question is not whether you can or can't.

11:43:50 6 Okay. I know your position on that. My question is,

11:43:52 7 did you. Okay? My question is, did you?

11:43:56 8 A. I can't answer beyond that what I've said.

11:43:59 9 Q. You don't know?

11:44:00 10 A. I --

11:44:00 11 Q. Did you -- did you take into consideration --

11:44:04 12 A. We did not make a conversion of skin absorption

11:44:08 13 to inhalation. It -- I don't think we could do it even

11:44:15 14 today.

11:44:16 15 Q. Okay. And you didn't do it at the time,

11:44:18 16 correct?

11:44:18 17 A. I guess that's correct.

11:44:19 18 Q. Okay. So, the route of exposure that you were

11:44:22 19 looking at was a route by means of inhalation, correct?

11:44:26 20 A. No. The route that we were calculating was an

11:44:29 21 inhalation-based route. That's what PPM years means.

11:44:32 22 Q. Okay. The route that you were calculating was

11:44:35 23 an inhalation-based route, correct?

11:44:37 24 A. That's right.

11:44:37 25 Q. Okay. The route that you were calculating was

11:44:40 1 not a dermal-based route, correct?

11:44:43 2 MR. YOUNG: Object to the form.

11:44:44 3 A. Yes.

11:44:44 4 Q. (By Ms. Clancy) Okay. And the route that you
11:44:45 5 were calculating for purposes of the Shell exposure
11:44:48 6 assessment study was not an ingestion-based route,
11:44:49 7 correct?

11:44:50 8 MR. YOUNG: Object to the form.

11:44:50 9 A. That's correct.

11:44:51 10 Q. (By Ms. Clancy) Okay. And what the end point
11:45:27 11 of the study produced is parts per million days per year
11:45:36 12 that a typical job exposure might -- might result in; is
11:45:43 13 that right?

11:45:45 14 A. That's correct.

11:45:45 15 Q. Okay. And, indeed, in making your estimates,
11:45:50 16 you also took into consideration whether or not
11:45:56 17 craftsman might be assigned to different zones during
11:46:01 18 the day, correct?

11:46:02 19 A. Yes.

11:46:04 20 Q. Okay. And --

11:46:04 21 A. That's on the form.

11:46:05 22 Q. Right. So, for example, if a craftsman worked
11:46:12 23 in benzene areas on some days, but not on others, you
11:46:16 24 would recognize that for purposes of performing your
11:46:19 25 exposure assessments and assigning a value of part per

11:46:24 1 million days exposure to that particular type of craft,
 11:46:26 2 correct?
 11:46:27 3 A. That is correct.
 11:46:27 4 Q. Okay. So -- and, in fact, you'd give them a
 11:46:35 5 lower-unit estimate where the craftsman weren't always
 11:46:41 6 working in a benzene-containing area on a continual
 11:46:44 7 basis, correct?
 11:46:44 8 A. Well, if the craftsman wasn't around benzene,
 11:46:47 9 we didn't escribe benzene exposure to them, that's
 11:46:50 10 correct.
 11:46:51 11 Q. All right. So, what my -- what my question is,
 11:46:53 12 your numbers here for a job exposure potential
 11:46:56 13 estimates, they take into consideration the fact that
 11:47:00 14 certain job tasks might at some periods be continually
 11:47:03 15 working in a benzene zone but on some days might not be
 11:47:08 16 working in those zones at all, correct? That's taken
 11:47:09 17 into account?
 11:47:09 18 A. Well, we take -- even on one day it could be
 11:47:12 19 A -- Zone A, Zone B and Zone C.
 11:47:14 20 Q. Right.
 11:47:14 21 A. Which would differ, sure.
 11:47:16 22 Q. And, so, my question is, the Shell Exposure
 11:47:19 23 Assessment Study recognizes that and accounts for it in
 11:47:24 24 its numbers and adjusts for it that certain folks might
 11:47:27 25 on one day be working around benzene, on the other day

11:47:32 1 might not, and then it takes -- it takes those
11:47:34 2 considerations into effect when producing these exposure
11:47:37 3 estimates, correct?

11:47:39 4 A. Yeah, that's consistent with industrial hygiene
11:47:42 5 practice, if you -- if we had the monitoring data. If a
11:47:44 6 person is here and we monitor and get one level. If
11:47:47 7 he's there and we monitor and get a different level, we
11:47:49 8 adjust on the monitoring basis. It's no different from
11:47:54 9 having had the data.

11:47:55 10 Q. Okay. So, for example, the -- so, here's what
11:48:33 11 I need you to explain to me: On the Shell exposure
11:48:36 12 assessment report -- and I'll show you this. But the
11:48:37 13 paragraph I'm going to ask you to look at is the higher
11:48:42 14 numbers of exposure assessments represent the exposure
11:48:44 15 potential range for a craftsman working in the benzene
11:48:47 16 exposure area for an entire year. An example is a zone
11:48:51 17 pipefitter postulated as being assigned every work day
11:48:53 18 to the benzene exposure area in the zone. The more
11:48:56 19 usual case is a zone craftsman who works in benzene
11:49:00 20 areas on some days, but not on others. Recognizing this
11:49:02 21 where appropriate, the exposure potential range for the
11:49:06 22 maintenance job has been divided by the estimated number
11:49:07 23 of craftsman that could have been assigned to that job
11:49:10 24 giving a lower unit estimate. In general, this lower
11:49:13 25 estimate would be more likely to represent the exposure

11:49:15 1 potential of such a zone craftsman. Right there.

11:49:47 2 A. Okay. What's the question?

11:49:48 3 Q. Okay. So -- could I have that back a second?

11:49:53 4 My question is, if we look at the, for example, job

11:50:06 5 potential exposure estimates on Wood River, what -- what

11:50:19 6 were the tasks that would exemplify that type of more,

11:50:24 7 for lack of a better word, itinerant craftsman who

11:50:27 8 worked one day at a benzene-containing job and another

11:50:29 9 day on not?

11:50:40 10 A. Well, for instance, a carpenter would be

11:50:43 11 something like that.

11:50:53 12 Q. Could a pipefitter be something like that?

11:50:56 13 A. Well, there's some jobs here as

11:50:59 14 pipefitters where they estimated -- there are two sets

11:51:02 15 of estimates in this attachment. One is the estimated

11:51:06 16 range for the job. The other is for a typical

11:51:12 17 individual in that job. And they're different. So, a

11:51:16 18 pipefitter here in one case at the coke oven benzene

11:51:17 19 rack, a pipefitter would be estimated, time of the job

11:51:21 20 would be less than 50 PPM days per year, which amounts

11:51:26 21 to, what, the equivalent of perhaps .1 or something like

11:51:30 22 that PPM.

11:51:32 23 Q. Per year?

11:51:32 24 A. No. PPM exposure.

11:51:34 25 Q. Okay.

11:51:35 1 A. Okay. All I can do is look at this and look at
11:51:40 2 the numbers -- the lower numbers in their estimates.
11:51:42 3 Carpenter. And there's a pipefitter foreman, for
11:51:46 4 example, and so on, who have these low numbers. There's
11:51:49 5 a machinist. Other pipefitters here, depending upon
11:51:53 6 where they worked. Whole variety of jobs and typical
11:51:58 7 individuals. Instrument man, for example.

11:52:00 8 Q. Okay. So, the way that you would reconstruct
11:52:06 9 which folks from the Shell historic exposure assessment
11:52:10 10 had the more itinerant tasks of one day they might be
11:52:14 11 exposed to benzene and one day not -- for example, you
11:52:14 12 gave the example of a carpenter -- is you'd look at
11:52:18 13 whether or not their numbers were lower, vis-a-vis, the
11:52:22 14 other -- other folks were working in the same areas; is
11:52:26 15 that correct?

11:52:27 16 A. No.

11:52:33 17 Q. Okay.

11:52:33 18 A. What you'd look at was -- first of all, the
11:52:33 19 first paragraph that you read me before talked about
11:52:34 20 looking at the job and then what typical individuals in
11:52:37 21 the job did. So, first you looked at the job. And then
11:52:40 22 you looked at that carpenter and say, okay, how many
11:52:44 23 days typically would a carpenter be in that job in that
11:52:47 24 unit per year. And then that individual would have that
11:52:53 25 assessment of so many PPM days per year.

11:52:56 1 Q. Okay. And the way that when I asked you to --
 11:52:57 2 when I asked you to look at the job exposure potential
 11:53:01 3 estimates and tell me, well, who are the folks on that
 11:53:04 4 that might have had the more itinerant jobs, the jobs
 11:53:09 5 that were sporadic in nature with respect to their
 11:53:09 6 exposure, you said, well, I can back into that by
 11:53:12 7 looking at lower numbers; is that right?

11:53:15 8 A. Yeah.

11:53:15 9 Q. Okay.

11:53:16 10 A. Yeah, yeah.

11:53:16 11 Q. And, so, Shell accounted for that type of work
 11:53:19 12 in its Shell historic exposure assessment study,
 11:53:21 13 correct?

11:53:23 14 A. That's correct.

11:53:23 15 Q. Okay. NIOSH -- not only did you base your
 11:53:34 16 studies, for example, your olfactory and sensory
 11:53:39 17 perception on peer-reviewed literature, but the
 11:53:44 18 Government, NIOSH, also approved the manner in which you
 11:53:47 19 were doing your study; is that correct?

11:53:49 20 A. Well, it wasn't official approval. We brought
 11:53:51 21 the protocol -- I personally brought the protocol to the
 11:53:52 22 director of NIOSH. And, essentially, I said, this is
 11:53:55 23 what we plan to do. Look at it. Tell us what we're
 11:53:59 24 doing right. Tell us what we're doing wrong. And if
 11:54:02 25 it's wrong, tell us how to fix it before we start.

11:54:03 1 Q. Okay. And it was your belief that NIOSH or
11:54:07 2 that OSHA appeared satisfied with the way that you were
11:54:10 3 doing the historic exposure study, correct?

11:54:13 4 A. Well, we didn't involve OSHA with it in the
11:54:16 5 beginning. NIOSH is the scientific arm, if you will, of
11:54:16 6 OSHA. And those are the ones we went to.

