

OFFICE OF ZONING AND ADMINISTRATIVE HEARINGS
FOR MONTGOMERY COUNTY

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:
PETITION OF COSTCO WHOLESALE : Case No. S-2863
CORPORATION : OZAH No. 13-12
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A hearing in the above-entitled matter was held on February 10, 2014, commencing at 9:35 a.m., at the Office of Zoning and Administrative Hearings, 100 Maryland Avenue, 2nd Floor Council Hearing Room, Rockville, Maryland 20850
before:

Martin L. Grossman
Hearing Examiner

A P P E A R A N C E S

For the Applicant:
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C O N T E N T S

Witnesses:	Direct	Cross	Redirect	Recross
Patrick Breyse				
By Ms. Cordry	49			346
By Mr. Goecke		297		

Exhibit No.		Marked/Received
446	May 5, 2015, study: In-Home Air Pollution Is Linked to Respiratory Morbidity in Former Smokers with COPD	236
447	ISA 2014 ISA Draft	250
448	Short-Term Associations Between Ambient Air Pollutants and Pediatric Asthma Emergency Department Visits	264
449	July 2012 study: Chronic Exposure to Fine Particles and Mortality	268

E X H I B I T S

Exhibit No.		Marked/Received
438	Resume of Karen Cordry	47
439(a)	Karen Cordry's conversions of parts per billion to micrograms per cubic meter	156
439(b)	Karen Cordry's compilation of data points from David Sullivan's reports	157
440	EPA's Integrated Science Assessment from July 2008	202
441	September 9, 2004, article: Pollution Damages Lung Development	203
442	July 2010 study: Childhood Incident Asthma and Traffic-Related Air Pollution at Home and School	204
443	April 2012 paper: Traffic Congestion and Infant Health: Evidence from E-ZPass	224
444	US EPA particulate matter research centers: summary of research results for 2005-2011	231
445	October 2008 study: A Longitudinal Study of Indoor Nitrogen Dioxide Levels and Respiratory Symptoms in Inner-City Children with Asthma	236

1 P R O C E E D I N G S
 2 MR. GROSSMAN: This is the 25th day of a public
 3 hearing in the matter of Costco Wholesale Corporation, Board
 4 of Appeals No. S-2863, OZAH No. 13-12, a petition for a
 5 special exception pursuant to Zoning Ordinance Section
 6 59-G-2.06 to allow petitioner to construct and operate an
 7 automobile filling station which would include 16 pumps.
 8 The subject site is located at 11160 Veirs Mill Road, Silver
 9 Spring, Maryland, Lot N, 631 Wheaton Plaza, Parcel 10, also
 10 known as Westfield Wheaton Mall, and is zoned C-2, general
 11 commercial.
 12 The hearing was begun on April 26, 2013, and
 13 resumed numerous times, as we all know. It was noticed to
 14 resume again today, and the next session has been noticed
 15 for Thursday, February 13, 2014, here in the second floor
 16 hearing room of the COB at 9:30 a.m.
 17 This hearing is conducted on behalf of the Board
 18 of Appeals. My name is Martin Grossman, which means I will
 19 take evidence and write a report and recommendation to the
 20 Board of Appeals which will make the decision in this case.
 21 Will the parties identify themselves for the record, please?
 22 MR. BRANN: Good morning. Erich Brann for Costco.
 23 MR. GROSSMAN: Good morning, Mr. Brann.
 24 MS. HARRIS: Good morning. Pat Harris on behalf
 25 of Costco.

Page 6

1 MR. GROSSMAN: Ms. Harris.
2 MR. GOECKE: Good morning. Mike Goecke for
3 Costco.
4 MR. GROSSMAN: Mr. Goecke.
5 MS. CORDRY: Karen Cordry for Kensington Heights
6 Civic Association.
7 MR. GROSSMAN: Good morning.
8 MS. ROSENFELD: Michele Rosenfeld with Kensington
9 Heights.
10 MR. GROSSMAN: Ms. Rosenfeld.
11 MR. SILVERMAN: Good morning. Larry Silverman,
12 Stop Costco Gas.
13 MR. GROSSMAN: Mr. Silverman.
14 MS. ADELMAN: Good morning, Mr. Grossman. Abigail
15 Adelman for the Coalition.
16 MR. GROSSMAN: Welcome. And in the back we see
17 some other people. Anybody else who is to offer testimony
18 here? Yes, sir.
19 MR. BREYSSE: Patrick Breyse from Johns Hopkins
20 University Bloomberg School of Public Health.
21 MR. GROSSMAN: Dr. Breyse, welcome. All right.
22 I see some other familiar characters who are not presumably
23 going to be witnesses today.
24 MS. ROSENFELD: And Ms. Duckett, I said she would
25 be here later this morning.

Page 7

1 MR. GROSSMAN: All right.
2 MS. ROSENFELD: She had a conflict.
3 MR. GROSSMAN: Okay. Let's turn to a few
4 preliminary matters. First of all, exhibits received since
5 our last session, that would be Exhibits 426 through 437.
6 And 426 was a notice of the additional hearing dates sent on
7 January 22, 2014; 427, e-mails between the parties on
8 January 30 regarding scheduling of Dr. Jison's testimony;
9 428, a memo from Ms. Rosenfeld on January 31, 2014,
10 submitting documents into the record; 429, materials by
11 Ms. Rosenfeld received on January 31, 2014 -- additional
12 materials, I'd say -- 430, once again, materials from
13 Ms. Rosenfeld; 431, e-mails from Ms. Cordry, submitting
14 materials that may be referenced by Dr. Breyse or
15 Dr. Jison, and 431(a) is a PDF of some of the annexed pages,
16 and 431(b) is a summary, or what's entitled Summary of
17 Existing Documents and Testimony About Background Levels
18 Measured at Various Monitors in the Area and History of
19 Methodology Choices; 432 -- and we'll discuss this further
20 because it's been the subject of some discussion in the
21 e-mail exchanges -- 432, e-mails between the Hearing
22 Examiner and Ms. Adelman regarding Sam Campbell's testimony,
23 and 432(a) is a copy of an e-mail sent from Ms. Campbell on
24 November 13, 2012; 433, documents submitted by Ms. Rosenfeld
25 on February 3, 2014; 434, e-mail from Cindy Holland

Page 8

1 regarding her desire to testify, and 434(a), a list of her
2 qualifications; 435, an e-mail between the parties, February
3 3, 2014, regarding the testimony schedule, closing
4 arguments; 436, e-mails between the parties, February 3,
5 2014, and regarding the author of that Exhibit 431(b). 437,
6 which I didn't have when I made up this little cheat sheet,
7 was another, apparently another e-mail from Ms. Rosenfeld,
8 which I don't think I've seen, and then there was also an
9 exchange which didn't yet make it into the -- an e-mail from
10 Mr. Silverman, which I responded to. It doesn't have an
11 exhibit number yet unless it's on here and I didn't see it.
12 Let me take a quick look. No, not yet on here.
13 Okay. As I understand it, the witnesses scheduled
14 for today, Dr. Breyse. We've received correspondence, as I
15 understand it, from Mr. Doug Sims, a resident, not being
16 called by any party thus far, Ms. Debra Houseworth, and
17 Ms. Ann Statland; their scheduling, I guess, to be
18 determined, depending on how long it takes to go through the
19 scheduled expert testimony, and of course, the schedule for
20 Dr. Jison is up in the air, and we'll get back to that.
21 Okay. And that's the -- let's take that as the first
22 question. Who do we have scheduled for February 13 -- and
23 we ought to also address the question of weather because I
24 understand it may snow that morning -- and have the parties
25 agreed on how we should calendar the rest of the hearing

Page 9

1 dates?
2 So let me mention, on the weather front, we have
3 -- on our website we published a procedure that we follow.
4 That is, generally speaking, we follow the Montgomery County
5 Schools' process because the Montgomery County government
6 essentially never closes and it's a problem to conduct
7 hearings when the, public hearings, when the public can't
8 get here because of bad weather conditions. So our
9 published requirement is following Montgomery County
10 Schools. So if they say they're going to open two hours
11 late, for example, we'll open two hours late. If they say
12 they're not opening, we won't open.
13 MS. ROSENFELD: Okay.
14 MR. GROSSMAN: Unless everybody here wants to do
15 something different, that's what we would follow. Do you
16 want to -- anybody want to speak to that point?
17 MS. ROSENFELD: I'm happy with that policy.
18 MS. HARRIS: Not sure how to answer.
19 MR. GROSSMAN: All right. I mean, I've made
20 exceptions to that in cases that generally don't involve a
21 lot of public showing up -- when we conduct human rights
22 cases, and usually that involves individuals involved in
23 that case. I'm a little bit leery of having cases that are
24 open to the public and have been noticed widely begin when
25 we have terrible weather conditions that might endanger

Page 10

1 people. So, all right, since there's no objection, let's
2 follow that stated policy --
3 MS. ADELMAN: Yes.
4 MR. GROSSMAN: -- check as to what's happening at
5 Montgomery County Schools, and let's follow that for
6 Thursday and Friday, which are the next scheduled hearing
7 dates.
8 All right. Let me hear first, I guess, from
9 Ms. Harris as to what, if anything, the parties have agreed
10 to in terms of the scheduling of the parties -- the
11 hearings, rather.
12 MS. HARRIS: Yes, and some of this is dependent on
13 Opponents' timing, but it's our understanding that Dr. Jison
14 is only available February 25th and that the -- so we have
15 the 10th, the 13th, and then we had determined that we would
16 cancel the 14th because the opponents thought that they
17 would be done their witnesses except for Dr. Jison, and they
18 can speak more to that perhaps.
19 So right now the tentative suggested schedule is
20 the 10th, today, the 13th, cancel the 14th, February 25th,
21 February 26th, and then March 3rd. And then Opponents
22 thought that it was necessary to have one more backup day,
23 and unfortunately, given our various schedules and other
24 cases that are going on, the next available date was March
25 25th for that --

Page 11

1 MR. GROSSMAN: Wow.
2 MS. HARRIS: -- for that backup day.
3 MS. ROSENFELD: The next date that --
4 MS. ADELMAN: That you were available.
5 MS. ROSENFELD: -- that Costco was available.
6 MS. ADELMAN: Yes.
7 MS. ROSENFELD: We had offered any two or three
8 days the week of March 3rd.
9 MR. GROSSMAN: As I mentioned in one of the e-mail
10 exchanges, I do try to accommodate parties and the
11 witnesses, including the expert witnesses, but there also
12 has to be some accommodation by the expert witnesses. So I
13 offered, as I said, to subpoena Dr. Jison, if necessary,
14 depending on what the nature is of her other obligations. I
15 haven't heard any description of --
16 MS. ROSENFELD: We --
17 MR. GROSSMAN: -- what they are.
18 MS. ROSENFELD: Okay. We shared those with
19 opposing counsel. I realize now you were not. Dr. Jison
20 works for the federal government. She has meetings that
21 have been scheduled. She is not in control of those
22 meetings. It's a regulatory agency. They involve people
23 from outside parties coming in. Her supervisors control
24 those meetings. She can neither schedule them and she is
25 not allowed to be absent from them.

Page 12

1 MR. GROSSMAN: Well, a subpoena is a good
2 excuse --
3 MS. ROSENFELD: Well, I --
4 MR. GROSSMAN: -- and so we have meetings --
5 MS. ROSENFELD: -- I understand that, but she --
6 MR. GROSSMAN: -- we have meetings scheduled, too,
7 and that, public hearings that have been noticed for a long
8 time.
9 MS. ROSENFELD: And we really, in good faith,
10 thought that she would be done on the 10th, and Dr. Jison is
11 not a paid expert witness. She's in a different position
12 from a lot of the other expert witnesses in this case. This
13 is not her primary profession. She's doing this, she's a
14 resident of the community, she has an expertise, and she's
15 spent a lot of time in these proceedings, and she spent a
16 lot of time preparing for. And --
17 MR. GROSSMAN: I'm not going to impose issuing a
18 subpoena if the parties don't want, if you agree to
19 something else. I just wanted to --
20 MS. ROSENFELD: We --
21 MR. GROSSMAN: -- an understanding that this is a
22 proceeding that involves many people and notices that go out
23 to a hundred people --
24 MS. ROSENFELD: I understand that.
25 MR. GROSSMAN: -- formal notices. So it's not as

Page 13

1 if it needs to take second fiddle to a meeting that some
2 federal supervisor has scheduled.
3 MS. ROSENFELD: And for the record, I'd like to
4 make one other observation. We have had February 14th on
5 the record as a noticed hearing date for a long time --
6 MR. GROSSMAN: Right.
7 MS. ROSENFELD: -- and Dr. Jison comprises a very
8 limited component of this case. I understand Mr. Guckert,
9 for one, is a rebuttal witness that has nothing to do with
10 Dr. Jison's testimony, and if there are other rebuttal
11 witnesses -- and we don't know, aside from Mr. Sullivan, who
12 they might be -- I candidly don't understand why Costco
13 cannot proceed with its rebuttal on the 14th.
14 MR. GROSSMAN: Let's hear from Applicant on that.
15 MS. HARRIS: Just customarily, we thought it made
16 sense for the opponents to conclude their case. We had,
17 based on the hearing back in January, when Dr. Jison was
18 supposed to testify this week, we had all our witnesses
19 lined up for rebuttal and we knew their availability and
20 everything was going to flow smoothly. Then there was this
21 issue that she couldn't be available. So we tried to
22 restructure various, our opponents' availability and wanted
23 to make sure that the rebuttal case was completed, and at
24 this point, I don't even think Mr. Guckert is available on
25 the 14th. I mean, we had intended him to be testifying, I

Page 14

1 don't even remember what date it was, but he had fit into a
2 slot before we had to restructure the entire schedule.
3 MR. GROSSMAN: All right. Well, let's turn to the
4 so-called bottom line and what the parties want to do here.
5 So what is your preference, Ms. Harris, or what have you
6 agreed to do? What --
7 MS. HARRIS: The 25th, the 26th. Originally we
8 had had the 27th, but there's been legislation reintroduced
9 in Annapolis regarding this gas station. So we have to be
10 in Annapolis on the 27th. So that date doesn't work, so
11 March 3rd and March 25th.
12 MR. GROSSMAN: And you don't want the hearing to
13 go forward on February 14?
14 MS. HARRIS: Correct, unless -- well, let me just
15 say, unless Opponents aren't finished for some reason their
16 case.
17 MR. GROSSMAN: Well, we do have to let people know
18 whether we're going to be having the hearing that day.
19 So --
20 MS. ROSENFELD: Well, frankly --
21 MS. HARRIS: Well, and --
22 MR. GROSSMAN: Well, we can cancel it a couple of
23 days in advance, but I --
24 MS. ROSENFELD: Mr. Grossman, in light of the fact
25 that there may be bad weather on the 13th --

Page 15

1 MR. GROSSMAN: Yes.
2 MS. ROSENFELD: -- it seems prudent to hold the
3 14th; so that if either we're, we start late or if we can't
4 hold the hearing on the 13th at all, you can hold that 14th
5 as a backup date. And you may recall, I will have to leave
6 early on the 13th because I have a hearing --
7 MR. GROSSMAN: You have to go to a new town --
8 MS. ROSENFELD: -- far away, in a far, far away
9 land.
10 MR. GROSSMAN: So shall we do that, keep the
11 hearing on February 14 for that reason?
12 MS. HARRIS: With the understanding that it,
13 that --
14 MR. GROSSMAN: It's hard to cancel --
15 MS. ROSENFELD: That it would --
16 MR. GROSSMAN: It's hard to cancel without -- let
17 me put it this way: I have to announce it at the public
18 hearing if I don't send out formal notice --
19 MS. HARRIS: Yes.
20 MR. GROSSMAN: -- and there won't be time for
21 formal notice to get to people if I don't know until
22 February 13. So I will have to announce something at the
23 public hearing if I'm canceling it. So if we come on
24 February 13 and there's no reason to have February 14, I'll
25 announce the cancellation at the public hearing. I'd like

Page 16

1 to give people more notice than that, but since we usually
2 have a set group that appears here --
3 MS. HARRIS: Yes.
4 MR. GROSSMAN: -- I guess that's the best we can
5 do.
6 MS. CORDRY: Okay. That makes sense.
7 MS. ROSENFELD: And, you know, on Thursday, if we
8 start late and end early, we may need the 14th to carry over
9 witnesses. After all the time we've spent trying to keep
10 the case moving along, I'm really wary of canceling a date
11 that's been scheduled, knowing that things always seem to
12 take longer than we expect.
13 MR. GROSSMAN: Why is that? Yes, it is true. All
14 right. So shall we do that? We'll keep the 14th on the
15 calendar. We'll all appear on the 13th, assuming that we're
16 functioning weather-wise, and if there's no need to have the
17 hearing on the 14th, we'll announce it at the public hearing
18 on the 13th that we won't be meeting on the 14th. Other
19 than that, we'll be meeting on February 25, February 26, as
20 previously noticed, and then we'll send out additional
21 notices for March 3, which is a Monday, and March 25, which
22 is a Tuesday, 2014.
23 MS. ROSENFELD: You said March 25, right --
24 MS. ADELMAN: Yes.
25 MS. ROSENFELD: -- not March 4? Okay.

Page 17

1 MR. GROSSMAN: That's what Ms. Harris is telling
2 me.
3 MS. ROSENFELD: Yes.
4 MR. GROSSMAN: Okay. So everybody's on board with
5 that?
6 MS. HARRIS: Yes.
7 MR. GROSSMAN: Hearing no nays, assume that's the
8 case. Now, the next question is how the parties want to
9 handle closing arguments, briefs, and the submission of
10 suggested conditions. As I indicated in my e-mail response
11 to Mr. Silverman and as I've said at the hearing before, no
12 matter what I recommend here, I'm going to attach conditions
13 that I would recommend if the Board of Appeals decides to
14 grant the special exception and also conditions that the
15 parties may wish -- even if I don't recommend them, I guess
16 I would attach them as some kind of an appendix. And so
17 there has to be some -- the parties have to get together and
18 see which, at least prior to the final hearing date that we
19 meet, decide which conditions they are agreeable to -- and
20 they should be submitted on a list of jointly recommended
21 conditions -- and then conditions that the applicant wishes
22 that the opposition does not agree to and, vice versa, ones
23 that the opposition wishes that the applicant doesn't agree
24 to.
25 So what's, for that part of it at least, what's a

1 good day to discuss those conditions? Should we, that be
 2 the last day, such as March 3, and we'll have March 25 in
 3 case it's necessary? Does that make sense?
 4 MR. GOECKE: I think that makes sense.
 5 MS. HARRIS: Yes.
 6 MR. GROSSMAN: All right. So let's assume that'll
 7 be, March 3 will be a day that we're going to look at those
 8 conditions, and so I'd ask that the parties get together and
 9 submit something at least a week before that. So that would
 10 be --
 11 MR. SILVERMAN: The 24th.
 12 MR. GROSSMAN: Okay, 24th of February. So I guess
 13 you can submit it at the, at our meeting scheduled for
 14 February 24. That would be the joint list and then the
 15 parties' --
 16 MS. HARRIS: Mr. Grossman, we don't --
 17 MR. GROSSMAN: -- not-agreed-to conditions.
 18 MS. HARRIS: We had said that the hearing dates
 19 are the 25th and 26th, not the 24th.
 20 MR. GROSSMAN: Oh, I'm sorry. Oh.
 21 MS. CORDRY: But he's saying we should be trying
 22 to meet or something and discuss a week before.
 23 MS. HARRIS: No, but then he said we submit.
 24 MS. CORDRY: Oh, I'm sorry.
 25 MR. GROSSMAN: Right. I'm sorry. Yes, because I

1 have -- the 24th is a calendar day for our hearing.
 2 MS. CORDRY: No.
 3 MS. HARRIS: Right, but then we canceled that
 4 because Dr. Jison isn't --
 5 MR. GOECKE: Is not available.
 6 MS. HARRIS: -- available that day.
 7 MS. CORDRY: So it's the 25th.
 8 MR. GROSSMAN: Oh, I see. So you, I -- sorry, I
 9 didn't catch that --
 10 MS. HARRIS: No, I'm sorry.
 11 MR. GROSSMAN: -- as a cancellation. Okay. So we
 12 canceled the 24th. The only problem with the 26th is that
 13 that is a Wednesday and we don't have the hearing -- we
 14 don't have this room on Wednesdays --
 15 MS. ROSENFELD: Oh.
 16 MR. GROSSMAN: -- and I'm not sure, I haven't
 17 checked, I'm not sure that we can get the Council's room on
 18 that day. So that may be up in the air. The --
 19 MS. CORDRY: Would the auditorium --
 20 MR. GROSSMAN: -- Board of Appeals meets here on
 21 Wednesdays.
 22 MS. CORDRY: Yes. Would the auditorium be
 23 available or --
 24 MR. GROSSMAN: I don't know. I'd have --
 25 MS. CORDRY: Okay. All right.

1 MR. GROSSMAN: -- we'd have to check.
 2 MS. CORDRY: Okay.
 3 MR. GROSSMAN: So --
 4 MS. ROSENFELD: Well, if that's the case,
 5 Mr. Grossman, maybe we should be looking at yet another date
 6 at the end of March after the 25th as an alternative to
 7 February 26th if the room is not available.
 8 MR. GROSSMAN: What about Friday the 28th of March
 9 as a possible date?
 10 MS. ROSENFELD: That looks okay for me.
 11 MS. HARRIS: That works.
 12 MR. GROSSMAN: Okay.
 13 MS. HARRIS: Yes, that would work.
 14 MR. GROSSMAN: Okay. So we will see whether we
 15 have a room available on the 26th of March, I'm sorry, of
 16 February.
 17 MR. SILVERMAN: 26th.
 18 MR. GROSSMAN: Right, or that was the date that
 19 was suggested in lieu of the 24th. And --
 20 MS. ROSENFELD: And we're canceling the 24th,
 21 right?
 22 MR. GROSSMAN: That's the question, but I guess --
 23 I guess that'll be the case, but right now that's what I'll
 24 be checking into, room availability and so on. So, yes,
 25 that's the likelihood. Well, I guess that's, are we talking

1 about -- you said adding on another one at the end of March.
 2 There is, I guess, the possibility --
 3 MS. ROSENFELD: Yes.
 4 MR. GROSSMAN: -- of February 28. Is that --
 5 MS. ROSENFELD: I think they were unavailable.
 6 Wait. Wait. Let me see.
 7 MR. GROSSMAN: Well, that's the question. What --
 8 MS. ADELMAN: The 27th they're unavailable.
 9 MS. ROSENFELD: No, Mr. Grossman, we'd be looking
 10 at the 25th and the --
 11 MR. GROSSMAN: Which month? Name a month.
 12 MS. ROSENFELD: February 25th, 26th. I just --
 13 MR. GROSSMAN: Well, the 26th is the one that's up
 14 in the air --
 15 MS. ROSENFELD: Up in the air.
 16 MR. GROSSMAN: -- because we don't know about a
 17 room, but --
 18 MS. HARRIS: Another thing that we're wondering,
 19 but I have to check with Mr. Guckert, is, is he available
 20 the 24th, again, recognizing that they have --
 21 MR. GROSSMAN: 24th of?
 22 MS. HARRIS: February.
 23 MS. ADELMAN: February.
 24 MR. GROSSMAN: Okay.
 25 MS. HARRIS: So we could add that back on and

1 start with his rebuttal on the 24th --
 2 MR. GOECKE: Before Dr. Jison testifies.
 3 MS. HARRIS: -- before Dr. Jison. I can e-mail
 4 him now and hopefully get an answer.
 5 MR. GROSSMAN: All right. Well, we can discuss
 6 this again later on today. Lunchtime --
 7 MS. HARRIS: Yes.
 8 MR. GOECKE: Yes.
 9 MR. GROSSMAN: -- why don't you all bring that up,
 10 and then we'll figure out what to do about it. All right.
 11 Why don't you discuss it offline so we don't take more
 12 hearing time on this, and we'll --
 13 MS. ROSENFELD: Okay. And --
 14 MR. GROSSMAN: -- talk among yourselves, as they
 15 say.
 16 MS. ROSENFELD: -- not to overly complicate
 17 things, but I'm here for preliminaries this morning, and I
 18 will be leaving for the rest of the day, and Ms. Cordry will
 19 be handling Dr. Breyse and Ms. Savage's testimony today.
 20 So --
 21 MR. GROSSMAN: Okay.
 22 MS. CORDRY: And I will keep notes on her
 23 availability.
 24 MR. GROSSMAN: Well, then if you're leaving early
 25 -- well, today is not your day that you're --

1 MS. ROSENFELD: Today is not, that's right.
 2 That's right.
 3 MR. GROSSMAN: Right. Right. Okay. All right.
 4 Let's move on to the --
 5 MS. ROSENFELD: But I will be in touch with
 6 Ms. Cordry so we can coordinate calendar even if I'm not
 7 here.
 8 MR. GROSSMAN: All right. Let's move on to the
 9 next question we were discussing which is how the parties
 10 want to handle closing arguments and briefing. Applicant,
 11 what's your preference about that? Do you want --
 12 MS. HARRIS: What we --
 13 MR. GROSSMAN: -- an oral closing argument? Do
 14 you --
 15 MS. HARRIS: No. We believe that written closing
 16 is probably more appropriate given the length and complexity
 17 of this hearing. And what we had suggested to Opponents,
 18 but we have not yet heard back from them, is a closing
 19 schedule that would have Applicant submitting their closing
 20 brief four weeks after the close of the record, Opponents
 21 preparing a reply brief two weeks after that, and then
 22 Applicant having an opportunity to submit another --
 23 MR. GOECKE: Rebuttal.
 24 MS. HARRIS: -- a rebuttal, excuse me, a rebuttal
 25 brief two weeks after that.

1 MR. GROSSMAN: Well, it wouldn't be after closing
 2 of the record because the briefs will be part of the record.
 3 MS. HARRIS: Oh, right. I'm sorry, after the last
 4 hearing date, my apologies.
 5 MR. GROSSMAN: All right. Ms. Rosenfeld, do you
 6 want to be heard on that?
 7 MS. ROSENFELD: We had proposed that both parties
 8 simultaneously submit closing statements 30 days after the
 9 last hearing date.
 10 MR. GROSSMAN: At one point, you said you had a
 11 desire to make an oral case.
 12 MS. ROSENFELD: I do. I do, and my recommendation
 13 would be that that either be some number of days after the
 14 final submissions are made or some number of days after the
 15 last hearing date, but absolutely, I would like to have an
 16 oral summation.
 17 MR. GROSSMAN: And how much time do you want for
 18 that?
 19 MS. ROSENFELD: I think 45 minutes would be
 20 reasonable.
 21 MR. GROSSMAN: All right. Now, you didn't
 22 indicate a preference for that, but I'm not going to deny
 23 Ms. Rosenfeld the opportunity to make an oral pitch. So I
 24 presume you want the opportunity to also make an oral pitch.
 25 So --

1 MS. HARRIS: Either an oral pitch or the
 2 opportunity to reply to that, rebut that in written, in a
 3 written statement after her oral pitch. I mean,
 4 traditionally, if this were, quote, a normal hearing, the
 5 applicant would make their closing argument, the opponents
 6 would reply, and then we'd be able to rebut that and --
 7 MR. GROSSMAN: Right.
 8 MS. HARRIS: -- that's the way it would go. And
 9 so therefore whether -- whatever form it takes I think that
 10 format is important to keep.
 11 MR. GROSSMAN: All right. But assuming, as we --
 12 or as I've already said, I'm going to let Ms. Rosenfeld make
 13 her closing argument. I don't know. How much time -- do
 14 you wish to, Mrs. Adelman, do you wish to make a closing
 15 oral argument, or do you wish to submit something?
 16 MS. ADELMAN: We were definitely going to submit a
 17 written closing, but I'd like to reserve the right to do an
 18 oral also, and it would probably be 30 minutes.
 19 MR. GROSSMAN: All right. I may want to cut the
 20 size of these oral arguments down, because now we're talking
 21 about a long oral argument. I mean, when the Council has
 22 oral argument on rezonings, they generally give 20 minutes
 23 to a side.
 24 MR. GOECKE: Yes.
 25 MR. GROSSMAN: So maybe you should gauge it down a

Page 26

1 little bit in terms of the length --
2 MS. ADELMAN: Okay.
3 MR. GROSSMAN: -- of oral arguments here. Rather
4 than 45 and --
5 MS. ROSENFELD: They also --
6 MR. GROSSMAN: -- 45 minutes and --
7 MS. ROSENFELD: They also typically aren't trying
8 to sum up a case that's quite as voluminous as this one.
9 MR. GROSSMAN: I agree. I agree. So I'll take
10 that into account.
11 MR. GOECKE: But the Court of Special Appeals
12 deals with cases like this, and they apply the same
13 restrictions to --
14 MR. GROSSMAN: I mean, that's, a 45-minute plus a
15 30-minute, that's a lot of oral argument for essentially --
16 so, anyway, we'll have another hearing. So you can all give
17 me a final figure on that, but -- and then there's also a
18 question. I guess what we would want to do is we'd want to
19 give the applicant equal time to the opposition, and so then
20 you'd be talking about another hour and 15 minutes from, and
21 we don't know about -- Ms. Duckett is not here; so we don't
22 know how much time, if any, she wants to make in oral
23 argument. So --
24 MS. CORDRY: We can certainly check. My --
25 MR. GROSSMAN: All right.

Page 27

1 MS. CORDRY: -- assumption would be she's not, but
2 we can check on that.
3 MS. ADELMAN: My assumption would be that also.
4 MS. CORDRY: And, actually, she will be here later
5 today, I believe. So you can --
6 MS. ADELMAN: Yes.
7 MS. CORDRY: -- check that at that time.
8 MR. GROSSMAN: All right. Well, I guess that we
9 should assume that whichever is the last hearing date, if
10 it's March 3, that would be the closing argument date. In
11 other words --
12 MS. ROSENFELD: March 3?
13 MS. CORDRY: No.
14 MR. GROSSMAN: It would occur at a scheduled
15 hearing date, if it's March 3 or March 25. Whatever is that
16 final date that we actually have to appear here would be the
17 date on which you'd make your closing argument.
18 MS. CORDRY: I thought we were talking about doing
19 the argument following the written material. So that it
20 would be that, you know, essentially, the written arguments
21 would be in and it would be a chance to state them and then
22 if you had any questions back from them and so forth, as
23 opposed to before you did the written closings.
24 MR. GROSSMAN: Applicant, what do you feel about
25 that?

Page 28

1 MR. GOECKE: That was my understanding as well.
2 MR. GROSSMAN: All right. Well, we can do that
3 too, I suppose. We can have, but that would require another
4 -- we'd have to have a public session noticed --
5 MS. CORDRY: Right.
6 MR. GROSSMAN: -- for the oral arguments.
7 MS. CORDRY: I mean, I think we were thinking like
8 a week or two weeks after the last papers went in would be
9 -- then have the oral arguments scheduled.
10 MR. GROSSMAN: You're trying to make me break the
11 record here, and I don't want to break the record.
12 MS. ROSENFELD: We're really not trying to do
13 that --
14 MS. ADELMAN: That's true.
15 MS. ROSENFELD: -- I can promise you that.
16 MR. GROSSMAN: All right.
17 MS. ADELMAN: So where are we now?
18 MR. GROSSMAN: And how much, it was suggested --
19 Ms. Harris, you suggested 30 days after the last hearing
20 date to, for the submission of --
21 MS. HARRIS: Yes, and I -- that part, yes.
22 MS. ROSENFELD: Yes. I think we both agree on
23 that.
24 MR. GROSSMAN: All right. And what about that
25 format that was suggested -- that is, Applicant submits any

Page 29

1 brief, responded to by the opposition, and an opportunity
2 for a reply from the applicant?
3 MS. ROSENFELD: I really can't argue with that
4 format that the applicant followed by the opposition
5 followed by the applicant for rebuttal, but if the applicant
6 is going to have four weeks to prepare their written
7 closing, we certainly should have four weeks as well. The
8 record is the equal size for both sides of the parties, and
9 I don't see why they would have additional time to prepare
10 their written statement and give us two weeks to respond to
11 their --
12 MS. HARRIS: Well, Mr. Grossman, if I could, it's
13 not exactly that they're only getting two weeks. I would
14 look at it as they're actually getting six weeks. I mean,
15 none of -- the issues in this case are not any secret, and
16 presumably, Opponents would be working on their brief for
17 six weeks, not starting on it after they've received ours
18 after four weeks.
19 MS. ROSENFELD: Knowing human nature --
20 MR. GROSSMAN: Well, we try not to take account of
21 human nature in these proceedings. How --
22 MS. ROSENFELD: Let's split the baby and make it
23 three weeks, could we?
24 MR. GROSSMAN: All right. Why don't we do this --
25 MS. ROSENFELD: You know, this isn't --

Page 30

1 MR. GROSSMAN: -- why don't we say 30 days for the
2 applicant, 20 days for the opposition after that's filed,
3 and then 10 days for any reply? How's that?
4 MS. ROSENFELD: I can live with that.
5 MS. HARRIS: And so can we. And the 30 days
6 commences after the last --
7 MR. GROSSMAN: Right, after the last --
8 MS. HARRIS: -- hearing date of the witnesses.
9 MR. GROSSMAN: -- date on which evidence is taken.
10 MS. HARRIS: Yes.
11 MR. GOECKE: And then the oral arguments would
12 take place 10 days after the rebuttal brief is filed?
13 MR. GROSSMAN: Yes. Well, we'll figure out the
14 specific date after consulting the parties as to what's a
15 good date for them --
16 MR. GOECKE: Okay.
17 MR. GROSSMAN: -- but that would generally be, it
18 could be any time after the last, the reply brief is due.
19 MS. HARRIS: And, Mr. Grossman, one more thing in
20 terms of the written closing statement, are you -- is there
21 going to be a page limit? Would you like a page limit?
22 MR. GROSSMAN: Three pages.
23 MS. HARRIS: Then we need 40 days.
24 MR. GROSSMAN: What do you all think about that,
25 page limits? There isn't anything in the rules that covers

Page 31

1 this. So --
2 MS. ROSENFELD: Right. Right.
3 MR. GROSSMAN: -- so do you have a, do you have a
4 feeling about that?
5 MS. HARRIS: I think there should be a page limit,
6 and now you're going to -- the next question is, how many
7 pages?
8 MS. ROSENFELD: Is how do we feel --
9 MR. GROSSMAN: How many pages?
10 MS. CORDRY: Why don't we come back to that?
11 MS. HARRIS: Thirty pages. That's --
12 MS. ROSENFELD: This is a very long case with a
13 lot of very technical information in it. The reports alone
14 are hundreds -- we have thousands, literally thousands of
15 pages of scientific reports in this case. Now, the point of
16 the summation is to distill it into a manner that would be
17 helpful to the Hearing Examiner in assessing the evidence.
18 How we arbitrarily put a page limit on that at this point in
19 the proceeding is very difficult to see, and frankly, I
20 don't see what the need for a page limit would be. I mean,
21 what's the meritorious basis for --
22 MR. GROSSMAN: Well, why do courts put page
23 limits --
24 MS. HARRIS: Right.
25 MR. GROSSMAN: -- on briefs? What's the

Page 32

1 meritorious basis for that? It tries to make people hone it
2 in to things that are important in the case. There's been
3 an awful lot of evidence here that is very important, and
4 there's been some evidence that is really not going to
5 directly bear on anything I'd recommend because it's too
6 peripheral to some of the, so many central issues in the
7 case. So there is an aspect of that. I'm afraid that if I
8 put a page limit on, somebody's going to submit type that's
9 too small for me to read and --
10 MS. HARRIS: Circuit Court rules.
11 MR. GROSSMAN: Right. I'll tell you what. I'm
12 not going to put a page limit on it, but let's use some
13 judgment as to what's really going to be effective, what I'm
14 going to be -- what's going to be useful to address, because
15 it makes sense from the perspective of the parties as well.
16 There's no point in writing so much that obfuscates the real
17 central issues in the case. So I would suggest that you
18 address yourself to those central issues. Don't add
19 appendices and that kind of thing because that's, you know
20 -- the evidence will be the evidence in the case. So this
21 is just argument, the briefs.
22 All right. Let's see what else. All right.
23 Let's turn to the questions raised regarding Ms. Cordry's,
24 quote, summary that's Exhibit 431(b), as in boy.
25 Mr. Goecke, you had raised objections to that exhibit coming

Page 33

1 in. Oh, the other thing is, I guess we also ought to
2 discuss the questions of handling the admission of exhibits.
3 There are many exhibits here, and I had said at the end of
4 the case we're also going to discuss which exhibits are to
5 be admitted and which would not be admitted formally into
6 the record. So far they're, in effect, marked as exhibits
7 but not necessarily admitted, and usually we do that at the
8 end.
9 Early on in the case, the applicant submitted a
10 long list of objections to exhibits, and I suggested that
11 that list of objections was not directive in the sense that
12 I would recognize, in that they were, they were handling --
13 most of them were objections to essentially advanced
14 descriptions of the expected evidence that was to be
15 submitted by the opposition, and I asked that that be
16 reconsidered and then resubmitted, honed down to what is
17 truly objected-to exhibits.
18 So what, what would be the appropriate day that
19 parties agree to that we discuss the exhibits? And I would
20 suggest that that would be the same day as we discuss the
21 proposed conditions, and so one week in advance of that.
22 MS. ROSENFELD: And did we have a tentative date
23 for that one week in advance, or do we know?
24 MR. GROSSMAN: Yes. I think it was February 24.
25 Right? Is that what we --

Page 34

1 MS. ADELMAN: 25.
2 MR. GROSSMAN: 25? Let me see. No. I think it
3 was February 24 because we had March 3 it was going to be
4 discussed.
5 MS. ROSENFELD: Frankly, Mr. Grossman, given the
6 fact that they're not even going to have started their
7 rebuttal testimony at that point and I'm anticipating that
8 there will be at least some exhibits introduced -- we don't
9 even know which witnesses yet -- that it would be more
10 appropriate to do that at the close of all the evidence.
11 MR. GROSSMAN: Well, I would agree it would be
12 appropriate at the close of all the evidence. I'm afraid
13 that we may be squeezing ourselves on a day, that's all. We
14 don't know which day that's going to be given our
15 flexibility here and how we're scheduling a day. Why don't
16 we do this: Let's keep that the way we had it, and then as
17 to additional exhibits, we'll handle, if there are
18 additional rebuttal exhibits, we'll handle them, you know,
19 separately at that point. At least we'll get an organized
20 submission of any objections by both sides on February 24,
21 and then we can discuss them all on March 3, will be the
22 goal.
23 MS. ROSENFELD: So February 24th we're looking at
24 proposed conditions and exhibit objections?
25 MR. GROSSMAN: Right. And --

Page 35

1 MS. HARRIS: So it seems, though, that the date of
2 March 3rd is going to be devoted primarily to those two
3 items or at least the morning --
4 MR. GROSSMAN: It may be. If we need --
5 MS. HARRIS: -- as opposed to having a witness
6 testify.
7 MR. GROSSMAN: Well, we'll see how that works out.
8 MS. HARRIS: Okay.
9 MR. GROSSMAN: I mean, I'll be flexible about how
10 we do it. I want to make sure we get all the evidence in.
11 So if we have to do that at one of the later dates that
12 we've talked about --
13 MS. HARRIS: Sure. Right.
14 MR. GROSSMAN: -- we'll do that.
15 MS. HARRIS: Okay.
16 MS. ROSENFELD: February 24th is just the day you
17 want us to submit --
18 MR. GROSSMAN: Right.
19 MS. ROSENFELD: -- that information? We're not --
20 MR. GROSSMAN: Right. So we're trying to --
21 MS. ROSENFELD: -- going to argue on that day?
22 MR. GROSSMAN: -- we're trying to do it in case we
23 have -- in case March 3 turns out to be a date available to
24 have the discussion, we'll have the submission of the
25 proposed conditions, and we'll have the submission of the

Page 36

1 objections. I'm generally pretty liberal about what I allow
2 into the record in terms of exhibits, and I address the
3 weight to be given to each as I consider the case later on.
4 But to the extent that you have objections, I will certainly
5 listen to them and rule on them.
6 Okay. Going back to Ms. Cordry's summary, so did
7 you want to be heard on that, Mr. Goecke?
8 MR. GOECKE: I would, Mr. Grossman. Thank you.
9 Right, you had raised questions in your e-mail that I said
10 were our concerns, and they remain our concerns. And
11 basically, what we have here is a document labeled a summary
12 but, as you pointed out, contains a lot of opinion and a lot
13 of argument by someone who is not a qualified expert on
14 these areas. And to the extent that Ms. Cordry or members
15 of the opposition have criticisms of Mr. Sullivan's
16 methodology, we believe the appropriate time to address them
17 was either on cross-examination or through Dr. Cole's
18 testimony. And now they're saying that Dr. Jison or
19 Dr. Breyse may rely on this summary created by a layperson,
20 and it could be very prejudicial to the applicant because
21 then suddenly you've got experts talking about a
22 laywitness's summary based on her analysis of the transcript
23 and of records. And there's been no indication that the
24 doctors have prepared this document at all, that they
25 reviewed the transcripts, that they've, you know, reviewed

Page 37

1 these other materials that Ms. Cordry is summarizing, and we
2 just think it would be objectionable for those reasons.
3 MS. CORDRY: I would say --
4 MR. GROSSMAN: Ms. Cordry.
5 MS. CORDRY: -- a couple of things. One, in terms
6 of dealing with Mr. Sullivan, this is not the question of
7 whether Mr. Sullivan did or not do the right thing.
8 Primarily, this is pulling together what Mr. Sullivan said
9 he did. So a lot of this is quoting his testimony. Then a
10 lot of it is saying, okay, if you take that I said I was
11 doing X and if I look at the background monitor readings,
12 which are also already in evidence, if I apply what he said
13 he did to the monitors, is that what appears to come up?
14 So it is an analysis, yes, but it's not putting in
15 new evidence. It's not something that takes an expert -- if
16 somebody says I picked the highest level from a monitor in
17 an area, I don't think you need to be an expert to go look
18 at a series of numbers and say this appears to be the
19 highest number. Now, if somebody wants to argue
20 differently, that's fine too, but what it's really trying to
21 do is pull this all together. We put a lot of it in his
22 testimony. We asked a number of these questions there, but
23 in a number of places, you know, it's hard for someone else
24 to go back and to ask an expert, you know, to ask one of the
25 experts who's looking at -- when you're talking about

Page 38

1 backgrounds and so forth, you certainly can't expect them to
2 have to go through and try to do all of this. What it's
3 trying to do is put in one place that they can say, look,
4 I'm not the one who's going to decide whether -- and you
5 decide for yourself whether you agree that these background
6 analyses and statements are correct. What I -- what we want
7 them to be able to say is simply, look, here's a basis to
8 say that if you pull everything together, the backgrounds
9 may be higher than what Mr. Sullivan was saying; or, if you
10 use his analysis and apply it and look at what it is, it
11 looks like he should have been coming out with different
12 numbers. And if I look at that, then that says to me that
13 there's a basis to look for different things.
14 You're still going to make the determination as to
15 whether or not you agree with this analysis and argument.
16 This is really trying to put it all together in one place so
17 that it's easy for someone else to just be able to use and
18 to say, look, rather than try to find 20 different days of
19 testimony -- maybe not 20, it felt like 20 -- four or five
20 days of testimony and exhibits and all these kinds of
21 things, it's putting it all together in one place and saying
22 here's what we did and here's what came out and here, if you
23 look at what he said he did and how he got there and how he
24 went from number to number to number.
25 MR. GROSSMAN: All right.