11:54:18 7 Q. Okay. So, it was your belief that NIOSH was --
11:54:20 8 appeared satisfied with the manner in which you were
11:54:27 9 conducting your historic exposure assessment; is that
11:54:30 10 correct?

11:54:31 11 A. I don't recall if they suggested, and I think
11:54:33 12 they may have suggested certain changes in the original
11:54:37 13 protocol. But once we got their recommendations in,
11:54:40 14 plus our other consultants, that was the final protocol
11:54:42 15 with which we went, yes.

11:54:42 16 Q. Okay. So, with the final protocol that you
11:54:45 17 used for your historic exposure assessment, NIOSH
11:54:49 18 appeared satisfied with the final protocol that Shell
11:54:54 19 used for its exposure assessment; is that correct?

11:54:57 20 A. That's correct.

11:54:57 21 Q. Okay. So, for example, when you wrote in 1984
11:55:03 22 note to file, various OSHA personnel present asked for
11:55:08 23 further information with regard to the historic exposure
11:55:10 24 study, they appeared satisfied with our responses
11:55:13 25 regarding sensory criteria for making exposure

11:55:16 1 assessments, validation of the criteria, olfactory
11:55:18 2 fatigue factors and corrections for benzene-containing
11:55:20 3 mixtures. I show you that. Right there.

11:55:25 4 A. Yeah, but that's OSHA, that's not NIOSH, but
11:55:28 5 yeah.

11:55:28 6 Q. Okay.

11:55:29 7 A. And this represents a meeting that we had with
11:55:31 8 OSHA in '84, not NIOSH. But, yes, that's what it says,
11:55:33 9 yeah.

11:55:34 10 Q. Okay. So, then -- so then both OSHA and NIOSH
11:55:39 11 appeared satisfied with the final criteria used with
11:55:42 12 respect to the Shell historic exposure assessment study,
11:55:42 13 correct?

11:55:43 14 A. That's what it says, yes.

11:55:44 15 Q. Okay. So, the study was not only based on
11:55:46 16 peer-reviewed data, it was also a study that the NIOSH
11:55:51 17 and OSHA said we are satisfied with the final criteria
11:55:56 18 by which Shell performed its -- its historic exposure
11:55:57 19 assessment analysis, correct?

11:55:59 20 A. Right. Well, we looked at NIOSH as part of the
11:56:01 21 peer review, sure.

11:56:03 22 Q. Okay. And I'm -- okay. So, part of the peer
11:56:07 23 review was you relied on peer-reviewed literature in
11:56:11 24 conducting your --

11:56:12 25 A. And in developing the protocol.

11:56:14 1 Q. In develop -- much better way. In developing
11:56:14 2 the protocol for the Shell exposure assessment study,
11:56:18 3 you relied on peer-reviewed literature and also relied
11:56:23 4 on peer review, such as NIOSH and OSHA, to confirm that
11:56:28 5 they were satisfied with the manner in which Shell was
11:56:30 6 conducting its historic exposure assessment; is that
11:56:34 7 correct?

11:56:35 8 A. Well, as I've testified, we -- we looked at --
11:56:37 9 asked NIOSH to comment on it. We asked other
11:56:40 10 consultants from academia to comment on it. And all of
11:56:40 11 that was incorporated into the final -- into the final
11:56:46 12 protocol that we used.

11:56:47 13 Q. Okay. So, I just want to make a list of, what
11:56:52 14 would you call it, verifications of protocol that Shell
11:56:56 15 used. Ways that they confirmed that they were taking
11:56:59 16 the right approach. Okay?

11:57:01 17 A. Okay.

11:57:01 18 Q. One -- one verification was you had consultants
11:57:02 19 from academia bless the manner in which Shell was
11:57:02 20 performing its historical exposure assessment; is that
11:57:07 21 correct?

11:57:09 22 A. Well, we had them bless what we intended to do
11:57:13 23 before we started.

11:57:14 24 Q. Okay. So, before you even started, you
11:57:17 25 consulted with experts from academia?

11:57:21 1 A. Correct.

11:57:19 2 Q. And asked them this is the manner in which
11:57:24 3 we're going to perform this historic exposure
11:57:26 4 assessment, does that comport with your views as to how
11:57:30 5 this exposure assessment should be performed; is that
11:57:32 6 what you did?

11:57:32 7 A. That's correct.

11:57:32 8 Q. Okay. And I'm assuming that the folks that you
11:57:36 9 consulted with in academia, that they had expertise in,
11:57:37 10 for example, industrial hygiene and health and safety?

11:57:41 11 A. They were all professors of industrial hygiene.

11:57:43 12 Q. Okay. So, you consulted with -- and I'm
11:57:45 13 assuming that they were qualified and esteemed
11:57:47 14 professors of industrial hygiene?

11:57:47 15 A. Absolutely.

11:57:48 16 Q. Okay. So, first step is you -- before you even
11:57:52 17 started this study, you got blessings from esteemed
11:57:55 18 professors of industrial hygiene in academia, saying the
11:58:00 19 protocol that you're going to use at Shell to conduct
11:58:00 20 this historic exposure assessment study is appropriate?

11:58:04 21 A. Well, either that or they would say, you're
11:58:07 22 wrong over here, we would suggest you do it that way.
11:58:10 23 And they would have the input, and we would obviously
11:58:13 24 listen to their input.

11:58:13 25 Q. Okay. And you made adjustments so that your

11:58:17 1 Shell historic exposure assessment study could conform
 11:58:21 2 with what were -- the recommendations were from esteemed
 11:58:23 3 qualified professionals from academia as to how this
 11:58:27 4 study should be conducted, correct?
 11:58:29 5 A. Absolutely.
 11:58:29 6 Q. Okay. And then after you -- in the course of
 11:58:32 7 conducting your study, you used peer-reviewed literature
 11:58:35 8 to develop data end points, appropriate data end points
 11:58:39 9 such as the sensory data points; is that correct?
 11:58:40 10 A. No. At the beginning, and that was part of the
 11:58:50 11 protocol, how would we do that. And in the beginning,
 11:58:50 12 not only do we go to our, as we say, esteemed people in
 11:58:50 13 academia, we went to NIOSH, as well.
 11:58:50 14 Q. Well, I'm not just saying esteemed --
 11:58:51 15 A. It was in parallel. They were all in parallel.
 11:58:54 16 Q. Well, I'm not just saying they're esteemed
 11:58:55 17 people -- you're saying they're esteemed people from
 11:58:57 18 academia, too, aren't you?
 11:58:58 19 A. Oh, of course.
 11:58:59 20 Q. Okay. We're both saying that they're esteemed?
 11:59:01 21 A. Yes, sure.
 11:59:03 22 Q. Okay.
 11:59:03 23 A. But we also went to NIOSH simultaneously.
 11:59:08 24 Q. Okay.
 11:59:09 25 A. We went to NIOSH -- in other words, I sent out

11:59:11 1 letters and called and spoke to the academicians. At
11:59:15 2 the same time I went down to Atlanta and spoke with
11:59:18 3 Dr. Milar, the head of NIOSH. I mean, it was all done
11:59:23 4 within that same time period before we put the protocol
11:59:25 5 together and said, okay, now we've got it, this is what
11:59:26 6 we're going to do.

11:59:27 7 Q. Okay. So, not only did esteemed qualified
11:59:29 8 persons from academia bless the protocol by which
11:59:34 9 ultimately Shell was going to perform its exposure
11:59:34 10 assessment, but the head of NIOSH found it
11:59:39 11 satisfactory -- the final protocol satisfactory; is that
11:59:43 12 correct?

11:59:44 13 A. Yes, after we included whatever comments he may
11:59:46 14 have made or his staff may have made.

11:59:46 15 Q. Okay. Ultimately --

11:59:47 16 A. Ultimately, yes.

11:59:49 17 Q. -- the head of NIOSH found it satisfactory, the
11:59:52 18 protocol that Shell was using?

11:59:53 19 A. That's correct.

11:59:53 20 Q. Okay. And, then, the third thing is that not
11:59:56 21 only did NIOSH find the protocol satisfactory, but OSHA
12:00:02 22 found the protocol satisfactory that Shell used in its
12:00:05 23 exposure assessment --

12:00:07 24 A. Well --

12:00:06 25 Q. -- is that correct?

12:00:07 1 A. Yeah, ultimately, yes.

12:00:09 2 Q. Okay. And -- but there was a fourth thing,
12:00:12 3 which is that, as you testified, even before you -- as
12:00:15 4 you were developing the protocol from the study, you
12:00:18 5 went to the peer-reviewed literature and said, well,
12:00:21 6 what would be the appropriate analysis to be using when
12:00:22 7 conducting our olfactory sensory data collection; is
12:00:27 8 that correct?

12:00:29 9 A. We had to start with something before --

12:00:31 10 Q. Yeah.

12:00:31 11 A. -- we gave them --

12:00:31 12 Q. Yeah.

12:00:31 13 A. -- to the consultants. So, we went to the --
12:00:35 14 we used our own expertise, we went to the peer-reviewed
12:00:38 15 literature and we put a basic or an initial protocol
12:00:46 16 together, which then we vetted through these
12:00:48 17 academicians and through NIOSH.

12:00:51 18 Q. Okay. So, your initial protocol was based on
12:00:53 19 peer-reviewed literature, which you then vetted,
12:00:57 20 adjusted and ultimately got blessed by esteemed
12:00:59 21 academicians, NIOSH and OSHA; is that correct?

12:01:04 22 A. Well, as I say, I don't recall that I took it
12:01:06 23 to OSHA before we started the study.

12:01:09 24 Q. Well, that's why I used the word ultimately.

12:01:12 25 A. Ultimately. Ultimately, yes. Ultimately,

12:01:13 1 yeah. But we had to start some place, and that was an
12:01:16 2 in-house, yeah. Okay.

12:01:26 3 THE WITNESS: What do we do? Break now,
12:01:26 4 then? Is that all right?

12:01:25 5 MS. CLANCY: That's fine. I think we're
12:01:25 6 finished with that question.

12:01:25 7 THE WITNESS: Okay.