Page 39

1 MS. CORDRY: And I actually see the version --
2 MR. GROSSMAN: I mean, I think, even in terms of
3 your language here, what I -- I view it as more of a, more
4 of an analysis and argument --
5 MS. CORDRY: Yes. Yes.
6 MR. GROSSMAN: -- than a summary really. And
7 although I think that you've demonstrated a remarkable
8 breadth of talents in various areas here, you're not
9 qualified, or have not been qualified as an expert in
10 meteorology, which is what is the topic of the piece. I
11 think it might have had more direct evidentiary appeal or
12 value if it had come in through Dr. Cole rather than as your
13 summary, because he's your expert in meteorology, but I
14 don't have any reason not to receive it as part of your
15 argument.
16 MS. CORDRY: Right.
17 MR. GROSSMAN: So I consider it kind of an advance
18 on the opposition's argument, and I would receive it as
19 such, and in some sense, it's advantageous to the applicant
20 to have an advance on their argument. So I'm not saying you
21 have to send them a thank you note, but I don't think that I
22 would reject it because I receive it as argument, which is
23 what it is --
24 MS. CORDRY: Right.
25 MR. GROSSMAN: -- analysis and argument.

Page 40

1 MS. CORDRY: Right. And --
2 MR. GOECKE: And if I may, Mr. Grossman --
3 MR. GROSSMAN: Yes.
4 MR. GOECKE: -- we have no objection to them
5 submitting this as argument, but I thought the issue today
6 was whether or not Drs. Breyse and Jison would be able to
7 testify about that, and that is, that is where our objection
8 lies.
9 MR. GROSSMAN: Yes. I think that's more
10 problematic because I would not want, Ms. Cordry --
11 MS. CORDRY: I'm sorry.
12 MR. GROSSMAN: -- I wouldn't want the additional
13 experts relying on your summary of Mr. Sullivan's testimony
14 as part of their expert testimony because I think that that
15 could be problematic. I think they should rely on a review
16 of the testimony and so on, not your own view of the
17 testimony as you've summarized it. So I think, to that
18 extent, that that's a fair point, but I would receive your
19 summary as part of the opposition's argument.
20 MS. CORDRY: And let me just say that I thought I
21 had printed out the most recent version. I see this one
22 still has one or two errors in it. I will print it out, and
23 we will have the actual correct copy. No, this -- I'll get
24 the final version submitted. Just --
25 MR. GROSSMAN: Okay.

Page 41

1 MS. CORDRY: -- this one that I had submitted
2 before has a couple of question marks in it in places where
3 I needed to fill in exhibit numbers. I must have printed
4 off the incorrect version, but --
5 MR. GROSSMAN: Okay.
6 MR. SILVERMAN: I just want to say that lawyers do
7 this all the time and they don't reveal it to the other
8 side. That's been my experience.
9 MR. GROSSMAN: Don't reveal? I'm sorry. I didn't
10 catch that.
11 MR. SILVERMAN: The kind of summary that
12 Ms. Cordry did.
13 MR. GROSSMAN: Right, and I, so --
14 MR. SILVERMAN: Yes, we all do that.
15 MR. GROSSMAN: Okay. All right then, so I think
16 that's all the preliminary matters that I have. Any other
17 preliminary matters? Shall we start with the applicant?
18 Did you have any other preliminary matters?
19 MS. ADELMAN: Mr. Grossman, Ms. Duckett is here if
20 you wanted to ask her about closing arguments.
21 MR. GROSSMAN: All right. Hi, Ms. Duckett.
22 Welcome --
23 MS. DUCKETT: Pardon me? I --
24 MR. GROSSMAN: Ms. Duckett, on behalf of
25 Kensington View Civic Association, are you going to want to

1 make an oral closing argument?

2 MS. DUCKETT: No.

3 MR. GROSSMAN: No? Okay. All right. We have
4 discussed and the parties can fill you in on the, how we're
5 going to handle closing briefs and so on, okay? All right.
6 Any other preliminary matters? Ms. Rosenfeld.

7 MS. ROSENFELD: Yes, a couple of things. With
8 respect to rebuttal, the applicant has indicated that they
9 expect to call Mr. Guckert and Mr. Sullivan. Do you have
10 any other idea what other rebuttal witnesses you might be
11 planning so I know which of our witnesses should be here?

12 MS. HARRIS: We don't, but part of that is because
13 you haven't completed your case. So depending on what we
14 hear through the completion of your case may influence that,
15 obviously.

16 MS. ROSENFELD: Okay. And the other, Cindy
17 Holland, who sent an e-mail in several days ago, I've gone
18 through her curriculum vitae that she attached, and I just
19 want everybody to be aware that I will move to qualify her
20 as an expert witness. I will --

21 MR. GROSSMAN: Is that --

22 MS. ROSENFELD: -- voir dire her. She's not our
23 witness, she's not a Kensington Heights witness, and I don't
24 believe she's being called by the Coalition, but I will seek
25 to admit her, move for her admission as an expert.

1 MR. GROSSMAN: All right. It's unusual for us to
2 have somebody show up and seek to qualify themselves as an
3 expert individually, not on behalf of a group, so on, but I
4 don't see any reason why that can't be done given, you know,
5 if the statements are made far enough in advance to give the
6 other side the opportunity, number one, to review
7 qualifications and, number two, to see what the opinions are
8 that are being offered. Now, that's the second part. She
9 did submit her qualifications, but what her opinions are I'm
10 not quite sure yet from what she sent. What about that
11 aspect of it?

12 MS. ROSENFELD: I don't know that she has any
13 written reports or written analysis.

14 MR. GROSSMAN: Yes. I mean, the --

15 MS. ROSENFELD: I don't expect her to -- if she
16 has them, I'm unaware of them.

17 MR. GROSSMAN: Here's the thing: The statute
18 requires, when there's a group or association offering
19 witnesses, they do have to file certain things in advance,
20 that 10-day rule, and -- to give the other side the
21 opportunity to prepare. But it also contains very clear
22 language that an individual showing up can testify without
23 submitting anything. And so the question is, what happens
24 if that individual is an expert, or submitting themselves as
25 an expert, and what's the fair way to handle that? I'd say,

1 under the statute I can't compel it because of the way the
2 statute is written, but I think it would be more fair if she
3 submitted in advance a statement of what she intends to
4 opine if she's appearing as an expert.

5 So I would ask, if you're communicating with her
6 in that sense, which I think you're suggesting you are, that
7 you ask her to do so. I'm not requiring it because, as I
8 say, the statute has clear language that an individual can
9 come in and testify --

10 MS. ROSENFELD: Okay.

11 MR. GROSSMAN: -- I don't think it contemplated
12 individuals coming in and testifying as experts. So that's
13 my kind of compromise on that.

14 MS. HARRIS: Two questions with regard to that.

15 What is she -- in what area is she an expert?

16 MR. GROSSMAN: Real estate values.

17 MS. ROSENFELD: On real estate valuation.

18 MS. HARRIS: Okay.

19 MS. ROSENFELD: Basically, looking at her
20 qualifications, they really mirror those of Mr. Cronyn in
21 terms of her, certainly her professional background and
22 training, to some degree.

23 MR. GROSSMAN: Right. Please make sure that she
24 includes -- I suggested in an e-mail, and I sent the
25 applicant a copy of the e-mail, that -- she initially

1 e-mailed me without sending copies to the other side. And
2 so anything, any communication with me has to go to all of
3 the participants in the hearing so that -- to ensure
4 fairness. So I said that to her, and then her last e-mail
5 she did include, she did cc it to the other side. Now ask
6 her to send, make sure she sends whatever communications she
7 has --

8 MS. ROSENFELD: Certainly, which brings up another
9 question, though, which is the 10-day rule, because I would
10 expect her to -- at the moment, I expect her to be present
11 on the 13th to testify --

12 MR. GROSSMAN: Okay.

13 MS. ROSENFELD: -- assuming we're done with
14 Dr. Breyse and Ms. Savage.

15 MR. GROSSMAN: Well, when you leave here today,
16 since we -- as I said, I can't require it -- but when you
17 leave here today, would you ask that she submit something,
18 e-mail this afternoon --

19 MS. ROSENFELD: Okay.

20 MR. GROSSMAN: -- outlining the nature of, or
21 summarizing what her opinion is, so at least to that extent,
22 the applicant has an opportunity to review that in advance?
23 Would that be --

24 MS. HARRIS: That's acceptable, but --

25 MR. GROSSMAN: All right.

Page 46

1 MS. HARRIS: -- and to the extent then we review
2 that and there's any type of information that we may want to
3 present on cross, how does that apply in terms of the 10-day
4 rule?
5 MR. GROSSMAN: Well, you may not have the 10 days,
6 but the practical fact is that the statute for individuals
7 doesn't give you the 10 days. They can show up and testify,
8 as a practical matter, whenever they can be fit into the
9 calendar. That's what the statute essentially says -- the
10 zoning ordinance, I'm talking about.
11 MS. HARRIS: Right. But so my question is,
12 though, if we have any evidence that we want to submit in
13 connection with our cross of her, I assume that we can
14 prepare it after we see what she's going to say and then
15 just submit it during the hearing.
16 MR. GROSSMAN: Oh, yes. Yes, and I think that --
17 MS. HARRIS: Okay.
18 MR. GROSSMAN: -- right, certainly. You wouldn't
19 have to give advance notice of that --
20 MS. HARRIS: Right.
21 MR. GROSSMAN: -- because under the circumstances
22 you're only getting a few days, in any event.
23 MS. HARRIS: Okay. I just wanted to clarify that.
24 Thank you.
25 MR. GROSSMAN: Okay. Any other preliminary

Page 47

1 matters?
2 MS. ROSENFELD: No. Oh, one more.
3 MR. GROSSMAN: All right.
4 MS. ROSENFELD: I don't believe Ms. Cordry's
5 résumé is in the record, and I do want to introduce that as
6 an exhibit.
7 MR. GROSSMAN: All right.
8 MS. HARRIS: But Ms. Cordry, I just want to
9 clarify, is not an expert on anything that --
10 MS. ROSENFELD: She's not an expert.
11 MR. GROSSMAN: She hasn't testified as an expert.
12 MS. ROSENFELD: She hasn't testified as an expert,
13 but to the extent that it goes to the weight of her
14 testimony on any of these issues, I do want it.
15 MR. GROSSMAN: Thank you. So this will be Exhibit
16 438, résumé of Karen Cordry.
17 (Exhibit No. 438 was marked
18 for identification.)
19 MS. ROSENFELD: And that's all of my
20 preliminaries. Thank you.
21 MR. GROSSMAN: All right. Ms. Adelman, did you
22 have any preliminary matters?
23 MS. ADELMAN: Well, I'm just, I have three
24 individual witnesses, and I'm just wondering how I'm going
25 to work them in.

Page 48

1 MS. ROSENFELD: If --
2 MR. GROSSMAN: Well, we'll try to work them in
3 after we complete the expert. I mean, I want to make sure
4 that we get -- Dr. Breyse has been sitting here through our
5 exciting --
6 MS. ADELMAN: Exactly.
7 MR. GROSSMAN: -- preliminary matters, but
8 we'll --
9 MS. ADELMAN: Yes, right. So I was hoping for one
10 today and two on the 13th, but I guess we'll have to see.
11 MR. GROSSMAN: Do you want to see how
12 Dr. Breyse's testimony goes --
13 MS. ADELMAN: Yes.
14 MR. GROSSMAN: -- and how long that takes and so
15 on, and then we'll --
16 MS. ADELMAN: Yes, sir.
17 MR. GROSSMAN: Okay. All right. Ms. Duckett, did
18 you have any preliminary matters?
19 MS. DUCKETT: No, sir.
20 MR. GROSSMAN: Okay. All right. Then I guess
21 we're ready to roll, as they say, slow roll. Okay. Then
22 your first witness?
23 MS. CORDRY: Dr. Breyse.
24 MR. GROSSMAN: Would you be so kind to --
25 MR. BREYSSE: Can I get some water?

Page 49

1 MR. GROSSMAN: Water? Yes. You have some?
2 MR. BREYSSE: I haven't started, and I'm already
3 anticipating being thirsty.
4 MR. GROSSMAN: I don't know if we let experts have
5 water. I'm not sure that that's a --
6 MR. BREYSSE: If it's red wine, it might be
7 better.
8 MR. GROSSMAN: Would you state your full name and
9 address for the record, please?
10 MR. BREYSSE: My name is Patrick Nolan Breyse,
11 and I live at 11963 Harford Road, Glen Arm, Maryland 21057.
12 MR. GROSSMAN: Would you raise your right hand,
13 please?
14 (Witness sworn.)
15 MR. GROSSMAN: All right. You may proceed.
16 MS. CORDRY: All right. I would like to state for
17 the record, I grew up in Glen Arm, Maryland, but I did not
18 know Dr. Breyse until we started this case.
19 MR. GROSSMAN: I don't even think there's a
20 requirement that you not know him, but that's okay.
21 MS. CORDRY: All right.
22 DIRECT EXAMINATION
23 BY MS. CORDRY:
24 Q Can you state your business address?
25 A 650 North Wolfe Street, Johns Hopkins University

Page 50

1 Bloomberg School of Public Health, Baltimore, Maryland
2 21205.
3 Q Okay. And I'd like to start with asking you to
4 describe your education and experience.
5 MS. CORDRY: And this is already in the record,
6 but I have provided copies.
7 MR. GROSSMAN: Exhibit 88C --
8 MS. CORDRY: It's --
9 MR. GROSSMAN: -- Dr. Breyse's --
10 MS. CORDRY: Right.
11 MR. GROSSMAN: -- curriculum vitae.
12 MS. CORDRY: Right, either 80(c) or 88(c). I
13 believe we did this twice. Do you have the copy of it
14 there?
15 MR. GROSSMAN: I have 88(c) here.
16 MS. CORDRY: Okay, same difference.
17 THE WITNESS: So I have a high school degree from
18 Blanchet High School in Seattle, Washington, where I grew
19 up, and a B.S. in environmental sciences from Washington
20 State University. In 1978 I moved to Baltimore to get a
21 master's degree in -- focusing on occupational safety and
22 health at the Johns Hopkins Bloomberg School of Public
23 Health. I intended to stay here for one year but managed to
24 stay for my doctoral training, and I completed my Ph.D. in
25 the environmental health engineering program with a focus on

Page 51

1 occupational safety and health and air pollution. And after
2 completing my Ph.D., I did a year of study as a postdoctoral
3 fellow at the British Institute for Occupational Medicine in
4 Edinburgh, Scotland, at which time I returned to Johns
5 Hopkins as a, as an assistant professor. And so since I've
6 been on the faculty since 1986, I've risen through the ranks
7 from assistant professor to associate professor, and now I'm
8 a full professor.
9 BY MS. CORDRY:
10 Q Okay. And you originally received your degree as
11 an, excuse me, as an industrial hygienist, I believe. Can
12 you describe a little bit about what kind of work an
13 industrial hygienist does?
14 A So an industrial hygienist is a person who's
15 trained to evaluate the safety and health factors in the
16 workplace. This was in a period of time right after the
17 Occupational Safety and Health Act was passed in the 1970s.
18 So there's a growth in the need for people with specialized
19 training on how to monitor the air in the workplace, how to
20 set safety hazards in the workplace, how to help employers
21 comply with the new Occupational Safety and Health Act, and
22 it was an exciting period of time. And I began my career as
23 an industrial hygienist, looking at factors in the
24 workplace, focusing on air pollution, and then later in my
25 career, as funding opportunities and the air pollution began

Page 52

1 to grow, I started applying my, my, the same tools to
2 assessing indoor and outdoor air quality outside the
3 workplace.
4 Q Okay. At Johns Hopkins, can you tell us where
5 precisely, what department you're employed at?
6 A So I'm in the Department of Environmental Health
7 Sciences.
8 Q Okay. And a particular division there?
9 A Well, we're actually in the process of
10 reorganizing ourselves, but we have a new department chair,
11 and -- but I'm currently in the Division of Environmental
12 Health Engineering.
13 Q Okay. And what does that division deal with?
14 A So in the -- the roots of the division were back,
15 historically, there was a discipline called sanitary
16 engineering, and sanitary engineers dealt with a range of
17 things, including air quality and sanitation issues with
18 water supplies, wastewater disposal. And so the division
19 used to have a lot of engineers with sanitary engineering
20 training, but as we've evolved over time, Environmental
21 Health Engineering has two, at Johns Hopkins Bloomberg
22 School of Public Health, has two major focuses: there's a
23 group of us that deal with air pollution issues, both in the
24 workplace and not in the workplace, and people who deal with
25 water quality issues, both in terms of water supply and

Page 53

1 wastewater treatment.
2 Q Okay. Are there other assignments at Johns
3 Hopkins besides, that you've held, besides this position in
4 the Division of Environmental Health Engineering?
5 A Well, I've had a number of administrative
6 responsibilities. So I was the director of the division for
7 five or six years. I stepped down as director of the
8 division when the dean asked me to lead the school's
9 Appointment and Promotions Committee, which was a big job
10 and I didn't feel like I could do both; so I stepped down at
11 that. I've led a number of centers. I participated in the
12 Center of Leadership. We have a Center for Childhood Asthma
13 in the Urban Environment where I'm the co-director of the
14 center. I've led other grants and program projects and had
15 other committees that I've served on.
16 Q Okay. And I see on your résumé you're listed as a
17 professor of medicine and a professor of chemical and
18 biomolecular engineering. Are those separate degrees, or
19 are those --
20 A No. At -- you know, when you collaborate with
21 faculty in other divisions of the university, other parts of
22 the university and you get involved in their academic
23 programs, it's not uncommon for them to offer you a joint
24 appointment. So I have a joint appointment in the School of
25 Engineering because I'm doing a lot of work that's

Page 54

1 engineering-related, and I have students that I co-mentor
2 with faculty in the School of Engineering, and I also do a
3 lot of work with faculty in the School of Medicine,
4 particularly in this case the Division of Pulmonary and
5 Critical Care Medicine, and as a consequence, I've went
6 through their kind of process for assigning kind of faculty
7 appointments. And I'm happy to say I have joint
8 appointments in those two other parts of the university as
9 well, but my primary appointment is in the School of Public
10 Health in the Department of Environmental Health Sciences.
11 Q And can you describe briefly the, generally, the
12 research areas you were working in at Johns Hopkins over the
13 last 10 years, let's say?
14 A So I've specialized in the last 10 years on indoor
15 and outdoor air quality and health both to children and
16 adults --
17 Q Okay.
18 A -- and in the United States and around the world.
19 So I have a number of studies globally. You mentioned
20 China. We do air quality studies in China as well as Peru
21 and Mongolia, parts of the Caribbean, in Baltimore City, in
22 Yakima, Washington, in Appalachia. So we have studies
23 around the, around the country and around the world.
24 Q Do you deal with determination of emissions and
25 exposures, risk levels, those kinds of things?

Page 55

1 A So my major contribution to the large body of
2 research is, is that I provide expertise on how to measure
3 what people are exposed to, and sometimes you model it,
4 sometimes you measure it. So there's ways to directly
5 measure exposure, there's ways to estimate what people are
6 exposed to, and then you use that information, along with
7 somebody who does a health assessment, to try and make
8 decisions about whether there's a relationship between what
9 people are exposed to and what sort of health you might be
10 investigating, whether it's childhood asthma or some more
11 research, recent research on adults with chronic obstructive
12 pulmonary disease. And so we're interested in how does air
13 pollution modify the morbidity amongst childhood asthmatics,
14 how does air pollution affect whether someone becomes an
15 asthmatic or not, how does air pollution make COPD worse or
16 not in a person who has that disease.
17 Q Okay. Now, we've provided your entire CV. So
18 we're not going to go through this line by line since it's
19 23 pages long, but can you tell us how many scientific
20 articles you've been listed as an author on on your CV?
21 A Oh, currently somewhere around 180. It might be
22 181, 182.
23 Q Okay. And can you estimate how many of those deal
24 with the topic of health effects resulting from exposure to
25 pollutions relating to vehicular emissions?

Page 56

1 A It's hard to put an exact number. Maybe in the
2 last, you know, four or five years, probably 20, 20 or so
3 publications that related to that in some way or another.
4 Q Okay. And in addition to presenting your own
5 studies, do you have a role in your various positions in
6 reviewing papers prepared by others?
7 A So I review other people's works in a number of
8 venues. Right? So I certainly review papers for journals.
9 Right? So the point of the realm for someone like myself is
10 publishing something called a peer-review journal, and it
11 only works if other people agree to peer review other
12 people's work. So I review, you know, five or six articles
13 a year. I get asked to review a lot more but that's about
14 all my time can bear. I review grant proposals to do
15 research that are based on other people's kind of assessment
16 of the science, as well, for the EPA, for the National
17 Academy of Sciences, for the National Science Foundation, as
18 well as other kind of international research bodies as well.
19 So there's lots of places where I review people's work and
20 comment on its --
21 Q Okay. And I --
22 A -- on its strengths and weaknesses.
23 Q And I would note that's on page 5 and 6 of your
24 CV. Are you a member of professional societies?
25 A I'm a member of a handful of professional

Page 57

1 societies. I would join more if the university would pay,
2 but unfortunately, it comes out of my, comes out of my
3 pocket. So currently I think I'm a member of the American
4 Society, I mean, the American Industrial Hygiene
5 Association, the American Conference of Governmental
6 Industrial Hygienists. I'm a member of the Society for
7 Exposure Science and Environmental Epidemiology, and I'm a
8 member of the Environmental Epidemiology Society; I can't
9 remember the exact name of it.
10 Q Okay. Have you had a leadership role in any of
11 those societies?
12 A Oh, I was on the board of directors for the
13 American Conference of Governmental Industrial Hygienists,
14 and I served as the chair of the board of directors for a
15 one-year period for that organization.
16 Q And have you served on advisory panels to
17 government agencies?
18 A Numerous advisory panels. It's not uncommon to
19 help the government through the National Academy of
20 Sciences, and I've served on a number of National Academy of
21 Sciences committees. Those are, generally, pretty
22 prestigious invitations. They're a lot of work, but you
23 don't like to turn them down. And I've served on other kind
24 of ad hoc review communities. You know, for example, the
25 Department of Energy was interested in worker exposures in

Page 58

1 Hanford, Washington, in the tank farms, and I was on an
2 advisory committee, assessing kind of the practices out in
3 the state of Washington for a number of years.
4 Q Okay. And I would note that those appear to be
5 listed at page 3 and 4 on your CV. Okay. And have you been
6 retained as a consultant with respect to your scientific
7 expertise?
8 A On occasion. I don't do a lot of consulting
9 because my full-time job keeps me too busy, and so I don't
10 get into too much relationship maintenance deficit with my
11 wife, I don't do a lot of outside stuff, but I do do some
12 consulting.
13 Q Okay. And I see on your CV that there's a number
14 of ones listed on pages 4 and 5, both for governmental
15 agencies and for private firms. With respect to the private
16 firms, what kind of consulting would you have done there?
17 A So I think it would vary, and what page did you
18 say those were on?
19 Q Those are on page 4.
20 MR. GROSSMAN: Refresh my memory.
21 THE WITNESS: You know, for academic purposes,
22 once you put something on your CV, it stays there forever.
23 So, you know, I've done, I've done work, for example, with
24 IBM early in my career, looking at setting up a medical
25 records system program. I did work with Baltimore

Page 59

1 Gas/Electric, helping them look at power lines, exposures to
2 people who live alongside power lines. I gave some advice
3 to Johnson & Johnson about the health concerns possibly of
4 some of the products that they're putting in people's homes.
5 They're worried about whether the air fresheners, for
6 example, with the perfumes and stuff in it, might be bad for
7 kids with asthma. So we talked to them about it. I've
8 consulted with the fraternal order of police on health
9 effects of a siting of a police facility next to a hazardous
10 waste site. So those are, those are some of the types of
11 things that I would do --
12 BY MS. CORDRY:
13 Q Okay.
14 A -- over the years, but this represents, you know,
15 20 or 30 years' worth of potential things.
16 Q Have you been retained as an expert to participate
17 in prior litigation?
18 A You know, I've provided advice on a couple
19 occasions for legal lawsuits. I've never testified on
20 behalf of anybody in a legal lawsuit. I've testified at a,
21 at a zoning hearing before in Harford County, Maryland, on
22 one occasion, but other than that, I haven't done a lot of
23 expert testimony.
24 Q Have you been deposed?
25 A I've been deposed on a couple of occasions.

Page 60

1 Q Okay. And were those in connection with these
2 cases where you were retained as an expert?
3 A One was, yes, and one was not. One was, when I
4 served as the chairman of the American Conference of
5 Governmental Industrial Hygienists, the agency was sued by a
6 number of industries about overstepping their boundaries in
7 terms of creating standards for workers that they thought
8 were not fair, and as part of those lawsuits, I was deposed,
9 and I also testified in Congress about that.
10 Q Okay. All right.
11 MS. CORDRY: I'd like to present Dr. Breyse as an
12 expert in the areas of industrial hygiene, epidemiology
13 work, generally and specifically with respect to health
14 issues relating to exposures to --
15 MR. GROSSMAN: Hold on. Slow down.
16 MS. CORDRY: Sorry.
17 MR. GROSSMAN: Industrial hygiene?
18 MS. CORDRY: Epidemiology generally --
19 MR. GROSSMAN: Hold on.
20 MS. CORDRY: -- and specifically --
21 MR. GROSSMAN: Epidemiology.
22 MS. CORDRY: -- with respect to health issues
23 relating to exposures to vehicular emissions, and also in
24 the review and evaluation of scientific studies and
25 research, including, particularly, the EPA air quality

Page 61

1 standards and the studies relating thereto.
2 MR. GOECKE: I'm sorry. Could you say the last
3 one again?
4 MS. CORDRY: The EPA National Ambient Air Quality
5 Standards and the studies relating to those standards.
6 MR. GOECKE: And I'm sorry. What is the expertise
7 on that?
8 MS. CORDRY: The expertise is in the standards
9 themselves and the kind of studies that were used to go into
10 making up those standards.
11 BY MS. CORDRY:
12 Q I guess I might ask one other question, say one
13 other question before I do that, which is, are you -- do you
14 read other literature in the area dealing with these areas
15 of air pollution and vehicular emissions, the sort of thing
16 you do in your studies and --
17 A As much as I can, but there's a mammoth volume of
18 literature on the topic, but I try to keep on it as best as
19 anybody can.
20 Q Okay.
21 MR. GROSSMAN: So if I understand it, you're
22 offering Dr. Breyse as an expert in industrial hygiene,
23 epidemiology regarding health issues as to vehicular
24 emissions, and the standards --
25 MS. CORDRY: And generally, with respect to review

Page 62

1 and evaluation of scientific studies and research.
2 MR. GOECKE: So those two are subsets of
3 epidemiology?
4 MR. GROSSMAN: Standards for air quality --
5 MS. CORDRY: No.
6 MR. GROSSMAN: -- for setting air quality
7 standards, and review and --
8 MS. CORDRY: I would say the review is a separate
9 part that -- as a person who does peer reviews, who
10 evaluates proposals, so that he has an expertise in
11 evaluating scientific studies, generally.
12 MR. GROSSMAN: Okay. And before I allow
13 Mr. Goecke to question you on your expertise, let me just
14 ask you a question. You've said you testified once as an
15 expert in Maryland -- in Harford County, I think you said --
16 and what was the area of expertise that you were -- I take
17 it you were admitted as an expert, you were accepted as an
18 expert by the zoning authority there?
19 THE WITNESS: Yes.
20 MR. GROSSMAN: And what was the area of expertise
21 that they certified you in?
22 THE WITNESS: It was very similar. It was --
23 there was a sand and gravel operation that wanted to expand,
24 and as part of that expansion, they wanted to change the
25 traffic patterns in terms of the trucks coming in and out.

Page 63

1 And there was an issue about increased truck traffic and air
2 pollution in the neighborhood around the sand and gravel
3 operation, and in particular, there was a school that would
4 have been potentially impacted. And so my testimony was on
5 the health impacts of the changes in traffic pattern that
6 might be impacting the neighborhood and particularly the
7 kids at the school.
8 MR. GROSSMAN: Okay. All right. Mr. Goecke.
9 MR. GOECKE: Thank you. Dr. Breyse, you
10 testified that sometimes you will do air modeling to
11 evaluate a situation. Talk, tell us about your background
12 in air modeling. What training have you had? What
13 experience?
14 THE WITNESS: Okay. So let me qualify that a
15 little bit. I usually have my students do the air quality
16 modeling for me. I don't run the models myself anymore, but
17 we, we often publish --
18 MR. GROSSMAN: Did you say you don't run the
19 models yourself anymore?
20 THE WITNESS: Directly myself, right.
21 MR. GROSSMAN: You said anymore?
22 THE WITNESS: Yeah.
23 MR. GROSSMAN: But then you did at one point?
24 THE WITNESS: At one point, a long time ago. So
25 in research studies we often want to look at, you know, what

Page 64

1 the air pollution might be in an area where there's no
2 measurements. And so, for example, we published a paper
3 last year in the Journal of Environmental Health
4 Perspectives where we looked at the air quality data and we
5 modeled what the exposures would be across the whole country
6 and we overlaid that with the health data we might predict
7 from looking at risk factors for health. And then we
8 published a paper, looking at the assessment of the health
9 impact of ozone across the country if the EPA met different
10 levels of -- set the standard at different levels, trying to
11 imply kind of where the health benefits would exist and how
12 big those health benefits would be. So that was an example
13 of a modeling experiment.
14 So, in addition, we're doing some research now
15 where we're looking at the effect of air pollution and
16 climate change. And so we're modeling the air pollution
17 over time, and we're modeling the heat, the changes in
18 temperature over time, and we're trying to estimate whether
19 we think there's going to be a greater impact from air
20 pollution associated with changes in temperatures associated
21 with climate change.
22 MR. GOECKE: And is that on a regional basis, a --
23 THE WITNESS: Yeah, it's usually on a regional
24 basis, a larger-scale basis. These are, these are national
25 models. In another case, in Nepal we're looking at

Page 65

1 emissions from homes that burn biomass, and we're trying to
2 estimate how much black carbon is being emitted as a climate
3 change agent. And we're using satellite imagery to look at
4 estimates of, breach a level of pollution, and we're trying
5 to build some models that might estimate kind of more
6 broadly what the black carbon emissions might be and how
7 that might be associated with, with the climate change and
8 the changes in glaciers in Nepal.
9 MR. GOECKE: Okay. You said that your students
10 normally do the air modeling. When was the last time that
11 you performed an air modeling?
12 THE WITNESS: It's probably been 15 years.
13 MR. GOECKE: Okay. And when you were doing air
14 modeling, what training did you have that enabled you to be
15 able to do air modeling?
16 THE WITNESS: So I don't think I had any formal
17 training. Once I -- after I graduated from the program, we
18 created a course on air quality modeling that students took
19 after me, and so I certainly knew the professors that kind
20 of taught that. So it was just kind of ad hoc, catch it as
21 we can, and working with people who know the models, who
22 teach the models, and work with them. In general, it's not,
23 not that hard. There's usually a pretty good guidance and
24 criteria, and certainly, if you're using one of the EPA
25 models, you could call them up and there's always somebody

Page 66

1 there who can help you kind of with those, with that data.
2 MR. GOECKE: So you're saying air modeling is not
3 that hard?
4 THE WITNESS: You know, running the models is not
5 that hard.
6 MR. GOECKE: And what else does air modeling
7 involve besides running the models?
8 THE WITNESS: Well, there's a lot to air modeling
9 beyond that. So there's all sorts of assumptions about
10 inputs that have to go into the models that you have to kind
11 of assess, you have to collect those data, but actually,
12 just kind of pushing the button and getting a number is
13 something that the software does for you at that point --
14 MR. GOECKE: Yes.
15 THE WITNESS: -- but there's a lot of data that
16 goes into creating those inputs, assessing kind of the
17 ranges and things that might be associated with different
18 models that you might be running.
19 MR. GOECKE: Yes. Did you perform or arrange to
20 have performed any air modeling for this, for this matter?
21 THE WITNESS: I did not.
22 MR. GOECKE: In terms of the advisory panels that
23 you've sat on for the National Academy of Sciences, have you
24 ever sat on a panel that determined air quality standards?
25 THE WITNESS: Yes.

Page 67

1 MR. GOECKE: And what are they?
2 THE WITNESS: That would be the ACGIH and that's
3 -- they set standards for guidelines for air quality
4 standards for the workplace.
5 MR. GOECKE: And what does ACJ stand for?
6 THE WITNESS: Well, it's like IBM now: they say
7 it doesn't stand for anything, but historically, it stood
8 for American Conference of Governmental Industrial
9 Hygienists, and they, they publish things called threshold
10 limit values --
11 MR. GOECKE: Yes.
12 THE WITNESS: -- which are the workplace
13 guidelines that most industrial hygienists used today, and
14 those were the subject of the lawsuit that I've talked about
15 before.
16 MR. GOECKE: Okay. And those threshold limit
17 values, what toxins or substances did you establish TLVs
18 for?
19 THE WITNESS: Well, when I chaired the committee,
20 when I chaired the ACGIH -- you know, every year they update
21 them, and so there's dozens that are changed every year --
22 and I served on the board of directors for 15 years, and I
23 was responsible for helping manage kind of the process that
24 reviewed and established new levels probably for, you know,
25 30 or 40 agents over that period of time.

Page 68

1 MR. GROSSMAN: What happened in the lawsuit, by
2 the way?
3 THE WITNESS: So the -- how much detail do you
4 want?
5 MR. GROSSMAN: What was the result?
6 THE WITNESS: So it was thrown out.
7 MR. GROSSMAN: Okay.
8 THE WITNESS: The lawsuit tried to establish that
9 we were a de facto FACA, federal advisory committee, and we
10 had to open all our meetings to the public and all our
11 decision making to the public, and we argued that we weren't
12 a, we weren't a federal government, even though OSHA adopts
13 the ACGIH standards all the time, that we were not a
14 government regulatory agency and that FACA did not apply,
15 and we were successful in that argument.
16 MR. GROSSMAN: I see. Okay.
17 MR. GOECKE: Have you ever played any role in the
18 EPA National Ambient Air Quality Standards setting?
19 THE WITNESS: Only in that they cite some of my
20 research.
21 MR. GOECKE: Yes. And what research have they
22 cited by you?
23 THE WITNESS: Oh, gosh, you know, I don't -- I
24 haven't done that tally. You know, if you look at some of
25 the criterias, documents that kind of come with these

Page 69

1 standards and you search for my name, you'll see it there,
2 but --
3 MR. GOECKE: Okay.
4 THE WITNESS: -- certainly some of the PM work
5 that we've done on childhood asthma and certainly some of
6 our NO2 work we've done on, on -- I know for a fact that,
7 because I looked at it this year, that the draft of the NO2
8 review that EPA is doing cites a number of our studies
9 directly --
10 MR. GOECKE: Yes.
11 THE WITNESS: -- more recently. So --
12 MR. GOECKE: So it's your understanding that the
13 EPA has considered some of your studies as part of their
14 process to set National Ambient Air Quality Standards.
15 THE WITNESS: Yes. In fact, our ozone study was
16 done purposefully to influence the EPA's reconsidering the
17 ozone standards. That was a study that was funded by the
18 American Thoracic Society, and they were interested in kind
19 of getting an evidence base to support lower ozone
20 standards. And so that study we did quite quickly with the
21 purpose to get it in the record in time to influence the EPA
22 decision making for ozone.
23 MR. GOECKE: For their current decision-making
24 process or --
25 THE WITNESS: Yeah.

Page 70

1 MR. GOECKE: -- standards that have already been
2 set?
3 THE WITNESS: Their current one.
4 MR. GOECKE: Okay. And this study was published
5 in a peer-reviewed article, and which one is that?
6 THE WITNESS: I don't think that's in that, that
7 list of stuff -- oh, on my CV?
8 MR. GOECKE: Yes.
9 THE WITNESS: The first author is Berman. I'm
10 looking for it.
11 MR. GOECKE: Okay. Berman, Fann, Hollingsworth,
12 Pinkerton?
13 THE WITNESS: What number is that?
14 MR. GOECKE: Number 10 on page 7 of your CV.
15 THE WITNESS: Sounds like it, yes. So that's
16 actually -- so I don't know if you know, kind of, nowadays
17 with electronic publication, before it comes out like in a
18 print volume with a page number, they give it this kind of
19 electronic kind of designation. So even though there's not
20 a page number -- it has a page number and volume now, but at
21 that, at the time I did this, it did not --
22 MR. GOECKE: Okay.
23 THE WITNESS: -- but it's still considered
24 published at that point.
25 MR. GOECKE: Okay. Have you ever done air

Page 71

1 modeling of a gas station before?
2 THE WITNESS: No.
3 MR. GOECKE: And, also, if you could point out for
4 me the articles that you've authored or co-authored relating
5 to the health effects of exposure to vehicle emissions.
6 THE WITNESS: I believe the question I answered
7 was on traffic-related pollutants. So the Berman, the
8 Berman one would certainly be one.
9 MR. GOECKE: Okay.
10 THE WITNESS: Then No. 11, Inkyu Han: Assessment
11 of heterogeneity of metal composition of fine particulate
12 matter collected from eight U.S. counties using principal
13 component analysis.
14 MR. GOECKE: Okay.
15 THE WITNESS: The -- No. 15, Breyse et al., on
16 the EPA particulate matter research centers. Then I
17 participated in a number of studies looking at the
18 biological impact, not in humans, but in cell and animal
19 models. An example of that would be Publication No. 17,
20 where, where I collected particulate matter from Baltimore
21 City and they exposed it to endothelial cells. In this
22 case, we're looking at kind of the mechanism through which
23 particles might kind of lead to or increase cardiovascular
24 risk. We know that they cause and increase cardiovascular
25 risk; we're not quite sure why, and there's a lot of basic

Page 72

1 biology that I collaborated on. So there's a number of
2 studies related to that.
3 Then I think No. 21 is the same thing, in
4 particular, the link between -- inhaling particles and
5 cardiovascular disease is a curious link because it's
6 obvious kind of how particles might affect the lungs but how
7 do, how do particles affect the heart? And so there's a lot
8 of basic biology research looking at that.
9 MR. GOECKE: And that was, again, focused on
10 animal --
11 THE WITNESS: Yeah. Right, yeah.
12 MR. GOECKE: -- animal health, not human? Got
13 you.
14 MS. CORDRY: I'm sorry. Did you say animal
15 health? I thought you said you were looking at endothelial
16 tissues and everything. Were those animal tissues or human
17 tissues?
18 THE WITNESS: Those were, those were -- those two
19 studies were in animals --
20 MS. CORDRY: Okay.
21 THE WITNESS: -- animals and animal tissues.
22 MS. CORDRY: Okay. Thank you.
23 THE WITNESS: If you look at No. 29, here's an
24 example of a study where we're looking at, yeah, gene
25 expression in human airways that might be related to kind of

Page 73

1 why we see a high asthma risk to people who are exposed to
2 air pollution. So, again, that's a mechanistic study but
3 that's in, that's in humans.
4 Study No. 30 is we're looking at whether air
5 cleaners improve kind of children's health or not, and
6 certainly an air cleaner in a home is going to lower
7 pollution from a variety of sources including that comes
8 from outdoors, which is going to include ambient particulate
9 matter. And then Study 32 is we're looking at indoor
10 particulate matter and asthma morbidity in children, right,
11 and the same argument applies there in that particles inside
12 a home are going to be a mixture of those particles that
13 come from outside, and most particles are generated inside.
14 MR. GOECKE: So these studies focus on health
15 effects from vehicular emissions to the extent that there's
16 vehicular emissions contaminating the air, but they weren't
17 focused specifically on the health effects from vehicular
18 emissions?
19 THE WITNESS: Right. They're focusing on
20 pollutants that are associated with vehicle emissions.
21 MR. GOECKE: Yes.
22 THE WITNESS: So when you're in an inner city like
23 Baltimore, for example, if you're measuring PM2.5 and you're
24 looking at impacts of PM2.5 in Baltimore City, you're
25 essentially looking at traffic-driven kind of pollution.