12:01:26 8 THE VIDEOGRAPHER: We're now going off the
12:01:30 9 record. The time is approximately 12:00 o'clock. We're
12:01:32 10 ending tape two.

12:01:33 11 (Recess taken)

12:13:29 12 THE VIDEOGRAPHER: We're now back on the
12:13:31 13 record. The time's approximately 12:12. We're starting
12:13:36 14 tape three.

12:13:37 15 Q (By Ms. Clancy) The Shell historic exposure
12:14:19 16 assessment did not analyze any contractor data; is that
12:14:23 17 correct?

12:14:24 18 A. As far as I can recall, yes.

12:14:26 19 Q. It was all employees; is that right?

12:14:28 20 A. That's my belief, that's correct.

12:14:30 21 Q. Okay. But Shell does monitor its contract
12:14:35 22 workers; is that correct?

12:14:36 23 A. It has, yes. I can't tell you what it does
12:14:39 24 now. I'm not there now.

12:14:39 25 Q. Oh, when you were there --

12:14:40 1 A. Yeah.

12:14:40 2 Q. -- at Shell, did it monitor its contract
12:14:42 3 workers?

12:14:43 4 A. It monitored, yes.

12:14:45 5 Q. Okay. And it would monitor them in situations
12:14:47 6 in -- such as turnarounds or wherever they might be
12:14:50 7 working; is that correct?

12:14:50 8 A. No. It would monitor the job. And if they
12:14:54 9 were there, they would monitor the contractors.

12:14:57 10 Q. Okay. When you -- I apologize. When you were
12:15:27 11 performing your job at Shell, you didn't operate in a
12:15:33 12 vacuum, did you, vis-a-vie, other oil companies, did
12:15:35 13 you?

12:15:38 14 MR. YOUNG: Object to the form.

12:15:38 15 Q (By Ms. Clancy) I mean, you would keep up
12:15:41 16 communications, I would presume, with your counterparts
12:15:43 17 at Exxon and other oil companies; is that right?

12:15:44 18 MS. RIEGLE: Object to the form.

12:15:46 19 A. That's right.

12:15:46 20 Q. (By Ms. Clancy) Okay. And would you do
12:15:47 21 that -- would one of the reasons that you would do that
12:15:47 22 in order to see, you know, what procedures they were
12:15:50 23 implementing for safety and also, you know, if -- to
12:15:55 24 confirm that your procedures and their procedures were
12:15:58 25 similarly safe or get ideas from them or compare notes

12:16:01 1 and you'd want to operate as a team in terms of
 12:16:04 2 implementing good safe measures at each refinery; is
 12:16:06 3 that correct?

12:16:08 4 MR. YOUNG: Object to the form of the
 12:16:09 5 question.

12:16:09 6 A. He think you're putting it incorrectly.

12:16:11 7 Q. (By Ms. Clancy) Okay. Tell me how.

12:16:11 8 A. As an industrial hygienist -- as industrial
 12:16:12 9 hygienist, I would talk to all of my colleagues and
 12:16:15 10 peers and so on and try to learn from each other. We
 12:16:20 11 wouldn't necessarily set up a team. I mean, I wouldn't
 12:16:23 12 characterize it as that. But I don't work in a vacuum.
 12:16:27 13 And you used that term. So, I have to contact other
 12:16:30 14 peers and meet them at professional meetings and so on.

12:16:33 15 Q. Okay. And would you say that, for example,
 12:16:36 16 Exxon Baytown, would you say that Shell Deer Park was --
 12:16:41 17 created a safer work environment than at Exxon Baytown?

12:16:46 18 MR. YOUNG: Object to the form. It calls
 12:16:48 19 for speculation.

12:16:49 20 A. I've never been to Exxon Baytown. I can't
 12:16:51 21 answer that.

12:16:51 22 Q (By Ms. Clancy) Okay. But you've talked to --
 12:16:53 23 in your job at Shell Deer Park -- or, excuse me, at
 12:16:56 24 Shell, you would talk to the -- your counterpart at
 12:16:59 25 Exxon in terms of what types of industrial hygiene

12:17:04 1 procedures and safety measures they were implementing at
12:17:07 2 Exxon, would you not?

12:17:08 3 A. I'd talk to the corporate people, yeah.

12:17:10 4 Q. Yeah. Okay. And did you have any reason to
12:17:11 5 believe that -- that they were -- that Exxon was
12:17:16 6 operating in a less safe manner than Shell --

12:17:19 7 MR. YOUNG: Object to the form. Asked and
12:17:20 8 answered.

12:17:21 9 Q (By Ms. Clancy) -- with respect to their
12:17:22 10 benzene policies?

12:17:24 11 MR. YOUNG: Asked and answered.

12:17:24 12 A. I had no way. I -- you know -- I think we all
12:17:26 13 tried to do the best possible job we could. And that's
12:17:28 14 the only way I can answer that.

12:17:30 15 Q. (By Ms. Clancy) Okay. And my question is, did
12:17:31 16 you have any reason -- and you may not have, you may not
12:17:34 17 have ever heard anything, but did you have any reason to
12:17:37 18 believe that Exxon was operating in a way that was, with
12:17:39 19 respect to its benzene policy, in a way that was less
12:17:44 20 safe than what Shell was doing? Did you have any --

12:17:45 21 MR. YOUNG: Object to the form.

12:17:47 22 A. I had even no reason to even think in those
12:17:48 23 terms.

12:17:49 24 Q (By Ms. Clancy) Okay. So, that answers my
12:17:50 25 question.

12:17:51 1 A. Okay.

12:17:52 2 Q. You never heard, well, those Exxon folks

12:17:54 3 they're just --

12:17:59 4 MR. YOUNG: Object to the form.

12:18:00 5 Q. (By Ms. Clancy) -- doing things that are

12:18:00 6 really unsafe?

12:18:02 7 MR. YOUNG: Object to the form of the

12:18:02 8 question.

12:18:02 9 MS. RIEGLE: Form.

12:18:01 10 A. No.

12:18:03 11 Q. (By Ms. Clancy) Okay.

12:18:09 12 MS. CLANCY: Basis?

12:18:09 13 MR. YOUNG: Asked and answered.

12:18:09 14 Q. (By Ms. Clancy) When -- the contractor data --

12:18:14 15 contractors often times would have higher exposure than

12:18:19 16 employees, correct?

12:18:22 17 A. No, I don't know.

12:18:22 18 Q. You don't know? You've never observed that?

12:18:26 19 A. I don't recall that. You know, which

12:18:26 20 contractor, which employee, but basically a contractor

12:18:30 21 would not necessarily have had higher exposures than

12:18:30 22 employees.

12:18:31 23 Q. Well, turnarounds are a situation that may lead

12:18:35 24 to higher exposures to benzene, correct?

12:18:38 25 MR. YOUNG: Object to the form.

12:18:38 1 A. Well, no. It depends upon how well you've
12:18:41 2 purged the system, how well you've cleaned it out and
12:18:44 3 how careful you are in doing a turnaround. And we have
12:18:47 4 contractors in the turnarounds, and they work together
12:18:49 5 with employees. And I can't tell you a contractor got
12:18:53 6 more or less.

12:18:54 7 Q (By Ms. Clancy) So, the contractors work
12:18:55 8 together with the employees during a turnaround; is that
12:18:58 9 right?

12:18:59 10 A. In general, that is correct. Now, if you're
12:19:02 11 asking me for which -- this task versus that task, I
12:19:06 12 have no way of answering that.

12:19:08 13 Q. But as a general principle, the contractors
12:19:08 14 work together with the employees during a turnaround --

12:19:10 15 A. Sure.

12:19:10 16 Q. -- is that right? Okay.

12:19:10 17 A. As far as I can remember, yes.

12:19:12 18 Q. Okay. And let me get this straight. Your
12:19:24 19 testimony today isn't that contractors have, as a matter
12:19:29 20 of course, less exposure to benzene than employees? Is
12:19:34 21 that -- you're not testifying that, are you?

12:19:35 22 A. I didn't say that.

12:19:35 23 Q. Okay. Nor are you testifying that you know, as
12:19:37 24 you sit here today, whether contractors have more
12:19:40 25 exposure as a matter of course?

12:19:41 1 A. Same answer.

12:19:42 2 Q. Okay. You just don't know as you sit here

12:19:44 3 today, correct?

12:19:45 4 MR. YOUNG: Object to the form.

12:19:46 5 A. I hadn't -- no, I have no reason to believe

12:19:48 6 they would be one way or another.

12:19:49 7 Q (By Ms. Clancy) Okay. Right. You have no data

12:19:50 8 one way or the other as to whether contractors have more

12:19:54 9 historical exposure to benzene than employees; is that

12:19:58 10 correct?

12:20:02 11 MR. YOUNG: Object to the form. That

12:20:02 12 misstates his testimony.

12:20:02 13 A. I said I have -- again, all I can say is repeat

12:20:05 14 what I said. I have no way of saying whether they had

12:20:08 15 more or less. And I have no reason to believe that they

12:20:10 16 would have more or less. It depends upon the task, the

12:20:13 17 time, the job, the care, what happened.

12:20:16 18 Q (By Ms. Clancy) Okay.

12:20:17 19 A. I can't say generically.

12:20:19 20 Q. You can't say as you sit here today?

12:20:21 21 A. That's correct.

12:20:22 22 Q. Okay. Because I'm just trying to understand

12:20:25 23 this because at trial I don't -- I'm trying to

12:20:27 24 understand if you're going to say, well, everybody knows

12:20:30 25 that contractors have less exposure to benzene than

12:20:31 1 employees?

12:20:34 2 A. I can't say that.

12:20:34 3 Q. Okay. And -- and I -- and you can't say, as
12:20:36 4 you sit here today, whether or not everybody knows that
12:20:39 5 contractors have more exposures than employees? That's
12:20:40 6 the reason I'm asking this --

12:20:41 7 A. Well, we're talking about contractors in
12:20:44 8 benzene areas.

12:20:45 9 Q. Yes.

12:20:44 10 A. Obviously a contractor who's not in a benzene
12:20:45 11 area is not going to have -- is going to have less
12:20:47 12 exposure than an employee in a benzene area.

12:20:49 13 Q. Right. Well, I'm -- I'm talking about --

12:20:50 14 A. Equivalent areas.

12:20:51 15 Q. Yes.

12:20:52 16 A. Okay. Yeah. You've characterized it
12:20:55 17 correctly.

12:20:55 18 Q. Okay. In -- with respect to hazards that may
12:21:40 19 present itself at a unit -- for example, exposure to
12:21:44 20 benzene -- it's the operators who are responsible for
12:21:50 21 the specific areas in a work place, and part of their
12:21:54 22 job is to be familiar with the substances in that area
12:21:58 23 and the hazards involved in that part of the process; is
12:22:02 24 that correct?

12:22:02 25 A. That's correct.

12:22:03 1 Q. Okay. Whereas maintenance people, however, may
12:22:05 2 work in many different areas, correct?

12:22:07 3 A. Well, maintenance people will work in different
12:22:10 4 areas.

12:22:10 5 Q. Okay. And while they may be experts in
12:22:13 6 repairing equipment, they may not be familiar with
12:22:16 7 what's inside the equipment or its hazards, correct?

12:22:20 8 MR. YOUNG: Object to the form.

12:22:21 9 A. No, not correct. In -- at least in the Shell
12:22:24 10 locations I'm familiar with, there were signs, there
12:22:26 11 were material safety data sheets, there were warnings.
12:22:30 12 And, so, they would be familiar with what's in those
12:22:34 13 areas. They may not know what's exactly -- what the
12:22:38 14 composition of a particular solvent stream might be in a
12:22:42 15 given -- given pipe, but they would know that there were
12:22:45 16 materials around that needed certain precautions.

12:22:48 17 Q (By Ms. Clancy) Well, I'm just reading from the
12:22:52 18 Hazard Communication in the Work Place Training Resource
12:22:56 19 Program, distributed by G.L. Green. And you were one of
12:23:01 20 the recipients in September, 1984. And the training
12:23:06 21 program says maintenance people, however, work in many
12:23:09 22 different areas. While they may be experts in repairing
12:23:13 23 equipment, they may not be familiar with what's inside
12:23:15 24 the equipment or its hazards. You see where it says
12:23:19 25 that?

12:23:27 1 A. Yeah. And that's exactly why we train them to
 12:23:30 2 make sure they're familiar.
 12:23:32 3 Q. Well --
 12:23:32 4 A. Glenda was writing here to me, says that
 12:23:36 5 initially they may not be familiar because they're not
 12:23:37 6 in it all the time and, therefore, we have to train them
 12:23:38 7 to be familiar with it.
 12:23:39 8 Q. Okay. Where does it say that, you have to
 12:23:41 9 train them to be familiar with it?
 12:23:42 10 A. Well, that's what a whole hazard communication
 12:23:48 11 program talks about, and that's what the whole --
 12:23:51 12 Q. Well, actually -- actually, this says --
 12:23:53 13 A. It doesn't say it in that one paragraph --
 12:23:56 14 Q. Right.
 12:23:56 15 A. -- but that's why you set up a hazard
 12:23:58 16 communication program, to communicate hazards.
 12:24:00 17 Q. Well, actually this says if the work involves
 12:24:02 18 potentially hazardous substances or condition, the
 12:24:03 19 operator can inform maintenance people of the hazards
 12:24:06 20 necessary of safety equipment and procedures before they
 12:24:09 21 begin work. Do you see where it says that?
 12:24:12 22 A. That's right.
 12:24:12 23 Q. That says the operator can inform them.
 12:24:17 24 A. No. That says --
 12:24:17 25 Q. Does this or does this not say the operator can

12:24:17 1 inform maintenance?

12:24:18 2 A. Ms. Clancy, there are a whole bunch of things
12:24:20 3 that are done. That's one of the things that are done.
12:24:23 4 Obviously when you walk in -- when you walk into an area
12:24:28 5 and you're not familiar with the area and somebody
12:24:30 6 working in the area is there, you rely on the person who
12:24:35 7 is -- again, I have to give you an analogy. You go to
12:24:43 8 the sergeants to find out what's happening on the battle
12:24:46 9 field.

12:24:46 10 Q. All right. Well, let's talk about a benzene
12:24:46 11 unit. Why don't we talk about a benzene unit as an
12:24:49 12 analogy?

12:24:49 13 A. Okay. The benzene unit analogy is, if I had
12:24:54 14 an -- if we had a maintenance worker who was going to be
12:24:56 15 working in the area, there would be preliminary
12:24:59 16 training. And that's what a hazard communication
12:25:00 17 program is here. In addition to that, one of the ways
12:25:02 18 that the individual walking into the area is -- is made
12:25:07 19 aware of what the problem is, is by the people who work
12:25:11 20 in that area who know the problems intimately, telling
12:25:15 21 that person. And that's all that says.

12:25:17 22 Q. Right. It says that the -- it says the
12:25:19 23 operator can inform maintenance people of the hazards,
12:25:21 24 necessary safety equipment and procedures before they
12:25:24 25 begin work?

12:25:25 1 A. Right. But --

12:25:25 2 Q. That's what that says.

12:25:26 3 A. -- you have to look at that in context.

12:25:26 4 MS. CLANCY: Object as nonresponsive.

12:25:27 5 Q. (By Ms. Clancy) Does this say the operator can

12:25:35 6 inform maintenance people of the hazards, necessary

12:25:35 7 safety equipment and procedures before they begin work?

12:25:35 8 A. In context, that's what that says.

12:25:35 9 MS. CLANCY: Okay. Object to the

12:25:35 10 nonresponsive portion of that.

12:25:39 11 Q. (By Ms. Clancy) Where does this say that --

12:25:44 12 retrack that. Okay. And, in fact, no work can be done

12:26:00 13 on a unit without the operator's knowledge and consent,

12:26:04 14 correct?

12:26:05 15 A. There are forms that have to be filled out, and

12:26:09 16 there are safety permits that have to be filled out.

12:26:12 17 And it's the local operator who has to sign off on -- on

12:26:16 18 that.

12:26:16 19 Q. Right. And, therefore, no work can be done on

12:26:18 20 the unit without the operator's knowledge and consent;

12:26:21 21 is that right?

12:26:22 22 A. The operator has to sign off -- the operator

12:26:26 23 who has to sign off on that permit is the one who also

12:26:30 24 limits what can be done there, yes.

12:26:32 25 MS. CLANCY: Object as nonresponsive.

12:26:33 1 Q. (By Ms. Clancy) My question is simply this:
12:26:35 2 Is it correct that no work is done on the unit without
12:26:39 3 the operator's knowledge and consent; is that correct?
12:26:41 4 A. I've said that twice now. I'll say it a third
12:26:43 5 time.
12:26:44 6 Q. Is it correct or is it not correct?
12:26:46 7 A. I'll say it a third time. No work can be done
12:26:47 8 on a unit without a permit. One of the signers on the
12:26:51 9 permit is the operator. And, therefore, the operator
12:26:53 10 has to approve work on the permit -- on the area.
12:26:57 11 MS. CLANCY: Okay. Object as
12:26:57 12 nonresponsive.
12:26:58 13 Q (By Ms. Clancy) My question is simply this: Is
12:27:00 14 this statement correct or is it not correct --
12:27:03 15 MR. YOUNG: Object to the form.
12:27:03 16 Q. (By Ms. Clancy) -- no work is done on the unit
12:27:05 17 without the operator's knowledge and consent?
12:27:08 18 MR. YOUNG: Asked and answered. Object to
12:27:08 19 the form.
12:27:09 20 A. I'm going to stop. I've said -- I've given you
12:27:10 21 my answer three times already, Ms. Clancy. I can't say
12:27:13 22 it any other way.
12:27:13 23 Q (By Ms. Clancy) You can't tell me whether that
12:27:15 24 statement is correct or not correct?
12:27:17 25 A. It doesn't take a simple yes or no. If there

12:27:21 1 are four operators on a unit and one is the one who
 12:27:25 2 signs the permit and I say you're correct and you say,
 12:27:29 3 well, this operator didn't sign the permit, he's not
 12:27:32 4 going to do anything. I think my answer stands, and it
 12:27:34 5 advances what you asked. Work is not done on a unit
 12:27:38 6 without a permit being signed, and operator is one of
 12:27:41 7 the people who signs the permit.

12:27:43 8 Q. Okay. So, work is not done on a unit without a
 12:27:46 9 permit being signed; is that correct?

12:27:49 10 A. Correct.

12:27:49 11 Q. Okay. And an operator must sign the permit; is
 12:27:53 12 that correct?

12:27:53 13 A. An operator or a supervisor. And there are
 12:27:56 14 various protocols, who signed the permit. But an
 12:28:01 15 operator is one of those who signs it.

12:28:01 16 Q. Okay. Or you mean a Shell operator or a Shell
 12:28:03 17 supervisor must sign the permit?

12:28:06 18 A. That's correct.

12:28:06 19 Q. Is that correct?

12:28:11 20 A. Yeah.

12:28:12 21 Q. Okay. And, in fact, maintenance folks, when
 12:28:26 22 working on a unit, have to work together with the
 12:28:29 23 operator to make sure that the work is performed safely;
 12:28:33 24 is that right?

12:28:35 25 A. Well, together or alongside or in the presence

12:28:38 1 of, yes.

12:28:38 2 Q. Okay. So, for example, one example might be if
12:28:41 3 you wanted to insert a blind in a unit. You better make
12:28:45 4 sure you talk to the operator to make sure that that
12:28:48 5 pipe or stream has been cut off; is that correct?

12:28:51 6 MR. YOUNG: Object to the form of the
12:28:51 7 question.

12:28:53 8 A. Well, essentially that's correct.

12:28:53 9 Q (By Ms. Clancy) Yeah.

12:28:54 10 A. Yeah.

12:28:54 11 Q. I mean, that's just an example of how they have
12:28:55 12 to work hand in hand together?

12:28:57 13 A. As an example, that's correct.

12:28:57 14 Q. Okay. So, maintenance folks, in performing
12:28:59 15 their tasks, if they're going to perform them safely,
12:29:03 16 they better make sure that they work hand in hand with
12:29:06 17 the operators of the unit; is that correct?