Page 74

1 That's not true in every community but certainly in a
2 community like Baltimore. The predominant source of PM2.5
3 in most of the neighborhoods that we're in are going to be
4 traffic-related.
5 MR. GOECKE: Is that where these articles focused
6 on, Baltimore?
7 THE WITNESS: Yeah. And so here's, if you look at
8 -- No. 37 is an interesting article. This is very
9 traffic-specific. And so there's a lot of interest in
10 trying to understand, based on some research in Southern
11 California, what the health impacts of living next to a lot
12 of traffic is. So it's hard to tease out in a city like
13 Baltimore because there's streets everywhere. Right? And
14 so it's hard to say kind of what you're next to when there's
15 this grid of streets with different vehicle traffic
16 associated with them. But we found this neighborhood in
17 Peru which was very interesting, because this is a large, we
18 can call it, peri-urban area on the edges of Lima that has
19 one road. And I've been there. It's literally one road.
20 It's a big, like, five-lane road, and they have a lot of
21 vehicle traffic on that road, and so it's a perfect place to
22 kind of study what being close to the road means because
23 there's no other traffic around there. Now, there's,
24 there's -- it's a dry area; so there's a lot of the larger
25 particles, but the main source of small particles is going

Page 75

1 to be the traffic, and we've shown that because we've
2 measured a pollutant called black carbon, and when you look
3 at how the black carbon, which is coming out of tailpipes,
4 is closer to the road than farther from the road, in this
5 paper we showed that the asthma incidence is a lot higher
6 closer to the road than farther to the road. And so this
7 study got a lot of press, got a lot of interest because of
8 the fact that it's a very unique setting to isolate this.
9 Studies in LA can look at kind of what it's like being next
10 to a major freeway, but teasing out, if you're next to a
11 major freeway, what other roads you might be exposed to are
12 a little bit more challenging.
13 So there's a large body of literature looking at
14 traffic-related pollutant and being close to the road or far
15 from the road health effects. It's pretty compelling that
16 there's concern about being close to the roads, but it's
17 hard to tease out exactly what kind of an exposure response
18 might be because of this complexity, but this is a situation
19 that we're very excited about following up on. So that
20 would be one example of a study that focuses exactly and
21 specifically on roadway exposures associated with mobile
22 source, as we'd call it.
23 So, and in No. 38 --
24 MS. CORDRY: It's all right. It's all right. I
25 think --

Page 76

1 THE WITNESS: Okay.
2 MR. GOECKE: Mr. Grossman, I have no further
3 questions and no objection to his submission as an expert
4 witness in those areas.
5 MR. GROSSMAN: All right. Anybody else have
6 questions, other parties?
7 (No audible response.)
8 MR. GROSSMAN: Okay. I accept Dr. Breyse as an
9 expert in -- and you can stop me if I get this wrong --
10 industrial hygiene, epidemiology regarding health issues
11 from vehicular emissions, as well as establishment and
12 measurement of air quality standards and the evaluation of
13 scientific studies and methodologies.
14 MS. CORDRY: Okay.
15 MR. GROSSMAN: Is that sufficient?
16 MS. CORDRY: Right. I think the epidemiology was
17 not necessarily clearly, you'll see from his résumé, just
18 specifically with respect to vehicular pollution. That was
19 specifically of the more general area of epidemiology, and
20 so --
21 MR. GROSSMAN: All right.
22 THE WITNESS: Mr. Hearing Examiner --
23 MR. GROSSMAN: Yes.
24 THE WITNESS: -- can I add something to that? I
25 would put exposure science in there as kind of a rubric. So

Page 77

1 I really consider myself an exposure scientist who works on
2 health effect studies.
3 MR. GROSSMAN: All right. Well, all right, you
4 weren't offered as an expert in that, but I suspect that --
5 MS. CORDRY: I'm happy to offer him as that --
6 THE WITNESS: I'm sorry. I didn't know if --
7 MS. CORDRY: -- if that's the best way he likes to
8 characterize it.
9 MR. GROSSMAN: So --
10 MS. CORDRY: He's the expert in what he's an
11 expert in. I will say that.
12 MR. GROSSMAN: Exposure science, and now I have to
13 give Mr. Goecke an opportunity to further question you in
14 that --
15 THE WITNESS: That's the new buzz word.
16 MR. GROSSMAN: It's like sustainability is the new
17 buzz word in --
18 THE WITNESS: Yeah.
19 MR. GROSSMAN: -- well, it's not so new anymore,
20 in land use things. But in any event --
21 MR. GOECKE: Can you define exposure science for
22 us?
23 THE WITNESS: So, you know, exposure assessment is
24 a process, and there's lots of scientific steps in that
25 process. So it's the sciences underpinning the whole

Page 78

1 process of what we call exposure assessment. So exposure
2 assessment is, as I mentioned before, is, in the health
3 effect studies, the part of the process at which you decide
4 what and -- to what people are exposed to, how much, for
5 what frequency, for what magnitude and what duration are you
6 exposed to. And it applies to air pollution, water
7 pollution. It applies to indoor environments, outdoor
8 environments. It applies to workplaces and non-workplaces.
9 MR. GOECKE: That's fine.
10 MR. GROSSMAN: Anybody else have any further
11 questions regarding exposure science?
12 MR. SILVERMAN: No, sir.
13 MS. ADELMAN: No, sir.
14 MR. GROSSMAN: All right. So the modified
15 expertise of Dr. Breyse is industrial hygiene, epidemiology
16 and health issues from vehicular emissions, and
17 establishment and measurement of air quality standards and
18 evaluation of scientific studies and methodology, and
19 exposure science. And you are accepted as an expert as
20 such.
21 THE WITNESS: Thank you.
22 BY MS. CORDRY:
23 Q Okay. In terms of your, now the substantive part
24 of your testimony here, I'd like to start with some general
25 questions about how studies are designed and conducted with

Page 79

1 respect to the effect of pollutants on human health. When
2 you are conducting a study relating to human exposures, the
3 substances that can potentially affect human health, are
4 there particular approaches that a scientist would take to
5 those?
6 A So there actually are a range of ways to kind of
7 approach that problem. Obviously you can do toxicological
8 studies, where you can take animals or parts of animals and
9 you could expose them to different pollutants and look and
10 see how the animals relate. And those are attractive
11 studies because you can usually expose animals to things at
12 a higher concentration; you can expose larger numbers of
13 them in a very controlled manner; you can sacrifice them
14 when you're done; you have access to tissues that you
15 couldn't have access to otherwise.
16 Of course, there's lots of limitations in those
17 studies as well. The limitations are animals aren't humans,
18 you often have to kind of expose them to high concentrations
19 for shorter periods of time to mimic longer -- lower
20 concentrations over longer periods of time. So there's
21 concern about what the exposure-response relationship is at.
22 But, in general, if you're looking for biological
23 plausibility and a reason to believe that something might
24 cause something else, these animal studies are crucial in
25 that, and there's probably not a single kind of given health

Page 80

1 effect, we believe, that hasn't been documented in some sort
2 of animal model or more than one species, actually. And
3 that gives us kind of credence to the biological
4 plausibility that X might cause Y.
5 There's often studies that people do,
6 clinical-type studies or controlled exposures in humans.
7 These are not as common anymore, and there's a lot of human
8 subjects problems with that. You may remember at Johns
9 Hopkins a few years ago there was a problem because there
10 was a participant who almost -- who died, actually, in a
11 controlled trial where they were giving somebody an exposure
12 to something. These type of studies are common for drugs
13 more than environmental pollutants, but there are studies
14 where you can put people in chambers and have them breathe
15 ozone and you can measure, you can very much -- you can
16 control the exposure; you can measure the change in
17 physiology of people. We ran an ozone exposure chamber for
18 years at Johns Hopkins.
19 The EPA right now is coming under fire because the
20 EPA is exposing people to diesel exhaust -- you may have
21 heard this in the news -- and of course, diesel exhaust is a
22 carcinogen. This -- herein lies kind of the ethical
23 dilemma: How can you, how can you expose people on purpose
24 to a carcinogen? Even though they argue that, you know,
25 people breathe diesel exhaust every day and we're not

Page 81

1 exposing people to any exposure levels that are any
2 different than you might get walking down the street, it
3 still kind of creates an ethical problem about exposing
4 people to something like diesel exhaust.
5 So in our studies we take pollutants and we put
6 them in, we instill them in people's noses, for example, and
7 we measure how much inflammation is produced in the nose.
8 That's an example of a human kind of study in a clinical
9 setting.
10 Then, of course, then observational epidemiology
11 is another major area that kind of -- relied heavily upon
12 and that's, that's where you look at populations of people
13 and you make judgments about the disease patterns in people,
14 then try to associate with patterns of exposure. And we
15 call that observational epidemiology because oftentimes we
16 just live with the world as it is.
17 Now, sometimes we do controlled studies in
18 epidemiology. And we've done a couple of those, for
19 example, where you can modify somebody's exposure on purpose
20 and then you look and see kind of in a clinical trial-like
21 setting, like you would for a drug, and then you look and
22 see is there a change, but you're changing, you're purposely
23 kind of changing the world to do that versus just observing
24 the world as it is. But these epidemiology studies are very
25 valuable, but on the downside they're expensive to do,

1 there's lots of biases associated with them, any one study
2 by itself is usually not compelling, you have to look at a
3 broad breadth of studies to kind of look at the whole
4 picture of things to kind of come to some conclusions, and
5 so as a result, the science in terms of epidemiology perhaps
6 moves a lot more slowly than the animal science would
7 because all these problems associated with you need large
8 numbers of people often, depending on the outcome you're
9 looking at; you need a lot of money to do a study.

10 So, for example, one of our asthma studies in kids
11 in East Baltimore which would have 100 asthmatic kids, for
12 example, would cost a billion dollars and take us five years
13 to do. Right? So it's a long time and it's a lot of money,
14 and it takes a big investment on the part of the government
15 to fund that. And so usually the science underpinning the
16 study you're trying to do must be pretty compelling to
17 generate, to track those kind of resources, but as a
18 consequence, you know, the data moves a little bit more
19 slowly.

20 Q Okay. And if you're doing these kind of
21 epidemiology studies in the real world, does that give you a
22 better or less ability to look at things where you have a
23 mixture of pollutants as opposed to how you would look at a
24 mixture if you have these, sorting out the effects, if you
25 have these other kinds of studies?

1 A Well, sure. In animal studies, you know, mixtures
2 are very straightforward: you look at Pollutant X, you look
3 at Pollutant Y, then you're exposing the animal to Pollutant
4 X and Y. So you're in a very controlled manner. You can
5 look at kind of what's X, what's Y, what's X plus Y. But in
6 the real world we're rarely ever exposed to a single thing,
7 and so teasing out multi-pollutant exposures is actually
8 kind of a challenge.

9 And so the science is trying to move, I think,
10 more aggressively towards looking at things in a more
11 holistic kind of way, but right now what our approach would
12 be is we look at Agent X and we look at Agent Y and we see
13 if there's an effect from Agent X if we control for Agent Y.
14 So independent Agent Y being there, there's Agent X. So,
15 for example, in our studies we look at NO2 in people's homes
16 and we measure the particulate matter in their home. We
17 look and see does NO2 cause a disease risk if we control for
18 NO2. So regardless of what PM people have, do we see an NO2
19 risk, and if we do, then we say that's an NO2 signal.

20 Now, the -- then we do the same thing with
21 particulate matter. So that's scientifically just fine. We
22 can do that. That helps the EPA because the EPA has to look
23 at kind of one pollutant, buy us time. But the real
24 question is, well, why -- what's worse for these kids when
25 they're exposed to both at the same time? We don't have

1 good methods for that right now, and in fact, the EPA's
2 progressively funding a lot of research now to look at
3 multiple pollutants because they want, they want to begin to
4 regulate pollutants now as a mixture. So traffic-related
5 pollutants are a perfect example because there's -- you're
6 not just exposed to NO2, you're just not exposed to carbon
7 monoxide, you're just not exposed to particular matter. We
8 can try and design studies that reduces those to their
9 individual components and provide EPA evidence to help them
10 regulate them as individual chemicals or agents, but the
11 reality is the sum of the exposures likely would be
12 different than what you'd get by just looking at each one by
13 itself and it's likely going to be higher; it's likely going
14 to be worse, kind of the mixture.

15 And so we're actually trying to move more
16 holistically to kind of these, looking at kind of these
17 mixtures of exposures. We're not quite there yet. That's
18 the next horizon to the EPA regulations. They want to begin
19 to regulate mixtures of pollutants rather than single
20 pollutants, but the scientific base has to catch up with
21 that for them to do that, which is why they're funding more
22 research to kind of come up with these joint pollution kind
23 of metrics for their studies, but we're not there yet.

24 MR. GROSSMAN: When you say that the combination
25 of the effects is likely to be worse, you're saying there's

1 kind of a reverse synergy; that is that if you would take
2 each of the individual effects alone and sum them up, it
3 wouldn't be as bad as having the combination --

4 THE WITNESS: Yes.

5 MR. GROSSMAN: -- of all of them together?

6 THE WITNESS: Yeah.

7 BY MS. CORDRY:

8 Q Can you give us an example of --

9 A So a classic example we teach is asbestos and
10 cigarettes. So if you smoke cigarettes, you have a risk of
11 getting lung cancer. We'll just call it X. Right? And if
12 you are exposed to asbestos, you have a risk of lung cancer.
13 We'll call that Y. If you do -- if you're exposed to both,
14 your lung cancer risk is a lot more than X plus Y. Right?
15 So there's a synergism between the two, and there's reason
16 to suspect, for example, that there's a synergism between
17 these pollutants, especially to have something like the
18 respiratory tract.

19 One example we're trying to explore, for example,
20 is that this whole cardiovascular disease risk, why does
21 that, why does that occur, and we know, for example, in some
22 of these animal studies, if you take cells that line your
23 respiratory tract and you put particles on them, they form a
24 pretty good barrier so the particles don't get through that
25 barrier. They do stuff to those cells, but they don't get

1 through. But now, if you put other chemicals on top of
2 that, that barrier function breaks down, and what that means
3 is, we think, is now the particles are becoming more
4 available to your systemic system to have an effect on the
5 cardiovascular system.

6 So that's a way we're trying to look at kind of
7 how do these combined effects occur and what might it mean
8 to be exposed to both together in terms of the synergistic
9 risk.

10 MR. GROSSMAN: Okay.

11 BY MS. CORDRY:

12 Q Okay. And we'll come back to that some more as
13 we're going along here. When you're looking at studies and
14 you're trying to evaluate the value of the study, how, what
15 it's really telling you, are there some measures that are
16 used by scientists to evaluate how strong the study's
17 results are?

18 A Oh, you know, absolutely, and I don't mean strong
19 as just being positive, you know, because we -- there's a
20 publication bias problem in science that, that people, if
21 you get a negative study, the feeling is, oh, my gosh, I
22 don't want to publish it, but you know, a good, a well-done
23 negative study could be every bit as valuable as a
24 well-done, kind of positive study. So good and bad doesn't
25 mean, in my lexicon, whether it sees something or not.

1 MR. GROSSMAN: When you say a negative study, you
2 mean one where the results do not meet the hypothesis or you
3 mean --

4 THE WITNESS: Right, yes.

5 MR. GROSSMAN: -- having a bad effect on people?

6 THE WITNESS: No. So a negative study means you
7 didn't, you didn't see the health effect you thought you'd
8 see.

9 MR. GROSSMAN: Okay.

10 THE WITNESS: Right. And so, you know, those --
11 and unfortunately, a lot of times, you know, journals want
12 the studies that show a health effect; they're not as
13 excited about studies that don't show a health effect, but I
14 always encourage my students and stuff to not -- you know,
15 they go home dejected, they're working on a thesis and they
16 say my study is negative, I didn't show that it caused, made
17 people die, I'm not going to publish it. We say, no, we're
18 going to publish it anyway, we're going to show it that way.

19 So hallmarks of a good study, you know, are -- it
20 depends on the type of study, but certainly you want to have
21 enough sample size. So you want to have enough observations
22 to see an effect, and you need to make that determination,
23 inquiry area up front. So you say that I think if X is
24 going to cause a twofold increase in Y and I know this is
25 how much X varies and this is how much Y varies, how many

1 people do I need to see a twofold increase if it really
2 exists. Right? And so the sample size has to be kind of
3 clear and that has to be presented early in the papers
4 because, if you see a negative effect but the reality is you
5 don't have enough sample size, enough observations to
6 determine the effect size you want to see, then I'm going to
7 not be very excited about that paper. Right? I may
8 actually kind of reject that paper if I was reviewing it,
9 because I'd say, jeez, they set up to do a negative study
10 because they didn't have enough observations to even
11 determine kind of the effect sizes they're looking for.

12 And so we look for how are people recruited to
13 studies; the way you recruit people to studies can create a
14 bias. And we look at -- so the recruitment is important.
15 So, you know, for example, a study that says I want to get
16 100 kids with asthma and we went to the medical records and
17 the first 100 we got agreed to participate in the study,
18 that would look pretty good. Another study said I got 100
19 kids with asthma but I had to ask 2,000 kids with asthma to
20 get the 100 to participate, the first question I'd ask is,
21 well, jeez, what's different about the 100 kids that agreed
22 to participate versus the vast majority of kids that didn't
23 participate? Is there some reason why they might want to
24 have agreed to participate versus ones who didn't agree to
25 participate that might bias kind of the results? So we look

1 at kind of this recruitment bias.

2 There are other sources of bias. There's
3 measurement bias. We look at how do they assess exposure,
4 how did the assessment exposure relate to the time frame and
5 health outcome you're looking at. So there's a host of
6 things we can evaluate in terms of kind of the, the quality
7 of the study. And like I say, if all those things are there
8 and it's a negative study, it doesn't show the health effect
9 you want to effect, that's still a good study.

10 BY MS. CORDRY:

11 Q Is there a particular terminology for determining
12 -- that kind of sums up this evaluation process in terms of
13 your confidence?

14 A I don't know what you mean.

15 Q Well, okay, I'll use a term that -- we've seen the
16 term confidence interval and statistical significance.

17 A Okay. Yes.

18 Q How do those relate to what you were just saying
19 right now?

20 A Okay. So that's not necessarily related to the
21 quality of the study --

22 Q Okay. I'm sorry.

23 A -- although it can be. Right?

24 Q Right.

25 A So, but if we're looking at whether a risk is

1 significant or not, right, there's a statistical probability
2 that, you know, an excess risk could be by chance, and we
3 need to quantify that and we need to present that in the
4 paper, and we can do that a couple of ways. We can look at
5 P values. So if we say there's a five percent increase in
6 asthma morbidity and that five percent, you know, it has a
7 probability of being high, it's less than five percent or
8 not, then we can kind of say that it's probably not due to
9 chance.

10 So we know that just about anything we measure,
11 right, there's a chance you're going to get a funny measure
12 just because of outlie. Right? And so you want to quantify
13 that probability. We do that two ways. One is we put a
14 confidence interval about it and, if that confidence
15 interval is, you know, excludes number one, we can say that
16 it's a statistically significant increased risk. We can put
17 a probability on that value. We say the probability is
18 greater than .05. We have a 95 percent chance of thinking
19 this is really real, which means there's only a five percent
20 chance that that's due to chance. Right? So it still could
21 be true.

22 So one study by itself -- this speaks to back why
23 one study doesn't matter. You can still have a study where,
24 where you have a five percent, only a five percent chance of
25 it being positive, but it could still be kind of a spurious

1 finding. And so when you have five studies, though, that
2 all kind of show statistically significant, then you become
3 more confident than that.

4 And there's no magical number, by the way, of this
5 five percent. I don't know where this five percent came
6 from. Our statisticians tell me it goes back to a bunch of
7 statisticians sitting in a room. So there's nothing magical
8 about something that's got a six percent, although in the
9 paper, the editor of the paper would probably say you can't
10 call it significant if it's got a P value of .06 versus a P
11 value of .05, but there's nothing magical about that.
12 Obviously, if something is less likely, the probability of
13 referring to chance is greater. If it's more significant,
14 that P value gets smaller, and the smaller it gets, the more
15 -- less likely it's due to chance; the greater it gets, the
16 more likely that it's due to chance. And there's a judgment
17 that we make, and just for some odd reason, somebody picked
18 that .05 years ago. But personally, I don't hold to that,
19 and if I see a risk that's at .06, I say it looks like
20 there's an elevated risk, it doesn't quite meet statistical
21 significance but it's still kind of something I think we
22 need to kind of think about, and I don't put any more value
23 on something that gets a .04 versus .06.

24 Q Okay. But that's a general range. That's an
25 accepted thing. If you -- is one of the reasons why you

1 might not have significance, I think you mentioned, was the
2 number of study points in a particular study, that it might
3 be too small. Is there a way to deal with that in terms of
4 additional studies, or you know, is there a way that the
5 evaluators look at that?

6 A Well, sure. I mean, additional studies/larger
7 sample sizes will always kind of help to answer that
8 question, and in fact, oftentimes a study will be borderline
9 significant and the recommendation in the back of the paper
10 will be a larger study needs to be conducted to see if this
11 is a chance finding or not.

12 Q Okay. In general, you said you did a lot of peer
13 review of articles and proposals. What would be your view
14 of a study or an analysis that didn't discuss these sorts of
15 margins of error and provide these kind of calculations?

16 A So it, you know, it likely wouldn't be publishable
17 or acceptable if somebody wrote a grant that didn't kind of
18 estimate the variability in some way that allows you to kind
19 of quantify the likelihood that a number represents what
20 they think it represents or not. There has to be some sort
21 of estimate of variability.

22 Q Okay. And if someone was trying to do modeling
23 for a future development, how do these concepts that you've
24 just been talking about fit in, in your opinion?

25 A So in modeling the same sort of concepts apply.

1 Right? And so a model can give you a single number, or the
2 model can give you a range of numbers, depending on how you
3 set it up. And I know for risk assessment purposes in the
4 U.S., the EPA, the current guidelines has suggested, you
5 know, single estimates are probably not as helpful because
6 they're, they're limited to just what those exact inputs
7 are. And the reality, as we've seen in this case and other
8 cases I've been involved with, you can run a model and get a
9 range of numbers, depending on who's picking what the input
10 values are.

11 And so the standard of practice that I would look
12 for is that you -- for every input value, there's a range of
13 things that it could be and that there are statistical
14 techniques you can use to sample from those range of values,
15 and you run the model multiple times, looking at all the
16 different inputs and what they could be, and then you come
17 up at the end of the day, a distribution that comes out of
18 the model that says the real answer is somewhere in here.
19 All right. We don't know exactly what it is, right, and to
20 say that you run the model once, you get a single number and
21 say that's the real number is probably not a fair way to
22 kind of think about it. So the real number is really
23 somewhere within this distribution of values, and then you
24 can put some -- then you can say, you know, the middle of
25 that is here and I'm confident this is a real number with

Page 94

1 some sort of statistical significance or not.
2 So there are ways to use the same approach to
3 running models and coming up with model outputs that have
4 uncertainty associated with them and that's the current
5 standard of practice that -- the National Academy of
6 Sciences created a committee to review risk assessment for
7 the EPA and other regulatory agencies a few years ago, and
8 they came out very strong that this uncertainty estimation
9 has to be a key component of any risk assessment. Of
10 course, modeling is a key component to the risk assessment
11 because the model provides the inputs to generate the
12 exposures that you use to kind of assess whether somebody's
13 at risk or not.
14 MR. GOECKE: Mr. Grossman, I would object to
15 Dr. Breyse's testimony about the methodology in modeling.
16 He doesn't have any formal training in modeling. He's
17 testified he hasn't done one in 15 years. He testified he's
18 not involved in determining what the inputs are. He simply
19 takes someone else's inputs and runs the numbers, which he
20 describes as not complicated, but I think now he's going
21 into where do these numbers come from and how do we derive
22 these numbers and that's outside the scope of his expertise.
23 MR. GROSSMAN: I don't think it is outside the
24 scope of his expertise as it's been accepted here, given his
25 expertise in establishment and measurement of air quality

Page 95

1 standards, evaluation of scientific studies and
2 methodologies. So that latter, it seems to me, covers this
3 field. I think your objection, or I'll take it as an
4 observation, it goes to the weight to be assigned to his
5 testimony on this particular point, but it's certainly not
6 outside of his general area of expertise. So I'll overrule
7 the objection.
8 MR. GOECKE: Thank you.
9 BY MS. CORDRY:
10 Q And in terms of what you've just said about
11 running a range of models, what if the person doing the
12 model says, well, I'm just going to pick very conservative
13 assumptions and they'll be so conservative, that ensures
14 there isn't a problem with making sure my value is within
15 the range -- what's your reaction to that?
16 A So historically that was the approach that was
17 often taken, and early on the conclusion was made that
18 conservative is in the eye of the beholder. And the problem
19 with that is that everybody could come up with different
20 conservative assumptions and now you have this competing
21 kind of I think it's 12; no, it's 10. The reality is it's,
22 there's a distribution of answers that probably encompasses
23 both 12 and 10, and the reality is, is 12 isn't any more
24 right or wrong than 10. And so the better approach, like I
25 say, is to really, is to come up with this, this more

Page 96

1 sophisticated approach. And while I don't run models right
2 now, I have lots of students who run the models and I
3 critique the output from their models and I look at all
4 their assumptions that go into their models and I review
5 papers that have the models and stuff in them, and I can
6 tell you, this is, this is truly the standard approach and
7 we would not accept that as a, as an outcome from a student
8 who was working on a thesis, to take -- estimate the worst
9 case and run a model with one set of input parameters that's
10 representative of so-called worst case. And the reality is,
11 is exactly what I said: worst case is in the eye of the
12 beholder and that might be the right answer but the reality
13 is, there's some uncertainty around that answer. If you
14 don't know how uncertain that answer is, you really can't
15 put any confidence on just how right it might be and that's
16 why you need to make these distributional assumptions about
17 input parameters. You run the model, you come up with a
18 range of values, and the real answer is you have some -- you
19 could calculate what the average of those are and you can
20 say I think the real answer is this but it could be, I'm 95
21 percent confident that this is within this kind of range.
22 You come up with kind of that estimate and that's the
23 standard of practice today, in my opinion.
24 Q Okay. If you have a range of assumptions and each
25 one has some uncertainty levels, is there an easy way to

Page 97

1 combine all those different uncertainties and to come up
2 with a global uncertainty, or is it -- are they additive?
3 Do they multiply?
4 A Well, it's often, it's often more complicated than
5 that, which is why you can't just say off the top of your
6 head that, you know, they're going to add or multiply or
7 what, so which is why you usually just kind of let the model
8 run and you create, like I say, a -- if you think there's a
9 range of idling times that are going to produce, impact the
10 model, you say, well, here's the distribution of idling
11 times that we think could exist, here's some -- it could be
12 really low, it could be really high, here's what's probably
13 in the middle, and you create that distribution. Then you
14 tell the computer, you say, randomly sample from that
15 distribution 1,000 times and come up with 1,000 different
16 outputs based on that, and that output will kind of
17 accompany kind of the variability associated with just how
18 high or how low idling time could be. And then you add
19 everything else together, you come up with these
20 distributional assumptions for every input, and the model
21 will run, and you tell it to run -- computer times -- you
22 can tell it to run 1,000, 10,000 times, and it runs. It
23 might take a couple of days to run, but at the end of the
24 day, you get an answer, an output that has this kind of
25 distributional weighting associated with all these different

Page 98

1 inputs and what they might be that tells you with some
2 confidence what the real answer might be.
3 Q So if you're reviewing a study using a
4 conservative-assumption approach and you found that there
5 were, you thought there were mistakes in either the
6 assumptions that were being used, the analysis that was
7 being applied to them, what would you tell the person to
8 have to do?
9 A Well, you know, you always kind of challenge your
10 assumptions, and if your assumptions don't stand up to
11 scrutiny, you, you have to kind of start over and reevaluate
12 kind of what those assumptions mean. But like I say, just
13 this -- you want to get out of that trap, and this is why,
14 you know, the EPA guides, you know, kind of say that doing
15 this kind of worst-case, kind of single-estimate kind of
16 number creates this kind of problem, because then you do
17 have dueling experts who will say, you know, I think it's
18 this and I think it's that. And they're both right, but the
19 real answer -- you know, then how do you decide which one is
20 more right? That's where the, kind of their outcome is
21 from.
22 Q And would you think then on that basis it's
23 acceptable to come back and say, well, I'll just turn down a
24 couple of my assumptions, I'll just change a couple of my
25 assumptions at some point, just one at a time, to another

Page 99

1 set of single numbers?
2 MR. GOECKE: Objection.
3 MR. GROSSMAN: And the basis for your objection?
4 MR. GOECKE: It's abstract. It's what's the
5 context, what are the assumptions, what are we modeling.
6 It's too general.
7 MR. GROSSMAN: He's being asked general questions
8 of a -- Ms. Cordry hasn't specifically named the particular
9 study here, but I think it's, the context is somewhat
10 obvious, but I think she's entitled to ask this sort of
11 general hypothetical question of an expert. So I will
12 overrule the objection.
13 MR. GOECKE: Thank you.
14 THE WITNESS: So I think the trap you get into is
15 that a model is a representation of reality, and the
16 question becomes how good a representation of that reality
17 that is. And reality is not something that moves, right,
18 with assumptions. The assumptions can move, but the reality
19 should be kind of something you kind of fix. And when you
20 come up with single-number estimates, you're always going to
21 be -- you're going to always be in this trap where, you
22 know, I can get you -- and I'll be honest with you, a good
23 modeler can get you any number you want if you come up with
24 kind of a single number, right, which, and which is why I
25 think you kind of want to avoid that trap of kind of

Page 100

1 changing your assumptions, assessing whether this is really
2 conservative or sort of conservative or modestly
3 conservative or this is more realistic now. It gets you out
4 of that trap of saying, here's a single number and I think
5 this number is the right answer.
6 MR. GROSSMAN: I'm not sure I understood your
7 answer to her question. So Ms. Cordry asked you, well, when
8 you have this issue, can you just change a couple of
9 assumptions, and I'm not sure I understood what your answer
10 was.
11 THE WITNESS: I don't think you can. I don't
12 think you should and for the reason I just said: you get
13 into this trap now that you're, you're still creating these
14 single-number estimates and that, that new number you
15 produced isn't any, you can't justify it as being any closer
16 to the truth than the previous number. Right?
17 MR. GROSSMAN: Okay.
18 BY MS. CORDRY:
19 Q Turning a little more specifically now to studies
20 dealing with human health effects from exposures to various
21 substances, can you describe in general, when you're doing a
22 study -- and I think you started to talk some of this --
23 about what's sort of the process of what you're trying to do
24 in terms of determining if there is a health effect from
25 exposure to a particular chemical?

Page 101

1 A Okay. So when you do a study, first of all, you
2 start off with a hypothesis that says I'm going to, I'm
3 going to, I expect to see this causes this, and you design
4 the, you design the recruitment and experiment and the
5 sample size to kind of accept or reject that hypothesis.
6 Right? And so you'd never get a grant funded today without
7 having a very clearly articulated hypothesis.
8 So depending on what the hypothesis is, you go and
9 you recruit participants, with or without the exposure of
10 interest, depending on the study design, and you follow
11 them. A typical study might be you follow them over time.
12 You look and see, as their exposure changes, does their
13 disease status change and, if you know how their exposure is
14 changing and their disease status changes -- so an example
15 of that would be, we study kids with asthma, right, and
16 asthma is a disease. If anybody in this room has asthma,
17 you know, your symptoms can come and go: one day you could
18 be bad; the next day you could be better. They come and go,
19 and the question is, does the daily changes in air pollution
20 affect your daily changes in asthma symptoms?
21 So that's the way you, that's the way you
22 articulate the question. That's says, now we want to do a
23 study that measures kids' asthma health every day and
24 measures their pollution every health every -- the pollution
25 every day. And then if you do that, at the end of the

Page 102

1 study, you look and see does the change in pollution, is it
2 statistically associated with the change in asthma
3 morbidity, and if it is, you say I think this is, this is
4 causing the increase in asthma morbidity. And that's
5 exactly the kind of studies that we do in our children's
6 center and that we've done in our COPD studies.

7 Q Okay. And when you're looking at that, are you
8 looking at a single level of pollution or are you looking at
9 a level of pollution that can vary over time?

10 A So these are observational studies. Right? So we
11 let the pollution vary, right, as it does in the real world,
12 and if the pollution doesn't vary very much, you're going to
13 need larger number of samples, larger number of people -- if
14 it varies more, maybe you can get away with a smaller number
15 of samples -- or maybe you have to follow people for a
16 longer period of time. Right?

17 So there's lots of things that kind of go into
18 this kind of assessment of, kind of, how often do you
19 measure somebody and how long do you measure them for to
20 kind of get you, kind of, the answer you want. But we
21 normally would measure kids over a whole year, and we'll
22 assess their asthma morbidity at, you know, for a week to
23 two weeks during the summer, winter, spring, and fall, and
24 we measure the pollution during those times, and we find
25 that's a very powerful design to assessing kind of the

Page 103

1 relationship between pollution and asthma morbidity, in
2 particular.

3 MR. GROSSMAN: Ms. Cordry, is there any reason why
4 we're approaching this so elliptically, in a more general
5 area, rather than getting down to the nitty-gritty of any
6 studies that were made here and issues that are directly
7 before me, rather than having me kind of conjure up a
8 connection?

9 MS. CORDRY: We're getting there very quickly.
10 I'm trying to --

11 MR. GROSSMAN: Okay.

12 MS. CORDRY: -- set the thing and provide the
13 general background, and we are coming -- I'm focusing in.

14 MR. GROSSMAN: All right. I wish -- yes.

15 MS. CORDRY: Okay.

16 MR. GROSSMAN: I'm asking you to do that --

17 MS. CORDRY: All right. Yes.

18 MR. GROSSMAN: -- focus in.

19 BY MS. CORDRY:

20 Q All right. And so at the risk of leading you,
21 these kinds of relationships, are they called dose-response
22 curves?

23 A Well, we call them exposure-response curves.

24 Q Okay. And in terms of that, is there -- one of
25 the things we have talked about here is that the EPA rules

Page 104

1 for both NO2 and PM2.5 say in the rules that there's, quote,
2 no evidence of a threshold for those chemicals. I can give
3 you the cites if you'd like, but we've talked about that
4 before. Those are statements in the rules.

5 MR. GROSSMAN: Well, you talked about it. I don't
6 want you to -- you are leading the witness now.

7 MS. CORDRY: Well, that, I'm just saying, I can
8 show you the pages -- my question is, what does that mean
9 when you say there was no evidence of a threshold? That's
10 what my question was going to be and that is my question.

11 BY MS. CORDRY:

12 Q When the EPA is talking about and when you have
13 scientists discussing the fact that there's, quote, no
14 evidence of a threshold, what is the meaning of that within
15 the scientific analysis?

16 MR. GROSSMAN: By the way, I'm not sure the EPA
17 said it. I think it was in the --

18 MS. CORDRY: Okay. I can --

19 MR. GROSSMAN: -- I think it was in studies that
20 were presented --

21 MS. CORDRY: No.

22 MR. GROSSMAN: -- to the EPA, but I can't recall
23 if it was --

24 MS. CORDRY: Okay.

25 MR. GROSSMAN: -- the EPA that said it. So --

Page 105

1 MS. CORDRY: Yes. I will show you on page, for
2 instance, in Exhibit 424(b) at page 6480 -- I mean, the EPA
3 has to draw from the study. So obviously --

4 MR. GROSSMAN: No, but the question, I think you
5 posed it as --

6 MS. CORDRY: Right.

7 MR. GROSSMAN: -- the EPA saying. The question --

8 MS. CORDRY: Right, and they --

9 MR. GROSSMAN: -- that I'm asking you is that, is
10 this something that was said --

11 MS. CORDRY: Yes. Okay.

12 MR. GROSSMAN: -- and I know it came from --

13 MS. CORDRY: Yes.

14 MR. GROSSMAN: -- your Federal Register entry, but
15 was this something that was said by the EPA or to the EPA?

16 MS. CORDRY: Well, the EPA, in looking at the
17 studies, draws a conclusion.

18 MR. GROSSMAN: That's not my question. My
19 question is, is this something the EPA said or is this
20 something --

21 MS. CORDRY: Yes.

22 MR. GROSSMAN: -- that was said to the EPA?

23 MS. CORDRY: It is something the EPA said. Let
24 me --

25 MR. GROSSMAN: All right. So --

Page 106

1 MS. CORDRY: -- find the quotes for you. For
2 instance, at page 6500 on the Federal Register, which is
3 Exhibit 424(b), dealing with the NO2: In considering this
4 analysis, the administrator notes the following. It's
5 talking about a meta-analysis about NO2 exposures. It says:
6 The NO2 -- I'm sorry. This meta-analysis does not provide
7 any evidence of a threshold below which effects do not
8 occur, and this is what they're relying on in terms of
9 making their standards.

10 MR. GROSSMAN: So you're saying the administrator
11 of the EPA made a comment regarding meta-analysis, is what
12 you're saying. I mean, it's not a --

13 MS. CORDRY: Okay. Well, I'm -- okay. Okay.

14 MR. GROSSMAN: -- I just want to make sure your
15 question --

16 MS. CORDRY: Okay.

17 MR. GROSSMAN: -- poses a proposition that is --

18 MS. CORDRY: Okay.

19 MR. GROSSMAN: -- accurate. That's all.

20 BY MS. CORDRY:

21 Q Okay. The question is that the EPA, looking at
22 the evidence to date, says, when we look at this evidence,
23 it shows us no evidence of a threshold.

24 MR. GROSSMAN: Well, it's not the EPA. It was the
25 administrator of the EPA.

Page 107

1 MR. SILVERMAN: That's the same thing.

2 MS. CORDRY: Well, that is, that is -- okay.

3 MR. GROSSMAN: I'm not sure that that's the EPA.

4 MR. SILVERMAN: Yes, it is.

5 MS. CORDRY: Well, yes, the administrator of the
6 EPA is the person who is making these judgments and putting
7 out, making a determination on these standards.

8 MR. GROSSMAN: I'm not sure that's exactly the
9 same. I think the EPA --

10 MS. CORDRY: Okay. Well, then --

11 MR. GROSSMAN: -- puts out something but
12 administrators can say things; that's not necessarily the
13 statement of the Environmental Protection Administration.

14 MS. CORDRY: Okay.

15 MR. GROSSMAN: There are differences.

16 MS. CORDRY: Okay. I understand.

17 MR. GROSSMAN: I just want to make sure you're
18 postulating --

19 MS. CORDRY: Okay.

20 MR. GROSSMAN: -- something to him, and is it
21 necessary to postulate that to him in that way?

22 MS. CORDRY: Well --

23 MR. GROSSMAN: Why don't you just ask a question
24 without the preface.

25 MS. CORDRY: Because you're asking me to focus

Page 108

1 very specifically on this --

2 MR. GROSSMAN: Right.

3 MS. CORDRY: -- and what I'm saying, very
4 specifically, with respect to these particular chemicals in
5 here, the administrator of the EPA, who is the head of the
6 EPA, who is the person who was making these judgments under
7 these rules, which are the judgments of the EPA when they
8 issue --

9 MR. GROSSMAN: If they issue.

10 MS. CORDRY: These are the issued rules.

11 MR. GROSSMAN: The statement that you quoted is
12 not the rule that was issued. It is a statement that was
13 made by the administrator.

14 MS. CORDRY: Okay.

15 MR. GROSSMAN: I just want to make sure we're
16 accurate in what you're postulating --

17 MS. CORDRY: Okay.

18 MR. GROSSMAN: -- to the witness, okay?

19 MS. CORDRY: What I'm saying, though, is that in
20 making the determination as to what rules --

21 MR. GROSSMAN: We don't have to have this
22 discussion.

23 MS. CORDRY: Okay. Okay. Right.

24 MR. GROSSMAN: Let's rephrase the question in a
25 way that doesn't require that particular assumption.

Page 109

1 MS. CORDRY: Okay.

2 BY MS. CORDRY:

3 Q In the EPA discussions leading up to the rules
4 that they issued with respect to both the NO2 and the PM2.5,
5 there are statements that there's -- that the studies
6 indicate no evidence of a threshold with respect to either
7 NO2 or PM2.5. What, as a scientist, does that statement
8 that there is, quote, no evidence of a threshold, what does
9 that mean with respect to studies?

10 A So one thing it doesn't mean is it doesn't mean
11 there's no threshold. It's just perhaps because we haven't
12 found it yet.

13 MS. ADELMAN: Yes.

14 THE WITNESS: So we know that the science -- you
15 know, as air pollution levels started out very high, we
16 could look at health effects at those levels. Our ability
17 to look at lower concentrations wasn't possible because
18 everything was high. As exposures come down, the science
19 looks at, is there health effects now that they're lower,
20 and if we see something, they say yes and the EPA lowers it
21 again; if they see something, they say it again, yes. And
22 so what that means is this march of safe levels over time
23 are, and ambient air qualities over time, going down, where
24 there's no sense that we've reached kind of a point where we
25 think there's -- at least in a way that we can't document

Page 110

1 any kind of risk.
2 So there's likely going to be risk at current EPA
3 standards, and we haven't shown that yet because the science
4 hasn't caught up yet, because the exposures now come down.
5 And if you look at the -- the EPA is a huge success story --
6 if you look at ambient air quality across the U.S., you
7 know, nationally the trend is coming down, down, down over
8 time, and as they come down, the science catches up with
9 what the new current levels are.
10 So we're studying, you know, PM concentrations
11 today that are on the order of, you know, you know, five,
12 10, eight, 15, 20, 25 micrograms per cubic meter, and we
13 couldn't study those exposures 30 years ago because they
14 didn't exist, right, because they were all much higher than
15 that.
16 So the science moves, and to date, it does not
17 appear that we found kind of what that threshold level is.
18 At some point, we're going to have to find it. I personally
19 don't believe that there's, that there's no threshold, but
20 it's just, we don't have evidence of what that is yet. So
21 there's still, there's still risks as we go down on that
22 exposure curve.
23 BY MS. CORDRY:
24 Q Okay. All right. So that no evidence of a
25 threshold, at this point, means that as far down as they've

Page 111

1 gone on the exposure curves --
2 A We're still seeing risks.
3 Q -- based on what they see, they're still seeing
4 that? And we'll come back to the details of that in a
5 little bit. If one cannot establish that a pollutant has a
6 safe threshold, does that have policy implications of how to
7 deal with that pollutant?
8 MR. GOECKE: Objection. Leading.
9 MR. SILVERMAN: No, it isn't.
10 MR. GROSSMAN: No, I think that -- I'll overrule
11 that.
12 THE WITNESS: So I guess the policy implications,
13 well, I -- there's policy and public health implications.
14 So the policy implications are the EPA has to constantly
15 kind of think about what it means to have lower exposures.
16 So somebody's got to fund the next generation of research
17 that says, look, we think that 12 is safe but we think
18 there's maybe evidence that it's lower than 12; maybe we
19 ought to do some science to see if we need to lower it even
20 further, which is part of this march of kind of the science
21 I talked about before.
22 But there's also public health policy
23 perspectives, and you know, at some point, you decide
24 yourself, well, if we don't think there's a threshold, if
25 there's some exposure that I can avoid or should be avoided,

Page 112

1 you know, as a public health practice, I'd say let's try and
2 avoid it. There's no, you know, if we don't have to have a
3 new source, as in this case, that's going to produce
4 pollutions that are maybe at or below where we think the
5 threshold currently might or might not be, if we can easily
6 avoid those, maybe it's good, prudent public health policy
7 to do so.
8 BY MS. CORDRY:
9 Q Okay. So if you have a facility such as a gas
10 station that will put out at least some levels of pollutant,
11 no matter how small it is, does that mean we can never build
12 such a facility? Is that just an inherent effect of any gas
13 station that --
14 MR. GROSSMAN: Well, let's ask one question at a
15 time.
16 MS. CORDRY: Okay.
17 MR. GROSSMAN: What's the question? One question.
18 If you have a facility such as a gas station, what's your
19 question?
20 BY MS. CORDRY:
21 Q That might put out some levels of pollutant, is
22 inherent in that gas station to -- I'm sorry. That's really
23 not a good way to do it. Is there an inherent effect of
24 pollutants from the gas station that must be accepted?
25 MR. GROSSMAN: Well --

Page 113

1 MS. CORDRY: Okay. I'm sorry.
2 MR. GROSSMAN: -- I'm going to stop that
3 question --
4 MS. CORDRY: All right. Let me start over.
5 MR. GROSSMAN: -- because that's a legal question.
6 MS. CORDRY: Okay. Okay.
7 BY MS. CORDRY:
8 Q All right. Assuming there is some level of
9 pollutants that are going to come out of any gas station, no
10 matter what size it is, does that say to you that this gas
11 station has that -- that it's reasonable to build this gas
12 station with the kind of pollutants that you are going to be
13 seeing from it?
14 MR. GROSSMAN: Well, wait a minute. I'm not sure
15 I even quite understand that. You started out with the
16 assumption that any gas station is going to have some level
17 of pollutants. Then you said this gas station.
18 MS. CORDRY: All right.
19 MR. GROSSMAN: Are we talking about the --
20 MS. CORDRY: Yes. Right.
21 MR. GROSSMAN: -- the one proposed by Costco?
22 MS. CORDRY: Right.
23 MR. GROSSMAN: And so what's the question about
24 this particular gas station? I didn't --
25 MS. CORDRY: All right.