12:29:08 18 A. Well, I don't know what you mean by hand in
12:29:09 19 hand; but I'll accept that.

12:29:10 20 Q. Okay.

12:29:10 21 A. Okay.

12:29:10 22 Q. And I mean -- by hand in hand I mean in
12:29:13 23 cooperation with and alongside the Shell operators of
12:29:17 24 the unit; is that correct?

12:29:18 25 A. Well, in cooperation with. Once the operator

12:29:20 1 has signed off and is satisfied that the maintenance
 12:29:24 2 person knows how to open -- open the pipe and put in the
 12:29:27 3 blind, the operator doesn't have to stand over his
 12:29:29 4 shoulder.

12:29:30 5 Q. Right. But the operator has to ensure that
 12:29:33 6 it's being done safely, correct?

12:29:34 7 A. The --

12:29:34 8 MR. YOUNG: Object to the form of the
 12:29:36 9 question.

12:29:36 10 A. The operator has to ensure that the -- that the
 12:29:38 11 maintenance person, yes, knows what he's doing and the
 12:29:42 12 parameters of what the job is going to be are spelled
 12:29:47 13 out.

12:29:47 14 Q (By Ms. Clancy) Okay. And it's the -- as we
 12:29:48 15 discussed earlier, it's the Shell operator or the Shell
 12:29:50 16 supervisor who spells out the parameters of the job,
 12:29:53 17 correct?

12:29:54 18 A. Pretty much so, yes.

12:29:55 19 Q. Okay. And it's the Shell operator or Shell
 12:30:04 20 supervisor who must be there with the maintenance person
 12:30:06 21 to confirm that the work is being performed safely,
 12:30:08 22 correct?

12:30:09 23 A. At least initially.

12:30:09 24 MR. YOUNG: Object to the form.

12:30:10 25 A. At least initially, yeah.

12:30:11 1 Q (By Ms. Clancy) Okay. And as the day goes on,
 12:30:13 2 if, for example -- are you telling me then that you
 12:30:19 3 don't have somebody from Shell watching over the
 12:30:21 4 maintenance folks, making sure that their work is being
 12:30:24 5 done safely?

12:30:25 6 MR. YOUNG: Object to the form of the
 12:30:26 7 question.

12:30:27 8 A. I can't answer that in a general term. If a
 12:30:31 9 maintenance person is in on a -- on a unit, the permit
 12:30:36 10 is signed, the operator has signed off on it and the
 12:30:41 11 individual starts his work, the operator may have to be
 12:30:45 12 someplace else within the unit while the maintenance
 12:30:47 13 person is doing that. You don't have an operator
 12:30:51 14 standing by and peering over the individual's shoulder
 12:30:52 15 while he's doing whatever he's doing.

12:30:52 16 Q (By Ms. Clancy) But you wouldn't expect the
 12:30:54 17 operator to leave the unit and leave the maintenance
 12:30:56 18 person alone there, would you?

12:31:01 19 MR. YOUNG: Object to the form. Hang on,
 12:31:02 20 Howard. Ms. Clancy, Mr. Kusnetz is an industrial
 12:31:02 21 hygienist. He wasn't ever a Shell operator. So, to the
 12:31:03 22 extent you're asking him questions outside his scope and
 12:31:05 23 knowledge, he probably can't answer.

12:31:07 24 MS. CLANCY: Object to very long sidebar.

12:31:09 25 Q (By Ms. Clancy) I'm asking about safety

12:31:12 1 practices. Okay. The -- was it -- would Shell expect
12:31:20 2 its supervisors and operators to confirm that, for
12:31:24 3 example, maintenance procedures performed during the
12:31:27 4 turnaround were performed safely?

12:31:30 5 A. Yes.

12:31:30 6 Q. Okay. And they'd also expect them to be there
12:31:32 7 to make sure that the procedures during a turnaround
12:31:35 8 were performed safely, correct?

12:31:38 9 A. It depends upon the procedure. If depends upon
12:31:42 10 the procedure. If -- generally that is correct. If
12:31:45 11 you're asking would there be always a Shell supervisor
12:31:48 12 or a Shell operator looking over a maintenance person's
12:31:53 13 shoulder throughout the entire period of time that the
12:31:58 14 work is done, my impression is probably not. That you
12:32:08 15 start, you check, you continue; but you're not standing
12:32:08 16 there minute by minute. I can't tell you more than
12:32:08 17 that.

12:32:08 18 Q. And thank you for clarifying. My question
12:32:10 19 isn't are they standing next to them minute by minute,
12:32:11 20 my question is, as a general principle, Shell expected
12:32:16 21 its supervisors and its operators to check in and assure
12:32:21 22 that the work being performed, for example, during a
12:32:23 23 turnaround by maintenance workers, was being performed,
12:32:27 24 according to Shell standards and safely; is that
12:32:29 25 correct?

12:32:30 1 A. Shell expected all of its employees to work by
 12:32:34 2 Shell standards and safely. So, that is correct.
 12:32:36 3 Q. Okay. And they would -- in turn, it would also
 12:32:38 4 expect its employees to --
 12:32:40 5 A. Anyone who was in the vicinity.
 12:32:41 6 Q. Yeah. And it would expect it's employees to
 12:32:44 7 ensure that outside maintenance workers were performing
 12:32:47 8 their work safely, correct?
 12:32:48 9 MR. YOUNG: Object to the form of the
 12:32:50 10 question.
 12:32:50 11 A. It would require that the on-site maintenance
 12:32:53 12 workers were knowledgeable of how to do the work and how
 12:32:56 13 to do it safely. And that they did do it safely and
 12:32:57 14 follow the permit procedures.
 12:32:58 15 Q (By Ms. Clancy) And the permit procedures were
 12:32:59 16 how to do it safely, were written and enforced by the
 12:33:03 17 Shell operators, correct?
 12:33:05 18 MR. YOUNG: Object to the form of the
 12:33:06 19 question.
 12:33:06 20 A. They were -- they were signed off on by the
 12:33:07 21 Shell operators, that's correct.
 12:33:08 22 Q (By Ms. Clancy) And the Shell operators were
 12:33:10 23 expected to make sure that the way that they crafted the
 12:33:12 24 permit was, in fact, the way that the job was executed,
 12:33:15 25 correct?

12:33:16 1 A. I don't know who would write a particular
12:33:19 2 permit; but basically that's correct, if you're talking
12:33:19 3 about a Shell employee doing a permit.

12:33:22 4 Q. Right.

12:33:22 5 A. An operator. I'd rather use the word employee.

12:33:25 6 Q. Oh, okay. So, the Shell employees were
12:33:27 7 expected to make sure that the way that they had crafted
12:33:28 8 the permit, that that work was in turn done according to
12:33:33 9 the specifications set forth in the permit, correct?

12:33:36 10 A. Absolutely.

12:34:49 11 Q. Okay. I want to ask you a question about
12:34:51 12 the -- Ms. Phillips' industrial hygiene services staff
12:34:54 13 1985, IHS annual report. And, again, this was
12:35:01 14 without -- produced to us without bates label. So, I'll
12:35:05 15 show it to you.

12:35:08 16 A. Okay.

12:35:08 17 Q. Okay. Now, on page two of the report,
12:35:16 18 Ms. Phillips talks about benzene exposures summary
12:35:21 19 update includes approximately 11,000 samples. And that
12:35:26 20 was in 1985.

12:35:31 21 A. Where is that? Where did you find that?

12:35:43 22 Q. Right there.

12:35:44 23 A. Oh, okay. Okay.

12:35:43 24 Q. Okay. Are those samples kept on a -- retract
12:35:45 25 that. That's a database that she's referring to. Where

12:35:49 1 is that database kept?

12:35:51 2 A. Today, I have no idea.

12:35:52 3 Q. Where was it kept then?

12:35:59 4 A. Database was kept -- I think it was in our

12:35:59 5 offices or whether our information people have that. I

12:36:01 6 don't recall where we had that.

12:36:02 7 Q. So, it was a database.

12:36:04 8 A. It was internal to the company. I don't know

12:36:07 9 physically where -- I don't recall physically where it

12:36:07 10 was.

12:36:07 11 Q. Okay. And, so, internally, it was a database

12:36:13 12 of, what is it called, database of benzene exposure

12:36:17 13 summaries?

12:36:18 14 A. Summary. Yeah.

12:36:19 15 Q. Which includes 11,000 samples.

12:36:21 16 A. 11,000 samples.

12:36:21 17 Q. Okay.

12:36:21 18 A. It was computerized someplace and on some

12:36:25 19 mainframe someplace, yeah.

12:36:26 20 Q. Okay. And you could use that computer to go in

12:36:29 21 and sort by what type of area had what type of exposure,

12:36:32 22 I would presume; is that right?

12:36:35 23 A. That's correct.

12:36:35 24 Q. Okay. And it was a faster way to do that than,

12:36:37 25 for example, going through thousands of pages, trying ot

12:36:42 1 determine what area had what exposure. I mean, going
 12:36:44 2 into the computer and accessing those data points, I
 12:36:45 3 would assume, would be a lot more efficient; is that
 12:36:48 4 right?

12:36:49 5 A. Well, the input to the computer were literally
 12:36:52 6 thousands of pages of sampling forms as they came in
 12:36:55 7 from a field.

12:36:56 8 Q. Right. And, so, the computer, I would imagine,
 12:36:58 9 allowed you an easier way to sort through those as
 12:37:01 10 opposed to manually going through all those data points;
 12:37:02 11 is that right?

12:37:03 12 A. Sure.

12:37:04 13 Q. Is that correct?

12:37:04 14 A. Sure.

12:37:05 15 Q. Okay. And do you have any reason to believe
 12:37:08 16 that that internal database is no longer in existence?

12:37:13 17 A. No. Just quite the opposite. I would suspect
 12:37:16 18 it still is someplace.

12:37:17 19 Q. Okay.

12:37:17 20 A. And has been added to since 1985.

12:37:23 21 Q. Okay.

12:37:23 22 A. I have no knowledge one way or the other. All
 12:37:27 23 I can do is say I suspect.

12:37:28 24 Q. Okay. One item on Ms. Philips' 1985 Industrial
 12:37:54 25 Hygiene Services Staff Report, is she talks about trade

12:37:58 1 association activities. Do you see that?

12:38:00 2 A. Yes.

12:38:00 3 Q. And one thing she mentions is the benzene
12:38:03 4 statistical study. Can you tell me what that is?

12:38:07 5 A. I don't recall what that is. It says it's
12:38:09 6 under API, and I -- I don't recall what -- what that is
12:38:12 7 sitting here now. I haven't seen reference to it in a
12:38:19 8 long time. And I -- I would hesitate to say what --
12:38:23 9 what that is now. I don't know. It's listed under an
12:38:28 10 API rubric. I just don't know. I don't recall.

12:38:32 11 Q. Okay. And the -- similarly, the API Downstream
12:38:40 12 Gasoline Exposure study?

12:38:42 13 A. It sounds familiar. I can't remember any of
12:38:44 14 that. I don't remember any of that.

12:39:53 15 MS. CLANCY: Oh, thank you.

12:39:53 16 THE WITNESS: I just don't have any need
12:39:53 17 for it.

12:39:53 18 MS. CLANCY: Yeah. Thank you very much.

12:40:08 19 Q. (By Ms. Clancy) OSHA -- do you recall that
12:40:10 20 OSHA issued in the 1970's an emergency temporary
12:40:14 21 standard?

12:40:15 22 A. Yes.

12:40:16 23 Q. Okay. And the API, the American Petroleum
12:40:20 24 Institute filed a lawsuit to ask them to withdraw the
12:40:22 25 emergency temporary standard, correct?

12:40:26 1 A. That's correct.

12:40:37 2 Q. Okay. And Shell did not oppose the API's
12:40:40 3 filing suit, correct, to withdraw that standard, right?

12:40:45 4 MR. YOUNG: Object to the form of the
12:40:46 5 question.

12:40:46 6 A. It's -- as far as -- well, Shell is part of the
12:40:48 7 API at the time, yes.

12:40:50 8 Q (By Ms. Clancy) Well, in fact, Shell also had
12:40:53 9 grave reservations about the emergency temporary
12:40:56 10 standard and did not want it put through, correct?

12:40:59 11 MR. YOUNG: Object to the form of the
12:41:00 12 question.

12:41:01 13 A. I don't recall what the objections were. And
12:41:03 14 as I indicated in that previous case that we talked
12:41:06 15 about, I don't recall what the details were.

12:41:09 16 Q (By Ms. Clancy) Okay. Well, Shell believed
12:41:12 17 that the guidelines set forth in the emergency temporary
12:41:16 18 standards, trying to lower the benzene exposure levels
12:41:20 19 from 10 part per million to 1 part per million were
12:41:20 20 unreasonable, that they equivocate, are unclear and are
12:41:24 21 not supported by appropriate evidence and violate
12:41:24 22 feasible industrial practice. Wasn't that Shell's
12:41:29 23 position?

12:41:30 24 A. I'd have to see that. You're reading from
12:41:34 25 something, obviously.

12:41:35 1 Q (By Ms. Clancy) Well, I'm reading, actually,
 12:41:36 2 from a letter that you wrote to the director of medicine
 12:41:38 3 and biological science of the API in September 28, 1976.
 12:41:57 4 A. Okay. If that's -- well, actually somebody
 12:42:01 5 signed -- signed -- Dr. Joyner signed his name for me on
 12:42:05 6 that, so -- but I'll take responsibility for having my
 12:42:08 7 name printed there.
 12:42:10 8 Q. Okay.
 12:42:10 9 A. Yeah.
 12:42:10 10 Q. Well, do you disagree with that statement?
 12:42:11 11 A. No. It sounds right, if that's the case.
 12:42:15 12 Q. Well, isn't that the case, isn't that what it
 12:42:17 13 says?
 12:42:18 14 A. It says we found that the guidelines, and the
 12:42:21 15 guidelines were -- well, there are a lot of guidelines
 12:42:24 16 in the thing, but I think this is correct. And I would
 12:42:26 17 stand by that.
 12:42:27 18 Q. Okay.
 12:42:28 19 A. And I think the Court, Supreme Court, also
 12:42:31 20 found that to be so when they voided the standard.
 12:42:34 21 MS. CLANCY: Object as nonresponsive.
 12:42:35 22 Q (By Ms. Clancy) The -- so, Shell, therefore,
 12:42:41 23 supported the API's efforts to have the emergency
 12:42:44 24 temporary guidelines withdrawn, correct?
 12:42:47 25 A. No. The emergency temporary standard

12:42:50 1 withdrawn.

12:42:51 2 Q. Okay. Shell supported the API's efforts in
12:42:56 3 1977 to have the emergency temporary standard withdrawn,
12:42:58 4 correct?

12:42:59 5 A. That's correct.

12:42:59 6 Q. Okay. One of the factors that Shell took into
12:43:06 7 consideration, as to the impact of the temporary
12:43:17 8 standards, was the economic impact, correct?

12:43:20 9 MR. YOUNG: Object to the form of the
12:43:21 10 question.

12:43:22 11 A. I'd have to look again and see, but that sounds
12:43:24 12 correct.

12:43:26 13 Q (By Ms. Clancy) I mean, Shell was concerned,
12:43:29 14 weren't they, that -- as to the cost that would arise to
12:43:31 15 Shell if this temporary standard was put in place, was
12:43:32 16 it not?

12:43:33 17 MR. YOUNG: Object to the form of the
12:43:34 18 question.

12:43:34 19 A. I can't say that was the case. I think Shell
12:43:36 20 was concerned as to whether the evidence required the
12:43:44 21 guidelines as such. And the concomitant costs for that
12:43:51 22 requirement that may not have had any basis in fact.

12:43:54 23 Q (By Ms. Clancy) The concomitant costs may not
12:43:56 24 have had any basis in fact?

12:43:58 25 A. Which may not -- yeah. In other words, the

12:43:59 1 require -- the concomitant costs of the requirements,
12:44:02 2 which may not have had any basis in fact.

12:44:05 3 Q. Well, one of the data points that Shell
12:44:08 4 collected in determining whether or not -- or what the
12:44:16 5 effect would be of the NIOSH recommendation to make the
12:44:20 6 permissible exposure level 1 part per million was the
12:44:23 7 economic impact of the regulations?

12:44:24 8 A. Wait, wait, wait, wait. NIOSH -- NIOSH had
12:44:28 9 nothing to do with the regulations. So, are we on the
12:44:31 10 same page?

12:44:32 11 Q. Well, NIOSH did recommend that the permissible
12:44:35 12 exposure limit be 1 part per million, correct?

12:44:38 13 A. NIOSH. Yeah. NIOSH made recommendations in
12:44:41 14 terms -- what NIOSH's brief was, under the law, was to
12:44:45 15 make -- set up criteria for regulations. OSHA, under
12:44:52 16 the law, was to take those criteria and then together
12:44:58 17 with an economic analysis, then promulgate the -- the
12:45:03 18 regulations. NIOSH was not required to and never did
12:45:06 19 look at economics. They said in the best of all worlds
12:45:10 20 this is where it ought to be.

12:45:12 21 MS. CLANCY: Okay. And I object to the
12:45:14 22 nonresponsive portion of that.

12:45:17 23 Q. (By Ms. Clancy) But I think what you're saying
12:45:18 24 is that NIOSH, based on a safety consideration, said
12:45:22 25 this should be 1 part per million, without consideration

12:45:25 1 of the economic; is that right?

12:45:27 2 A. No, I don't know what they based it on.

12:45:31 3 Q. Well, you just said best of all possible

12:45:32 4 worlds. And understood --

12:45:32 5 A. I -- yeah, NIOSH could have said zero as well.

12:45:32 6 I don't know what they based it on. NIOSH --

12:45:35 7 Q. Well, you just said they didn't base it on the

12:45:37 8 economic?

12:45:38 9 A. That's right. And I don't know --

12:45:38 10 Q. Well, how do you know --

12:45:39 11 A. I don't know what they based it on.

12:45:39 12 Q. -- if you don't what they based it on?

12:45:40 13 A. Well, I said NIOSH was not required to make a

12:45:44 14 recommendation based on economics. NIOSH, whatever it

12:45:50 15 did and however it wrote, indicated, in terms of

12:45:54 16 permissible exposure levels, 1 part per million. I

12:45:59 17 don't think in '77 they had the evidence that it was

12:46:02 18 appropriate. NIOSH also made recommendations on, I

12:46:05 19 believe, medical surveillance and other surveillance.

12:46:11 20 When we comment on a regulation, we're commenting on

12:46:13 21 what OSHA does, not on what NIOSH does. So, API and

12:46:18 22 Shell in supporting API was talking to OSHA, not to

12:46:23 23 NIOSH. And I'd like to keep those things separate.

12:46:24 24 Q. Okay. Well, Shell did meet to assess the

12:46:28 25 possible activities that may be generated by the NIOSH

12:46:31 1 recommendation to set a permissible exposure level of 1
 12:46:32 2 PPM for benzene, did they not?
 12:46:36 3 A. We -- may I see that?
 12:46:37 4 Q. Did they meet or not?
 12:46:37 5 MR. YOUNG: Object to the form of the
 12:46:38 6 question. Please extend the witness the courtesy to
 12:46:41 7 show him the document you're reading from.
 12:46:42 8 MS. CLANCY: I'm just asking a question.
 12:46:43 9 A. Well, let me see what -- may I see what you're
 12:46:45 10 reading from?
 12:46:45 11 Q. (By Ms. Clancy) I just find it surprising that
 12:46:47 12 if you know I'm reading from a document, you can answer
 12:46:50 13 a question; but you can't answer it when I'm just not
 12:46:53 14 reading from a document. So, my question is simply, you
 12:46:56 15 -- I'm trying to understand your distinction between
 12:46:59 16 what NIOSH and OSHA. NIOSH made a recommendation that
 12:47:03 17 it be 1 part per million, correct?
 12:47:05 18 A. NIOSH made all sorts of recommendations over
 12:47:08 19 the years. We react to those recommendations. OSHA
 12:47:12 20 makes a -- or promulgates a proposed regulation. And we
 12:47:16 21 react to that regulation. Joe Dokes may come out with
 12:47:21 22 an article in a peer-reviewed journal. And if it
 12:47:25 23 affects us or affects any other company or affects us,
 12:47:28 24 we would react to that article. We don't work in a
 12:47:35 25 vacuum.