Page 114

1 MR. GROSSMAN: -- quite follow that.
2 BY MS. CORDRY:
3 Q I'm trying to get at, in some respects, the
4 question you had asked, you were asking before about is it
5 -- if every gas station has at least some level of
6 pollutants, does that mean we can never build a gas station.
7 So --
8 MR. SILVERMAN: That's a good question.
9 BY MS. CORDRY:
10 Q -- so one of the questions is --
11 MR. GROSSMAN: All right. Well, you can ask him
12 that question.
13 MS. CORDRY: Okay. All right. All right.
14 MS. ADELMAN: Yes, exactly.
15 MR. SILVERMAN: That's a good one.
16 THE WITNESS: So say it again.
17 BY MS. CORDRY:
18 Q It probably isn't your, really your question
19 there, but okay.
20 MR. GROSSMAN: If every gas station has some level
21 of pollutants, given the fact that you have no threshold for
22 some, no -- at least no determined threshold at this point
23 for some of the pollutants, does that mean you can never
24 build a gas station?
25 THE WITNESS: So I don't think it means that.

Page 115

1 Right? And so it depends on a couple of things. So clearly
2 the size of the gas station matters, right? And where it is
3 matters, right? And how close the receptors are -- in this
4 case, that's a modeling term for people, right? How close
5 are --
6 MR. GROSSMAN: Right.
7 THE WITNESS: -- the people, right? So a big gas
8 station that's in the middle of nowhere is not the same
9 concern as a big gas station that's in the middle of a lot
10 of people. You know, a small gas station, you know, is
11 probably less of a risk than a big gas station because the
12 source term is small in that case.
13 So the size of the source term, the location of
14 the receptors or the people relative to that source term are
15 all things you have to consider in terms of whether you
16 think this is an acceptable scenario or not. And I don't
17 think that puts you in a position where you can never have a
18 gas station, and I think you just have to weigh kind of, you
19 know, what are the risks, what are the benefits and, you
20 know, what's the best place to put something relative to
21 those risks and benefits.
22 MR. GROSSMAN: It's a judgment call?
23 THE WITNESS: (No audible response.)
24 BY MS. CORDRY:
25 Q In terms --

Page 116

1 MR. GROSSMAN: You have to answer yes or no.
2 THE WITNESS: Yes.
3 MR. GROSSMAN: Okay.
4 BY MS. CORDRY:
5 Q All right. In terms of a typical gas station
6 versus this station, what is your understanding of how this
7 station would compare to a standard neighborhood sort of gas
8 station?
9 A Well, it's much, much bigger. Do I have to be
10 more quantitative than that?
11 Q Are there other aspects of it that you think are
12 different than a standard gas station?
13 A Well, I think because it's bigger --
14 MR. GROSSMAN: I think you may be outside of what
15 he said is his area of expertise here. Does he purport to
16 be an expert in different size of gas stations? I don't
17 think that that was offered as his area of expertise.
18 MS. CORDRY: Okay. No, but I think we all, or we
19 all have a great deal of personal experience with a
20 neighborhood gas station.
21 BY MS. CORDRY:
22 Q And compared to a neighborhood gas station, are
23 there aspects of this station that you would view as unusual
24 and that would contribute to your concerns about air
25 pollution?

Page 117

1 MR. GROSSMAN: I still have a problem with that
2 question, but I haven't heard an objection. So --
3 MR. GOECKE: Objection. I don't think that the
4 size of the gas station is something we need expert
5 testimony on.
6 MR. GROSSMAN: Well, I don't know about that. I'm
7 just saying that, that just the way it's phrased, it's so
8 kind of loosey-goosey in terms of whether he's, there's
9 something to be concerned about. I mean, I think he's --
10 he's a highly qualified expert in a certain area. Let's ask
11 him questions about --
12 MS. CORDRY: Well --
13 MR. GROSSMAN: -- about that.
14 MS. CORDRY: -- I am, but I'm also trying not to
15 lead him. So I'm trying to say --
16 MR. GROSSMAN: Well, I know.
17 MS. CORDRY: -- with respect to what you have been
18 told about this gas station and the way of its operations,
19 are there things that you, and you can articulate those -- I
20 mean, I can ask him does the idling cause you a concern, but
21 that's kind of leading.
22 MR. GROSSMAN: No, it's not necessarily leading.
23 It --
24 MS. CORDRY: All right.
25 MR. GROSSMAN: -- depends on whether you're

Page 118

1 assuming something that's not in evidence --
2 MS. CORDRY: All right.
3 MR. GROSSMAN: -- here. That's what really --
4 MS. CORDRY: All right. Well, then let me --
5 MR. GROSSMAN: -- the question of what's leading,
6 because it depends on what's in evidence and what you're
7 assuming. You can ask him hypothetical questions based on a
8 set of things that are in evidence.
9 MS. CORDRY: All right.
10 MR. GROSSMAN: That's a legitimate use of an
11 expert.
12 MS. CORDRY: All right.
13 BY MS. CORDRY:
14 Q If the evidence in this case indicates that there
15 is likely to be idling for a substantial period of each day
16 of operation in the range of perhaps as many as 20 to 40
17 cars -- and I believe that is a fair statement of the
18 evidence -- does that cause you concern with respect to
19 these pollution issues that you would have or not have with
20 respect to a standard gas station?
21 A I think it's clearly part of, part of the concern.
22 So if we treat the gas station as a source, right, as a
23 source of pollution, the question is, is that source going
24 to put a recognizable health effect to the people living
25 around that? We need to know how big the source is and what

Page 119

1 are the different factors that are contributing to the
2 pollutants that might be produced from that. So clearly,
3 the number of cars queuing up are part of that picture; how
4 long they're idling for, part of that picture. So all these
5 things, I think, kind of speak to kind of how big the source
6 is in terms of the pollution that's going to be produced
7 from that source.
8 Q Okay. I'd like you to look at two slides that
9 were taken from Mr. Sullivan's PowerPoint, and this would
10 have been Exhibit 174.
11 MR. GROSSMAN: Is it --
12 MS. ADELMAN: Do you have this, Dr. Breyse?
13 MS. CORDRY: Yes, he has it. He has copies of all
14 the exhibits.
15 BY MS. CORDRY:
16 Q On these slides one is labeled a
17 12-Million-Gallon-A-Year Station with Vent Controls at 99.7
18 Percent in 2013 Similar to Smaller Stations in 1980s and
19 1990s and Will Continue to Drop. The other one is labeled
20 Typical Gas Station Versus Costco with the typical gas
21 station being listed as having, I think that's indicated, as
22 a 1.5-million-gallon level versus the Costco at 12 million.
23 So looking at these two slides and the statement
24 there that the station is not unprecedented because the
25 levels here are comparable to those of a 1.5-million-gallon

Page 120

1 station in 1987, a three-million-gallon station in 1998, can
2 you comment on those slides in terms of how you would view
3 those in the sense of whether this is an appropriate
4 statement about whether a gas station is safe, unsafe?
5 A I don't know whether they're unprecedented or not
6 speaks to safety at all. It's not clear to me. I mean, of
7 course, there -- you know, it used to be unprecedented to
8 put lead in gasoline, but you know, we took the lead
9 gasoline out because we didn't think it was safe. These
10 levels are going down over time, you know, for a reason
11 because people decided, you know, that VOC emissions were
12 unacceptable. And so whether they're unprecedented or not,
13 you can certainly go back in time and probably find any, any
14 -- anything we see today might be kind of commonly existing
15 in the past. So I'm not sure what that means. I don't
16 disagree that it's unprecedented, but I'm not quite sure
17 what that means.
18 MR. GROSSMAN: You're saying, even though it might
19 have occurred before, that might have been a health hazard
20 before; is that what you're saying?
21 THE WITNESS: Sure. Yeah. There's nothing in
22 this that suggests, that implies anything that's safer about
23 today than it does about what was safe back in, you know,
24 2000 or 1985.
25 BY MS. CORDRY:

Page 121

1 Q But if this station, if you look at the second
2 slide, out through 2025, is still projected to be somewhat
3 more than twice the levels of a typical gas station, is that
4 an issue that raises concern for you?
5 A Well, you know, it still speaks to that source
6 term. Right? This is still a big source, right, and it's
7 bigger than these other sources. And the fact that it's
8 emitting things that might have been similar to things in
9 the past, you know, is a good kind of historical anchor, I
10 think, but I don't think it helps me kind of make a decision
11 about the acceptability of the health consequences or not.
12 Q And that happens to be for VOCs. Would you expect
13 to see a similar kind of change in emissions and levels for
14 NO2 and PM2.5 over this kind of a time period?
15 MR. GROSSMAN: Are you asking him whether he would
16 expect to have, see a decline in emissions of those
17 particular substances for a gas station?
18 MS. CORDRY: Yes.
19 BY MS. CORDRY:
20 Q If you prepared a similar chart for PM2.5 and NO2
21 over this time period, do those also have drop-offs in
22 levels?
23 A I don't know if I can answer that. I'm not -- you
24 know, I could think that might, but I, you know, I'm not
25 quite sure that VOCs are going to work the same way as like

Page 122

1 PM and NO2 is going to work. There's, you know -- but the
2 change over time is just not all that informative to me. So
3 I wouldn't --
4 Q I think the question I was trying to phrase -- and
5 we may get at it with a later exhibit -- is, has there been
6 drop-offs in PM2.5 levels and NO2 levels over time --
7 A Oh, certainly, yeah.
8 Q -- in the same way?
9 A Yeah.
10 Q So if you prepared a similar chart to this for
11 PM2.5 or NO2, you could similarly show that at some point in
12 the past there were levels as high?
13 A Well, but this is, this is emission rates at a gas
14 station. So --
15 Q Right.
16 A -- if you're asking me did, are the, are
17 pollutants going down over time, the answer is yes, but can
18 I say that the emission rates over time at a gas station
19 kind of for these other pollutants follows these graphs or
20 not, I don't know the answer to that --
21 Q Okay.
22 A -- if you don't mind me saying that.
23 Q But it's fair to say the ambient levels are going
24 down over time?
25 A Yeah. Yeah.

Page 123

1 Q Okay, fine.
2 MR. GROSSMAN: You know, I neglected to take a
3 mid-morning break here.
4 MS. CORDRY: Yes. Actually, I was -- let me see.
5 MR. GROSSMAN: Is this a good time to do that?
6 MS. CORDRY: Actually, I have maybe one more
7 question. Let me --
8 MR. GROSSMAN: Okay, sure.
9 MS. CORDRY: -- just see about this one and then
10 that would be a good place to take a break. So -- let me
11 see. This is a fine place. We'll take a break at this
12 time.
13 MR. GROSSMAN: All right. It's five to 12:00.
14 Let's come back about 12 O'clock.
15 (Whereupon, a brief recess was taken.)
16 MS. CORDRY: Okay.
17 MR. GROSSMAN: You may proceed, Ms. Cordry.
18 MS. CORDRY: All right.
19 BY MS. CORDRY:
20 Q So just to sum up, assuming that the evidence does
21 not establish a threshold for NO2 or PM2.5, how does that
22 affect your views about whether this particular gas station
23 should be located in this, sited in this location?
24 A So I think you have to be very careful about
25 siting this size of a gas station in that location given

Page 124

1 that we're constantly reevaluating our concern about levels
2 of air pollution, we're concerned about the concentration of
3 pollution that this gas station represents, especially if
4 you consider that they're moving -- you know, if the
5 trade-off is between, you know, 10 small gas stations
6 dispersed around the neighborhood versus one giant one,
7 clearly, I think, the scale then becomes kind of the issue.
8 And if we're shifting the risk from these 10 small scales to
9 one giant one, I think we do have a different situation in
10 that case, and just considering things like the number of
11 vehicles, idling time, and so forth, I think, creates a
12 public health concern.
13 Q Okay. All right. Turning more specifically now
14 to mobile source pollution issues, you did describe earlier
15 that you had done a number of studies in that area and that
16 you looked at both PM2.5 and NO2. Have you looked at those
17 pollutants in contexts other than specifically emitted by
18 vehicles?
19 A Well, like I said before, our studies generally
20 focus on those pollutants, and we're interested in health
21 effects and the concentrations at which those health effects
22 manifest themselves without particular regard to where they
23 come from, and that's informative to the EPA because, you
24 know, the EPA is interested in kind of seeing where the
25 health effects and exposures kind of coincide. And so the

Page 125

1 fact that we're looking indoors is different than setting a
2 gas station, but you know, NO2 is not any different indoors
3 than it is outdoors, and if there's levels of NO2 indoors
4 that are causing a health effect, that still kind of informs
5 in the process.
6 Q You've been doing indoor pollution studies?
7 A Yes.
8 Q Okay. All right.
9 A Yeah, and outdoors, but more indoors than
10 outdoors.
11 Q Okay. And can you just describe very briefly some
12 of the health effects that you are aware of from exposure to
13 NO2 or PM2.5?
14 A So, you know, the literature kind of suggests a
15 wide range of health effects for particulate matter.
16 Particulate matter increases morbidity, the rate at which
17 people die, I mean, the rate at which people get sick;
18 mortality, the rate at which people die. In terms of
19 morbidity, there's a wide range of morbidities that are well
20 accepted, from a variety of cardiovascular and respiratory
21 diseases.
22 In addition, there's growing evidence that
23 particulate matter can have some wider-ranging effects.
24 There's studies out of New York that suggest that PAH
25 components is a marker of traffic-related pollution that

Page 126

1 affects childhood development similar to what lead does; so
2 homes with higher PAHs, and they specifically say that PAHs,
3 traffic-related PAHs --
4 MR. GROSSMAN: PIH being?
5 THE WITNESS: PAHs, polyaromatic hydrocarbons, so
6 it's one of those complex molecules that's produced from
7 traffic pollutant. And they show that kids have
8 developmental disabilities in terms of IQ deficits and
9 behavioral problems that are similar to lead. Science like
10 that is very provocative but needs to be kind of, you know,
11 reproduced elsewhere, but for now that's a good finding.
12 So we're exploring a range of health effects from
13 -- increased traffic-related pollutions can affect childhood
14 lung development. Some of the stuff out of Southern
15 California, I think, is really remarkable. So I'm not a
16 pulmonologist, but based on our studies, I know that when
17 you're born, you have a certain amount of lung capacity,
18 right, and we use that throughout our lives, and as we get
19 older, that lung capacity declines, but a healthy person has
20 enough reserve, unless there's something going on, that, you
21 know, until you get really old, perhaps your lung capacity
22 is more insufficient to maintain your daily activities, but
23 the suggestion that kids who live next to freeways have high
24 traffic-related pollution start off with a lung function
25 deficit compared to kids who don't, which was concluded in

Page 127

1 the Southern California studies, I think is a, like I said,
2 is a phenomenally important kind of observation. And what
3 that means for them later in their life is something we
4 don't know, but you can only predict that, or you worry that
5 that lung reserve that most of us have perhaps isn't going
6 to be as strong or be there like in these kids.
7 So things like, like lung development in kids,
8 behavioral developments in kids are all kind of, I think,
9 very important findings. And our recent studies on air
10 pollution, by the way, and COPD is a pretty new kind of
11 finding as well. You know, COPD is thought of being just a
12 smoker's disease, and people didn't do a lot of research on
13 COPD, but among people who have COPD, chronic obstructive
14 pulmonary disease, who've quit smoking, their exacerbations,
15 I think, are, the consensus is, are pretty clearly related
16 to traffic-related kind of air pollutant exposures.
17 BY MS. CORDRY:
18 Q Okay. And we'll come back to those in just a
19 moment. Can you tell us, are you aware of governmental
20 regulatory efforts to limit exposure to those substances?
21 A I assume you're referring to the --
22 Q PM2 point --
23 A -- National Ambient Air Quality Standards.
24 Q Yes. Okay. Are you generally familiar with the
25 process by which those standards are set?

Page 128

1 A Yes.
2 Q Okay. And where did you get that familiarity
3 from?
4 A Years of working in the field, reading about it,
5 going to meetings where it's talked about --
6 Q Are there --
7 A -- I know people who serve on, close colleagues
8 serve on the Clean Air Scientific Advisory Committee for the
9 EPA.
10 Q Was Dr. Jonathan Samet, is that someone in
11 particular that you know?
12 A Yes, a very, very close colleague of mine. He --
13 Q And what was --
14 A -- chaired the CASAC for a while, and Mr. Ron
15 White is also a close colleague. He served on the
16 Particulate Matter CASAC.
17 MR. GROSSMAN: What's the relevance of that?
18 MS. CORDRY: Just that he's familiar with this
19 process of how the standards are set.
20 MR. GROSSMAN: Well, you've --
21 MS. CORDRY: Okay.
22 MR. GROSSMAN: -- qualified him as an expert.
23 So --
24 MS. CORDRY: Okay. All right. All right. So I
25 just want --

Page 129

1 MR. GROSSMAN: -- you don't have to go into that
2 again.
3 MS. CORDRY: Okay. All right.
4 BY MS. CORDRY:
5 Q And I believe you testified that you're aware that
6 these levels have changed over time. What direction have
7 the levels, the permissible levels changed, in your --
8 A Sometimes they stay the same when EPA kind of
9 reevaluates them every five some-odd years, but otherwise,
10 they always go down.
11 Q Have you ever seen one go up?
12 A No.
13 Q Okay. And they are reevaluated why?
14 A Well, it's a congressional mandate --
15 Q Okay.
16 A -- that EPA kind of reevaluate them and that's --
17 and it was written that way because they knew that the
18 health effects evidence base is going to change over time
19 and they need, the EPA needs to periodically reevaluate the
20 evidence base that supports the current standard and see if
21 they need to revise it based on that new evidence base.
22 Q And if a standard changes, doesn't stay the same,
23 if it changes, why would it change?
24 A Well, it would change because there's a
25 publication suggesting there are health effects at a lower

Page 130

1 level.

2 MR. GROSSMAN: Ms. Cordry, how does this help me

3 make a recommendation on this? The witness has testified

4 that he has concerns that if you have a larger station, you

5 have to be careful. I mean, how does that allow me to, or

6 help me make a recommendation without telling me what levels

7 I need to look at to determine that a risk is inappropriate?

8 MS. CORDRY: Okay. I am getting there. I am

9 trying to do this in a --

10 MR. GROSSMAN: Very slowly.

11 MS. CORDRY: Well, I'm trying to do it in a

12 logical fashion, set up his familiarity with these --

13 MR. GROSSMAN: All right.

14 MS. CORDRY: -- and why they change, and that --

15 MR. GROSSMAN: Well, we assume he's familiar with

16 it.

17 MS. CORDRY: Okay. All right. We will be there

18 shortly.

19 MR. GROSSMAN: All right.

20 BY MS. CORDRY:

21 Q All right. Can you explain how the air quality

22 standards are supposed to deal with particular populations?

23 A Well, they're mandated, the EPA, to deal with

24 susceptible populations and that creates kind of a challenge

25 for, well, all populations but particularly kind of

Page 131

1 susceptible population. That creates a challenge for the

2 EPA because in even the scientific community we're not quite

3 sure what susceptibility means. You can be susceptible for

4 lots of reasons, but where there are obvious markers of

5 susceptibility, like a kid with asthma, the EPA is required

6 to try and set a standard that's going to be protective for

7 them, but it isn't going to be protective for 100 percent of

8 the people, including, there's going to be some people who

9 have unique susceptibilities that are kind of unknown or not

10 well understood that are not going to be protected.

11 Q Do you understand whether or not the standard is

12 to be set at a level that creates zero risk?

13 A Oh, it's not supposed to be zero risk, no.

14 Q Or that protects the very most sensitive

15 populations?

16 A It affects the sensitive populations that can be

17 defined and, clearly, kind of have been evaluated, and

18 there's data to suggest it is, but there's no way it's going

19 to affect every possible sensitive person.

20 Q Are you aware of the existence of the Stephen

21 Knolls School?

22 A Yes.

23 Q Okay. And I'm going to point it out to you on the

24 map here.

25 MR. GROSSMAN: That's Exhibit?

Page 132

1 MS. CORDRY: 159.

2 MR. GROSSMAN: Okay.

3 MS. CORDRY: And I think the testimony has been

4 that the distance from the station to the edge of the

5 property is about 850 feet.

6 MR. GROSSMAN: Something in that arena, I believe.

7 MS. CORDRY: Okay. All right. Give or take.

8 Certainly less than 1,000 feet.

9 MR. GROSSMAN: Right.

10 BY MS. CORDRY:

11 Q What do you know about the student body at the

12 Stephen Knolls School?

13 A So I know they have a lot of physical challenges,

14 and I know they have a lot of physical challenges, some of

15 them are to respiratory in nature. So they're, they're

16 going to be kind of particularly vulnerable, I think, to

17 pollutions in general but any increased pollution that might

18 be associated with a new source in the neighborhood.

19 Q So would you consider them equivalent to children

20 in general --

21 A No. They're --

22 Q -- in terms of susceptibility?

23 A I think, based on my understanding, they're more

24 susceptible perhaps than the average healthy child.

25 Q Is it your understanding that the existence of

Page 133

1 these air quality standards are meant to preclude a

2 regulator from considering whether a particularly sensitive

3 population in the particular location might be more

4 seriously affected?

5 MR. GOECKE: Objection. Legal conclusion.

6 MR. GROSSMAN: Yes. I'll sustain that.

7 BY MS. CORDRY:

8 Q All right. Dr. Chase was asked on September 16th

9 in his testimony whether the standards specifically are,

10 quote, designed to protect children at that school, i.e.,

11 the Stephen Knolls School. His answer was yes. Do you

12 agree or disagree with that statement?

13 A You know, I don't think it was, based on my

14 understanding of the kids at that school. I think they have

15 unique susceptibilities there that perhaps were not on the

16 radar of EPA, and I certainly know of no, no studies that

17 would allow EPA to have an evidence base in which to kind of

18 design a standard that would be protective for kids with

19 that level of disability.