12:47:36 1 Q. Right. And, so, one of the -- Shell got
12:47:40 2 together to assess possible activities that may be
12:47:43 3 generated by the NIOSH recommendation to set a
12:47:47 4 permissible exposure level of 1 part per million,
12:47:49 5 correct? There was a reaction to the NIOSH
12:47:51 6 recommendation?

12:47:53 7 A. There are always reactions to anything that's
12:47:55 8 printed.

12:47:57 9 Q. Okay.

12:47:55 10 A. And this is one reaction.

12:47:58 11 Q. Okay. And --

12:47:58 12 A. Because this wasn't an emergency meeting that
12:47:59 13 was called and said what do we do.

12:48:00 14 Q. And one of the information, the data points
12:48:02 15 that Shell was trying to correct was what's the economic
12:48:06 16 impact of the NIOSH recommendation; is that right?

12:48:10 17 A. I think what they were trying to do was --
12:48:13 18 yeah. One of the points together with -- is the
12:48:15 19 recommendation feasible, is it scientific, can it stand
12:48:19 20 on its own 2 feet scientifically and so on. And
12:48:21 21 economics is also one of them.

12:48:28 22 Q. And, further, one of the issues that OSHA had
12:49:02 23 with the permanent benzene standard proposed -- excuse
12:49:04 24 me. One of the issues that Shell had with the permanent
12:49:12 25 benzene standard proposed by OSHA was the wide business

12:49:14 1 effects that it would have by nature of the fact that it
12:49:16 2 would apply to benzene streams containing .1 percent
12:49:21 3 benzene or higher?

12:49:23 4 MR. YOUNG: Object to the form of the
12:49:24 5 question.

12:49:24 6 Q. (By Ms. Clancy) Is that correct?

12:49:24 7 MR. YOUNG: Object to the form of the
12:49:24 8 question.

12:49:24 9 A. I don't recall. I'd have to see specifically
12:49:26 10 what they recommend -- what they're referring to.

12:49:27 11 Q (By Ms. Clancy) Okay. I'm looking at a
12:49:29 12 memorandum, dated June 3rd, 1977 to the manager of
12:49:34 13 Safety and Industrial Hygiene Health, Safety and
12:49:35 14 Environment head office, which I guess is a memorandum.

12:49:40 15 A. To me.

12:49:41 16 Q. To you, but it appears -- oh, excuse me, it's
12:49:42 17 from you.

12:49:43 18 A. Okay.

12:49:43 19 Q. It's a memorandum that you wrote.

12:49:53 20 A. Okay. What it says is there, wider business
12:49:57 21 effects in the permanent standard than what were in the
12:49:59 22 temporary standard. Okay. And what's the question?

12:50:01 23 Q. So, one of the issues that you were considering
12:50:05 24 by virtue of the fact that the OSHA permanent standard
12:50:10 25 might be issued in 1977 was the wider business --

12:50:13 1 business effect; is that right?

12:50:14 2 A. Well, obviously -- excuse me. Obviously, if
12:50:18 3 there are more stringent requirements, they're going to
12:50:22 4 be more stringent business effects. I don't understand
12:50:27 5 the question.

12:50:28 6 Q. Well, let me clarify that. That one of the
12:50:30 7 things that Shell decided to do is to get an economic
12:50:38 8 impact statement as to what would happen if OSHA indeed
12:50:43 9 promulgated those rights; is that correct?

12:50:47 10 A. Well, if we're going to have to comply, we're
12:50:49 11 going to have to know what we have to do and what's it
12:50:50 12 going to cost, certainly.

12:50:52 13 Q. Right. And, so, one of the criteria that OSHA
12:50:54 14 was considering when it considered what the effects
12:50:57 15 would be of the emergency temporary regs, was the
12:50:59 16 economic impact of those reges; is that correct?

12:51:02 17 A. That OSHA would consider?

12:51:04 18 Q. I mean, excuse me, one of the criteria that
12:51:06 19 Shell was using to consider when it analyzed the
12:51:13 20 proposed regulation in 1977 was the economic impact of
12:51:18 21 those regulations; is that right?

12:51:20 22 A. Sure.

12:51:20 23 Q. Okay. One of the issues that the emergency
12:53:11 24 temporary standard spelled out was requirements for
12:53:14 25 designating benzene areas where 1 percent -- where

12:53:19 1 liquid streams containing 1 percent by volume of benzene
 12:53:22 2 or more are processed; is that correct?
 12:53:27 3 A. Sounds right. I don't recall, but could be.
 12:53:28 4 Q. Okay. And I'm going to show you the Shell
 12:53:29 5 Chemical Benzene Training Manual, which set forth at
 12:53:35 6 Deer Park the areas that had been designated as benzene
 12:53:40 7 areas. Do you see that?
 12:53:42 8 A. Is there a date on this? Let me just see if
 12:53:43 9 there's a date on this. Yeah. June of '77. Okay.
 12:53:48 10 Q. So, do you see where it talks about those --
 12:53:51 11 A. Right.
 12:53:51 12 Q. -- quote, unquote, benzene areas?
 12:53:53 13 A. Right.
 12:53:54 14 Q. Okay. So, for example, the OP-2 unit, the
 12:53:57 15 ethyl alcohol, the BEU, the thermal cracking and the
 12:54:01 16 hydro-cracker units are included in the benzene areas?
 12:54:06 17 A. That's right.
 12:54:06 18 Q. Okay. And the BEU unit, the catalytic
 12:54:12 19 reforming area and the distilling area are all included
 12:54:19 20 in those benzene areas, correct?
 12:54:21 21 A. That's right.
 12:54:21 22 Q. Okay.
 12:54:21 23 A. Except just minor correction. The letter U in
 12:54:25 24 BEU means unit. So, that's what --
 12:54:30 25 Q. So, all I need to say is BE?

12:54:34 1 A. BE unit or BEU, yes. It's like saying the PIN
 12:54:37 2 number.
 12:54:37 3 Q. Okay. It's like saying a PIN number?
 12:54:39 4 A. PIN, yeah, personal identification number.
 12:54:42 5 Q. Oh, I'm guilty of that, too.
 12:54:44 6 A. See.
 12:54:44 7 Q. Yeah.
 12:54:44 8 A. Okay.
 12:54:44 9 Q. There it is. Okay. So, my question for you is
 12:54:46 10 this: As an industrial hygienist, one of the reasons
 12:54:49 11 you would segregate out areas as benzene areas is
 12:54:55 12 because you need to know where there might be potential
 12:54:59 13 for exposure to benzene; is that right?
 12:55:00 14 A. That's correct.
 12:55:01 15 Q. Okay. And the thought is that if the processes
 12:55:03 16 aren't kept in a closed system in those areas, there may
 12:55:08 17 be a potential for exposure, correct?
 12:55:09 18 A. Basically, that's correct.
 12:55:10 19 Q. Okay. And, so, if there are leaks and spills
 12:55:13 20 in those areas or safe work practices aren't followed in
 12:55:17 21 those areas, there may be the potential for exposure to
 12:55:21 22 benzene, correct?
 12:55:22 23 A. That is correct.
 12:55:23 24 Q. Okay. Or similarly if there are fugitive
 12:55:25 25 emissions from the benzene areas, there could be the

12:55:29 1 potential for exposure to benzene in the benzene areas,
12:55:30 2 correct?

12:55:31 3 A. Well, depends upon where the emission was.
12:55:32 4 But, basically, correct.

12:55:33 5 Q. Okay. And, so, one of the things that the
12:55:35 6 Shell historic exposure assessment took into
12:55:39 7 consideration was, well, where the person worked if --
12:55:42 8 is that correct?

12:55:43 9 A. That's correct.

12:55:43 10 Q. Okay. So, if they weren't working in a benzene
12:55:47 11 area, then it's pretty -- you make it less likely that
12:55:52 12 they'd be exposed to benzene, correct?

12:55:53 13 A. That's correct.

12:55:53 14 Q. Okay. But for the historic exposure
12:55:55 15 assessment, if you had testimony or work records from
12:56:00 16 that worker that the worker was indeed working in a
12:56:03 17 benzene area, then you would take that into
12:56:05 18 consideration in terms of calculating the possibility
12:56:07 19 that person might be exposed to benzene, correct?

12:56:08 20 A. Well, I think we went through all that. But
12:56:11 21 that's still correct. It hasn't changed since this
12:56:14 22 morning.

12:56:14 23 Q. Okay. Good. Just want to confirm. So -- so,
12:56:16 24 these areas set forth here as benzene areas, given that
12:56:20 25 you did your exposure assessment, I think, what, five

12:56:25 1 years later? You started it five years later.

12:56:28 2 A. Well, the exposure assessment study was
12:56:30 3 based --

12:56:31 4 Q. Was historical.

12:56:31 5 A. -- was historical. It was based on what had
12:56:36 6 occurred in the 1920's and 1930's. This was
12:56:39 7 contemporaneous.

12:56:42 8 Q. Okay. Well, if you were to conduct the
12:56:44 9 exposure assessment study based on the same principles
12:56:46 10 by which Shell conducted its exposure assessment study,
12:56:48 11 would you say, then, well, we'll look at these benzene
12:56:51 12 areas and interview the people there and see if there
12:56:53 13 was possibility that they were exposed to benzene in
12:56:57 14 those areas; is that correct?

12:56:58 15 A. If we had no data, we would do that.

12:57:01 16 Q. Okay.

12:57:01 17 A. If we had monitoring data, we wouldn't do that
12:57:05 18 type of historic exposure study.

12:57:07 19 Q. Well, I'm saying with no data.

12:57:07 20 A. With no data?

12:57:08 21 Q. Uh-huh.

12:57:08 22 A. Then you have to do the best you can with what
12:57:11 23 you do have.

12:57:12 24 Q. Okay. And which is what the Shell historic
12:57:14 25 exposure assessment does?

12:57:17 1 A. That's what I said earlier, yes.

12:57:18 2 Q. Okay. And, so, to do -- recreate the exposure

12:57:20 3 from saying you have no data as to whether or not a

12:57:23 4 person was exposed while working on one of the benzene

12:57:23 5 areas set forth in the --

12:57:28 6 A. Yeah.

12:57:28 7 Q. -- benzene training manual --

12:57:31 8 A. Right.

12:57:29 9 Q. -- you would first say, well, did you work in

12:57:33 10 that area? That would be one of your questions, right?

12:57:36 11 A. That's absolutely reasonable, sure.

12:57:37 12 Q. And then you'd analyze what was their sensory

12:57:46 13 perception in that area and then you'd analyze their

12:57:46 14 hours worked in that area and you'd also talk to other

12:57:46 15 people to determine whether or not, indeed, everybody

12:57:49 16 was kind of observing the same phenomenon?

12:57:52 17 A. And we would look at engineering drawings. We

12:57:54 18 would look at work records. We would look at

12:57:56 19 maintenance records and all the same data that we talked

12:57:59 20 about earlier this morning.

12:58:01 21 Q. Okay. In order to craft an exposure data point

12:58:02 22 for the person; is that correct?

12:58:03 23 A. To try to come up with the best possible

12:58:05 24 estimate we could, yes.

12:58:07 25 Q. Okay. All right.

12:58:08 1 MS. CLANCY: I'm going to take a quick
12:58:08 2 break.
12:58:13 3 THE VIDEOGRAPHER: Now going off the
12:58:14 4 record. The time's approximately 12:57.
12:58:17 5 (Recess taken)
01:04:50 6 THE VIDEOGRAPHER: We're now back on the
01:04:51 7 record. The time is approximately 1:04.
01:04:57 8 MS. CLANCY: Plaintiff has stipulated that
01:05:00 9 one objection is good for all. And that applies
01:05:02 10 retroactively to the start of the deposition. Does that
01:05:04 11 work? All right.
01:05:04 12 Q (By Ms. Clancy) Are you still at the same
01:05:06 13 address as set forth on Exhibit 1?
01:05:08 14 A. Yes, I am.
01:05:09 15 Q. Okay. And are you planning any trips out of
01:05:14 16 the Country in May?
01:05:16 17 A. No. Out of the city in May, but not out of the
01:05:19 18 Country.
01:05:19 19 Q. Okay. When will you be out of the city in May?
01:05:23 20 A. Approximately from the 11th through the 20th.
01:05:27 21 If you give me a minute, I can look it up.
01:05:32 22 Q. That would be great. Thank you.
01:05:32 23 A. Okay. Is that enough? Or do you want me --
01:05:38 24 Q. No, I'll wait -- I'll wait for you to look it
01:05:38 25 up.

01:05:34 1 A. Oh, these Palm pilots are amazing, aren't they?

01:05:41 2 I'll be out from the 14th through the 23rd.

01:05:47 3 Q. Returning to Houston on the 23rd of May?

01:05:48 4 A. Late on the 22nd. So, the 23rd is essentially
01:05:48 5 an out day. I need some mail to catch up on, make sure
01:05:52 6 I don't get bills that are going to go post-due.

01:05:57 7 Q. Okay.

01:05:57 8 A. Yeah. And I have a doctor's appointment on the
01:05:59 9 3rd. But at that end of the month, I'm free.

01:06:02 10 Q. Okay.

01:06:03 11 MS. CLANCY: Pass the witness.

01:06:10 12 MR. YOUNG: Does anyone have anything?
01:06:10 13 Then we'll reserve ours for the time of trial.

01:06:13 14 THE VIDEOGRAPHER: We're now going off the
01:06:14 15 record. The time is approximately 1:05. We're now
01:06:17 16 ending this deposition.

01:06:17 17 (Proceedings concluded at 1:05 p.m.)

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01:06:17	1	CHANGES AND SIGNATURE
01:06:17	2	
01:06:17	3	
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01:06:17 1 I, HOWARD KUSNETZ, have read the foregoing
01:06:17 2 deposition and hereby affix my signature that same is
01:06:17 3 true and correct, except as noted above.

01:06:17 4

01:06:17 5

HOWARD KUSNETZ

01:06:17 6

01:06:17 7 THE STATE OF _____)

01:06:17 8 COUNTY OF _____)

01:06:17 9

01:06:17 10 Before me, _____, on this day
01:06:17 11 personally appeared HOWARD KUSNETZ, known to me or
01:06:17 12 proved to me on the oath of _____ or through
01:06:17 13 _____ (description of identity
01:06:17 14 card or other document), to be the person whose name is
01:06:17 15 subscribed to the foregoing instrument and acknowledge to
01:06:17 16 me that he/she executed the same of the purpose and
01:06:17 17 consideration therein expressed.

01:06:17 18 Given under my hand and seal of office on this
01:06:17 19 ____ day of _____, ____.

01:06:17 20

01:06:17 21

NOTARY PUBLIC IN AND FOR

01:06:17 22

01:06:17 23 THE STATE OF _____

01:06:17 24 My Commission Expires: _____

25

01:06:17	1	CAUSE NO. A-030272CC	
01:06:17	2	ANN STUBBS, Individually	) IN THE DISTRICT COURT OF
		and as Representative of	)
01:06:17	3	the Estate of BEN L.	)
		STUBBS, Deceased,	)
01:06:17	4		)
		Plaintiff,	)
01:06:17	5		)
		vs.	) ORANGE COUNTY, TEXAS
01:06:17	6		)
		RADIATOR SPECIALTY	)
01:06:17	7	COMPANY; et al.,	)
			)
01:06:17	8	Defendants.	) 128TH JUDICIAL DISTRICT
			)
01:06:17	9		)
		HERBERT W. WILKINSON and	) IN THE DISTRICT COURT OF
01:06:17	10	PEGGY S. HERBERT,	)
			)
01:06:17	11	Plaintiff,	)
			)
01:06:17	12	vs.	) ORANGE COUNTY, TEXAS
			)
01:06:17	13	RADIATOR SPECIALTY	)
		COMPANY; et al.,	)
01:06:17	14		)
		Defendants.	) 128TH JUDICIAL DISTRICT

01:06:17 16 REPORTER'S CERTIFICATE

01:06:17 17 ORAL VIDEOTAPED DEPOSITION OF HOWARD KUSNETZ

01:06:17 18 MARCH 3, 2006

01:06:17 19

01:06:17 20 I, Anne F. Sitka, Certified Shorthand Reporter in

01:06:17 21 and for the State of Texas, hereby certify to the

01:06:17 22 following:

01:06:17 23 That the witness, HOWARD KUSNETZ, was duly sworn and

01:06:17 24 that the transcript of the deposition is a true record

01:06:17 25 of the testimony given by the witness;

01:06:17 1 That the deposition transcript was duly submitted on
 01:06:17 2 _____ to the witness or to the attorney
 01:06:17 3 for the witness for examination, signature, and return
 01:06:17 4 to me by _____.

01:06:17 5 That pursuant to information given to the deposition
 01:06:17 6 officer at the time said testimony was taken, the
 01:06:17 7 following includes all parties of record and the amount
 01:06:17 8 of time used by each party at the time of the
 01:06:17 9 deposition:

01:06:17 10 Ms. Denyse Clancy (02:47)
 Attorney for Plaintiffs
 01:06:17 11 Mr. Brett Young (00:00)
 Attorney for Shell Chemical, LP and Shell Oil
 01:06:17 12 Company
 Ms. Catherine R. Riegle (00:00)
 01:06:17 13 Attorney for Union Carbide Corporation
 Ms. Stacy Yates (00:00)
 01:06:17 14 Attorney for Radiator Specialty
 Ms. Elizabeth Eve Baker (00:00)
 01:06:17 15 Attorney for Exxon, Ethyl, ACC
 Ms. Susan Price (00:00)
 01:06:17 16 Attorney for Atlantic Richfield

01:06:17 17
 01:06:17 18 That a copy of this certificate was served on all
 01:06:17 19 parties shown herein on _____ and filed
 01:06:17 20 with the Clerk.

01:06:17 21 I further certify that I am neither counsel for,
 01:06:17 22 related to, nor employed by any of the parties in the
 01:06:17 23 action in which this proceeding was taken, and further
 01:06:17 24 that I am not financially or otherwise interested in the
 01:06:17 25 outcome of this action.

01:06:17 1 Further certification requirements pursuant to
01:06:17 2 Rule 203 of the Texas code of Civil Procedure will be
01:06:17 3 complied with after they have occurred.

01:06:17 4 Certified to by me on this _____ day of
01:06:17 5 _____, _____.
01:06:17 6
01:06:17 7

01:06:17 8 Anne F. Sitka, CSR
01:06:17 9 Texas CSR 7079
01:06:17 10 Expiration: 12/31/2006
01:06:17 11 Henjum Goucher Reporting
01:06:17 12 Firm No. 69
2501 Oak Lawn Avenue
Suite 435
Dallas, Texas 75219

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01:06:17 1 FURTHER CERTIFICATION UNDER TRCP RULE 203

01:06:17 2

01:06:17 3 The original deposition was/was not returned to the
01:06:17 4 deposition officer on _____.

01:06:17 5 If returned, the attached changes and Signature
01:06:17 6 page(s) contain(s) any changes and the reasons therefor.

01:06:17 7 If returned, the original deposition was delivered
01:06:17 8 to Ms. Clancy, Custodial Attorney.

01:06:17 9 \$_____ is the deposition officer's charges to the
01:06:17 10 Plaintiffs for preparing the original
01:06:17 11 deposition and any copies of exhibits;

01:06:17 12 The deposition was delivered in accordance with Rule
01:06:17 13 203.3, and a copy of this certificate, served on all
01:06:17 14 parties shown herein, was filed with the Clerk.

01:06:17 15 Certified to by me on this _____ day of
01:06:17 16 _____, _____.

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01:06:17 23

01:06:17 24

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Anne F. Sitka, CSR
Texas CSR 7079
Expiration: 12/31/2006
Henjum Goucher Reporting
Firm No. 69
2501 Oak Lawn Avenue
Suite 435
Dallas, Texas 75219