20 Q Okay. In his testimony, Dr. Chase said that the

21 NAAQS, the N-A-A-Q-S, these standards, were the, quote, the

22 CASAC standards -- he said that at page 51; that the CASAC

23 members, quote, formulate the recommended standards, page

24 52; and that the EPA standards are, quote, based totally on

25 CASAC recommendations, also on page 52.

Page 134

1 MR. GROSSMAN: Page 52 of what?
2 MS. CORDRY: Of, I'm sorry, the testimony on
3 September 16th.
4 MR. GROSSMAN: That's the transcript page?
5 MS. CORDRY: Yes, the transcript testimony, yes.
6 BY MS. CORDRY:
7 Q To your knowledge, is that an accurate
8 characterization of the role of CASAC in setting the
9 standards?
10 A My understanding is that CASAC reviews the
11 literature and recommends a range of values to the
12 administrator that says we suggest that you set a standard
13 within this range of things. They do not set the standard.
14 They give the administrator some leeway to kind of set the
15 standard within that kind of range. They think that they --
16 they'll say things like, we think there's health effects
17 down to 50 but maybe we're less certain about that but
18 clearly there's health effects between 75 and 100, we think
19 you should set the standard between 75 and 100.
20 At that point, the EPA administrator is free to
21 kind of do whatever they want, and in fact, there's been
22 cases when the EPA administrator sets standards higher than
23 what CASAC recommended. That usually creates some sort of
24 difficulty, and in the one case, in particular, recently in
25 particulate matter, the chair of the CASAC committee wrote

Page 135

1 a, you know, pretty public letter to the head of the EPA,
2 saying, you know, why did you go outside our range, which
3 eventually resulted in lowering it back down to within the
4 CASAC range. So they don't give a number; they give a
5 range.
6 Q Do you know how that lowering came about? Was
7 that from anything CASAC itself did?
8 A I think there were some lawsuits involved with it
9 as well.
10 Q Okay. Not brought by CASAC or --
11 A No. I don't think CASAC sues.
12 Q Okay. All right. So in terms of looking at
13 the --
14 MR. GROSSMAN: Is the witness referring to the
15 U.S. Court of Appeals opinion --
16 MS. CORDRY: Yes.
17 MR. GROSSMAN: -- that's been decided --
18 MS. CORDRY: Yes.
19 MR. GROSSMAN: -- that --
20 MS. CORDRY: Yes.
21 MR. GROSSMAN: -- U.S. Court of Appeals, D.C. --
22 MS. CORDRY: Right.
23 MR. GROSSMAN: -- Sierra Club case?
24 MS. CORDRY: Right.
25 MR. GROSSMAN: Okay.

Page 136

1 MR. SILVERMAN: No.
2 MS. CORDRY: No.
3 MR. SILVERMAN: No. These are other cases.
4 MS. CORDRY: The Sierra Club case was the, setting
5 the SIL level. This was actually a couple --
6 MR. GROSSMAN: Right.
7 MS. CORDRY: -- this was actually one that was a
8 couple years earlier. The EPA had, I think, had not wanted
9 to set the level -- we haven't gone into that rule-making.
10 That was several years ago.
11 MR. GROSSMAN: Right, I mean, but an oblique
12 reference has been made to a case. I just --
13 MS. CORDRY: Right.
14 MR. GROSSMAN: -- want to make sure that we're
15 talking about a case -- so obviously I was thinking of a
16 different case.
17 MS. CORDRY: Right.
18 MR. SILVERMAN: Yes, right.
19 MR. GROSSMAN: So --
20 MS. CORDRY: It was a different case. This one,
21 this case, it's referred to, if it's important, it's
22 referred to actually, if you wanted to see it, it's referred
23 to in the description of the, in the rule, as to how they
24 got to setting this particular standard.
25 MR. GROSSMAN: Yes, I don't know if it's

Page 137

1 important, but just --
2 MS. CORDRY: Right.
3 MR. GROSSMAN: -- since the reference has been
4 made --
5 MS. CORDRY: Right.
6 MR. GROSSMAN: -- to a case, we ought to make sure
7 that the record is clear as to what case you're referring
8 to.
9 MS. CORDRY: Right. Yes. At page 3093 on the
10 Federal Register, which is 424(f), it talks about litigation
11 relating to those 2006 PM standards, and those were the ones
12 that were not -- they didn't accept the CASAC
13 recommendations. A variety of people, not including CASAC,
14 challenged them, and it was sent back eventually, and the
15 new review was the one that came out with the --
16 MR. GROSSMAN: It doesn't cite to the specific
17 case there?
18 MS. CORDRY: It probably does. Let me see.
19 Actually, it looks like, if I'm reading this right, yes,
20 American Farm Bureau Federation versus EPA, 559 F.3d 512,
21 D.C. Circuit (2009), and it just says: The court remanded
22 the primary annual PM2.5 NAAQS to the EPA because the EPA
23 failed to adequately explain why the standard provided the
24 requisite protection from both short- and long-term
25 exposures to fine particles, including protection for

Page 138

1 at-risk populations, such as children.
2 MR. GROSSMAN: What's the date of that decision?
3 MS. CORDRY: 2009.
4 MR. GROSSMAN: Okay. Thank you.
5 MS. CORDRY: So that returned review was what then
6 eventually became the standard that came out right at the
7 end of 2002 and the beginning of 2013.
8 MR. GROSSMAN: Okay.
9 MS. CORDRY: Okay.
10 BY MS. CORDRY:
11 Q So in terms of this process of setting standards,
12 what evidence does the EPA look at?
13 A So the breadth of evidence, from animal studies to
14 controlled human studies to observation on human EPID
15 studies.
16 Q And how up to date are the studies that go into
17 the setting of a particular rule?
18 A So, unfortunately, they're always a little -- the
19 current standard is always a little bit behind, right, and
20 that's just kind of the nature of kind of the regulatory
21 process. Right? So, at some point, they have to say we're
22 going to review studies up to some date. Right? So they
23 cut the date off and they compile the studies. Now,
24 clearly, the science doesn't stop at that point, but I think
25 if some kind of monster kind of study came out kind of

Page 139

1 before they finalized their answer, they'd look at it, but
2 in general, they cut the studies off. Then it takes them a
3 while, a year or so, to kind of update it, and then the
4 standard can be placed for five years.
5 So the standard today, you know, could, in some
6 case, be six to seven years kind of behind the time in terms
7 of the scientific literature, which is why they kind of
8 mandate that they periodically update. So even when they
9 promulgate it, it's behind, you know, perhaps by a year.
10 And then certainly by the end of its cycle, you know, you
11 could have five or six years' worth of literature that's not
12 reflected in the current number.
13 Q Okay. If I could refer you to the, Exhibit 424(b)
14 where it says the cutoff date for NO2 was mid-2008. So is
15 that what you're discussing?
16 A Right.
17 Q Okay. So, at this point, we're five-and-a-half
18 years of more studies down the road since then. Okay. And
19 are you aware of what the current NAAQS standards are for
20 NO2 and PM2.5?
21 A I usually have to look them up, but I keep them
22 not too far from, from my, from my desk, but I --
23 Q Okay. I'll proffer to you for the point of
24 keeping track of this as we're going along that they're 53
25 for NO2 --

Page 140

1 A Right.
2 Q -- and 100 parts per billion -- annual level --
3 and 100 parts per billion for the one-hour level and 12
4 micrograms per meter cubed for PM2.5 for the annual level
5 and 35 for a 24-hour standard. Hearing no disagreement, we
6 can, we can work with those bases. Okay.
7 So I'd like to ask you some questions about how --
8 what those numbers mean and how they're arrived at, how
9 they're applied. Let's start with the NO2. Until recently,
10 until this 2010 standard that came out, there was only a
11 rule for annual exposures, is that correct?
12 A Correct.
13 Q Okay. Can you give us some understanding from
14 your knowledge and from the terms of the new rule what led
15 them to put a one-hour standard in in 2010?
16 A Okay. So this is a perfect example of how the EPA
17 has to catch up to the science. It had been known for a
18 while that -- you know, NO2 is an irritant gas. It causes
19 irritation to your mucous membrane, to your respiratory
20 tract, and certain diseases are exacerbated by irritation.
21 And for a long time they thought the effect was just kind of
22 a chronic kind of accumulation of irritation, and in that
23 case they set the standard on an annual basis based on that
24 understanding, but the -- the science kind of was emerging
25 actually well before this.

Page 141

1 Short-term high exposures to NO2 creates, you
2 know, inflammation in your lungs that's acutely dangerous,
3 not just chronically dangerous. And so the acute exposure
4 requires the EPA to think of an averaging time that's
5 shorter than a year, and in fact, in this case, they show
6 that you can have a pretty quick response to a high level
7 exposure to NO2. And so the EPA says we want to, we want to
8 keep the one-hour average below some level that we think is
9 safe and, if we can do that, I think we can, we can effect
10 these short-term kind of acute exposures that create these
11 short-term kind of acute health effects.
12 Q Okay. And in terms of determining how to set that
13 level, was there particular aspects of the way that NO2
14 appears in the air that related to that?
15 A So NO2 is a challenge. So EPA has to do two
16 things. Right? There's two challenges. One is they have
17 to figure out what a safe number is, and then they have to
18 figure out how to enforce it.
19 So PM2.5 is easy in, easy in one regard, if I can
20 digress for a minute, because it's relatively homogenous in
21 space in an urban area. NO2, however, we know from early
22 on, from many studies, it's very heterogeneous. Right? So
23 you can -- close to sources it can be high; farther, it can
24 be lower -- and if you want to limit kind of a population
25 average to a one-hour exposure below some level -- you know,

Page 142

1 EPA can't put a monitor everywhere, right, and they can't,
2 you know, and they can't even put tons of monitors; there's
3 actually very few monitors. So the EPA has to come up with
4 a strategy that they think is protective that represents
5 kind of -- that's wedded to a monitoring approach. And so
6 the approach the EPA took is they said we want to, we want
7 to create a one-hour standard that represents the 98th
8 percentile of a distribution -- so this is the peak value
9 that they have -- and they say we want to, we'd love to be
10 able to set that one-hour 98th percentile across the whole
11 area but we can't do that, and in fact, they say they think
12 the evidence suggests that that safe level should be
13 somewhere around 75 to 85 parts per billion, but they said
14 we're going to put standards next to the roadway, monitoring
15 equipment next to roadways, next to high source, and we're
16 going to say they can't be over 100 parts per billion and,
17 if we keep those below 100 per billion, we're probably
18 keeping this spatial, kind of peak value kind of far from
19 that, less than 75 to 80.

20 So it's a little bit nuanced because the standard
21 says, you know, 100 parts per billion, but that standard is
22 key to kind of this regulatory measurement approach, but if
23 you read the evidence, it's very clear that the EPA
24 administrator thinks that the, the health threshold for NO2
25 is clearly, you know, 75 to 85 parts per billion, and they

Page 143

1 even say in their record that they suggest that there's
2 pretty good evidence that it's down to like 50 parts per
3 billion. And so that's really their target --

4 MR. GROSSMAN: It's down to 50 parts per
5 billion --

6 THE WITNESS: Right, but the evidence becomes less
7 certain down to 50, but they're very certain about it
8 between 75 and 80, and there's a number of statements, and
9 if you read their -- she's very clear about that. And so we
10 don't want to, we don't want to treat the standard as 100
11 parts per billion meaning that's the standard everywhere.
12 Right? That really just kind of represents kind of that
13 peak kind of value and that's the approach that CASAC
14 recommended to EPA for this kind of spatial reg dealing with
15 the spatial heterogeneity and that's the approach the
16 administrator kind of took.

17 BY MS. CORDRY:

18 Q So in determining this -- and this is, this is
19 coming out of the rule is that, correct?

20 A Yes.

21 Q Okay. So in determining that, is the rule saying
22 that if the level is 100 on the road, what level is that
23 expecting it to be in the general area? How is setting the
24 road level at 100 supposed to determine the levels off the
25 road?

Page 144

1 A Right. So the road level is going to be lower.
2 So if you keep the road level below 100, the levels kind of
3 away from the road should be below 75 to 80, which kind of
4 represents that threshold they think they saw the effect.
5 But remember, even the administrator says that's not a fine
6 line between, you know, above this number is bad, below this
7 number is okay, because the administrator said very clearly,
8 we think the health effects probably go down to about 50.

9 And so nobody believes the National Ambient Air
10 Quality Standards from anything but a regulatory
11 perspective, in terms of compliance, yes or no, are fine
12 lines. From a health perspective, they're not fine lines.
13 These represent targets: now that we, if we bring the air
14 pollution down, people will be better off, but it certainly
15 doesn't imply that magically above that number is bad and
16 miraculously below that number is good, whether, however you
17 nuance this measurement-strategy approach.

18 Q Were there particular studies that the EPA was
19 looking at and placed importance on in reaching that
20 conclusion --

21 A Well, they list --

22 Q -- about where to set the level?

23 A They list a number of studies in their, in their,
24 in their criteria review.

25 Q Actually, if you look at page 6501. I think I've

Page 145

1 given you some excerpts from the rule.

2 MR. GROSSMAN: 6501 of what?

3 MS. CORDRY: It's Exhibit 424(b).

4 THE WITNESS: Can you hold it up?

5 BY MS. CORDRY:

6 Q Sure.

7 MR. GOECKE: Do you have the Federal Register
8 cite?

9 MS. CORDRY: Yes. It's the --

10 THE WITNESS: The current ISA?

11 BY MS. CORDRY:

12 Q No, no. This is the federal rule that is listed
13 as --

14 A Mine don't have exhibit numbers on it.

15 Q It's listed as Tuesday, February 9th, 2010.

16 A Okay.

17 Q That one.

18 MS. CORDRY: And the Federal Register cite would
19 be Volume 75, No. 26, as I said, February 9th, 2010. I
20 believe it started at probably page 6474.

21 MR. GOECKE: So it's 40 CFR?

22 MS. CORDRY: That's the --

23 MR. GOECKE: Yes. Thanks.

24 MS. CORDRY: -- statutory rules. Okay.

25 BY MS. CORDRY:

Page 146

1 Q Actually, can you find page 6501?
2 A Yeah.
3 Q Okay. And on the left-hand side there, about
4 midway down the left-hand column --
5 A Uh-huh.
6 Q -- are those the studies that you were referring
7 to?
8 A Sure. Those are all well-known studies looking at
9 NO2 and health effects.
10 MR. GROSSMAN: This is: A cluster of five key
11 U.S. epidemiological studies --
12 MS. CORDRY: Yes.
13 MR. GROSSMAN: -- studies; is that what you're
14 referring to?
15 MS. CORDRY: Right.
16 THE WITNESS: So I think this speaks to the
17 judgment of the administrator when they concluded from their
18 assessment that the health effects in these studies suggest
19 that the NO2 concentration is down to 85 to 94 parts per
20 billion, which all these studies are kind of where, where
21 she wants to kind of set the standard to protect people
22 against.
23 BY MS. CORDRY:
24 Q And can you look on the middle column there, the
25 paragraph that starts: Given these considerations? And can

Page 147

1 you read that sentence or two?
2 A Given these considerations, the administrator
3 continues that epidemiologic evidence provides strong
4 support for setting the standard limits -- for setting a
5 standard that limits the 98th percentile of the distribution
6 of one-hour daily maximums, sorry, one-hour daily maximum
7 area-wide NO2 concentrations to below 85 parts per billion.
8 Q And --
9 A All right. So this speaks to that kind of
10 roadside approach versus kind of the peak kind of average
11 exposure kind of away from the roadside.
12 Q Right. If you go down one more paragraph below
13 that, it starts out: In considering specific standard
14 levels.
15 A Uh-huh.
16 Q And, again, can you read that or summarize that
17 paragraph in the next, in the two bullet points there?
18 A So, in considering specific standard levels
19 supported by the epidemiologic evidence, the administrator
20 notes that the level of 100 parts per billion, for a
21 standard reflecting the maximum allowable NO2 concentration
22 anywhere in the area, would be expected to maintain the
23 area-wide NO2 concentrations well below 85 parts per
24 billion. And here they refer to those cluster of five
25 studies. So --

Page 148

1 Q Right.
2 A -- again, the aim of this standard is to kind of
3 keep this area-wide one-hour maximum level, you know, below
4 85.
5 Q Actually, can you read those two bullet points
6 there then?
7 A If NO2 concentrations near roadways are 100
8 percent higher than concentrations away from roads, the
9 standard level of 100 parts per billion would limit
10 area-wide concentrations to approximately 50 parts per
11 billion.
12 If NO2 concentrations near roadways are 30 percent
13 higher than the standard concentrations away from the
14 roadways, the standard level of 100 parts per billion would
15 limit area-wide concentrations to approximately 75 parts per
16 billion.
17 So this speaks to that spatial heterogeneity.
18 Right? So if the roadway is 100 percent higher than away
19 from the roadway, then setting the roadway at 100 will mean
20 the area-wide average should be kind of below 50. If the
21 roadway is only 30 percent higher, then it would still set
22 it at 75. So the administrator is saying I think there's
23 some, there's some protection here, because in reality, you
24 know, it states elsewhere in here that this spatial
25 heterogeneity is such that the near-roadway exposures are,

Page 149

1 you know, 30 percent to 100 percent higher than the
2 far-from-roadway exposures.
3 All right. So this is just a, this is just a
4 regulatory monitoring strategy approach that the
5 administrator has taken to ensure that this broad area of
6 exposures are acceptable, not that the standard is 100 for
7 everybody.
8 Q And, again, going back to those studies, what's
9 the significance of those studies?
10 A Well, those studies all saw, all saw exposure in
11 health effects in this range. Right? And so the EPA
12 administrator very clearly wants to kind of, since this is
13 the evidence base, these five studies, very clear evidence
14 base that health effects are occurring down to 85 parts per
15 billion, these one-hour averages, and the EPA, the EPA
16 regulator is setting a science, saying, I think the best
17 science is in these five studies and I'm going to hang my
18 hat on these five studies.
19 Q Okay.
20 MR. GROSSMAN: So I take it that what the
21 opposition is saying is that the actual EPA National Ambient
22 Air Quality Standard area-wide for one-hour NO2
23 concentrations is actually somewhere 50 to 75 parts per
24 billion rather than 100 parts per billion; is that what
25 you're suggesting by this?

Page 150

1 MS. CORDRY: Yes. What we're saying is that --
2 MR. GROSSMAN: Okay.
3 MS. CORDRY: -- by setting it at 100, she's saying
4 that's where we expect -- if we don't let it get above 100
5 at the highest point anywhere, like on the roadways, that
6 will assure that we keep the area-wide areas off the
7 roadways down to 50 to 75 parts per billion --
8 MR. GROSSMAN: Right. I just want to --
9 MS. CORDRY: -- because we are seeing health
10 effects below 100 parts per billion.
11 MR. GROSSMAN: I understand.
12 MS. CORDRY: Okay. All right.
13 MR. GROSSMAN: While Ms. Cordry is looking through
14 her papers, do you have any estimate of if, if you had a
15 concentration at, let's say, 100 parts per billion of NO2
16 near a roadway, what would the concentrations be 850 feet
17 from a roadway?
18 THE WITNESS: I'd have to, I'd have to kind of
19 look at some of the data, but I would think at a -- it would
20 be somewhere between, I think, you know, 30 percent of that
21 to 100, one half of that, based on the EPA administrator
22 suggesting that the distribution kind of ranges away from
23 roadways to between 30 percent and, you know, 100 percent.
24 BY MS. CORDRY:
25 Q And those are reductions, you mean --

Page 151

1 A Right, yeah.
2 Q -- 30 percent lower to 100 percent lower? So --
3 A Yeah.
4 Q -- so it would be 50 percent off the roadway?
5 MR. GROSSMAN: Well, yes, that's the question.
6 Are you saying that if you were 850 feet away --
7 THE WITNESS: I don't know that exact distance.
8 I --
9 MR. GROSSMAN: Right. The reason I chose that
10 figure is you mentioned in the testimony the Stephen Knolls
11 School, which is about 850 feet away from the source. So I
12 used that distance.
13 THE WITNESS: Right.
14 MR. GROSSMAN: And are you saying that you're
15 estimating that the reduction in concentration would be 50
16 percent to 30 percent of the measurement at the roadway, or
17 are you saying it would be 50 percent to 30 percent lower?
18 I'm not sure what -- are you saying it'll be, end up
19 being --
20 THE WITNESS: Half --
21 MR. GROSSMAN: -- 50 percent to 70 percent at the
22 850, or are you saying it'll be 50 percent to 30 percent?
23 THE WITNESS: It'll be roughly half to 70 percent
24 of --
25 MR. GROSSMAN: Okay.

Page 152

1 THE WITNESS: -- what's at the roadway. And --
2 but, you know, that's just based on kind of these general
3 kind of characteristics. In part, you know, I would rely on
4 the, on the modeling that was --
5 MR. GROSSMAN: Right.
6 THE WITNESS: -- then done to kind of predict kind
7 of what the levels are.
8 MR. GROSSMAN: Right. Okay.
9 BY MS. CORDRY:
10 Q All right. So speaking of modeling, we can
11 certainly turn to that now, depending on whether it's a good
12 point -- I guess we might as well keep going for a while
13 longer. Okay.
14 MR. GROSSMAN: Mr. Silverman is not hungry yet.
15 MS. CORDRY: Not yet.
16 MR. SILVERMAN: No. This is more appetizing.
17 MS. CORDRY: Okay.
18 MR. SILVERMAN: I checked out the lunch before.
19 MS. ADELMAN: What are we having today? Anything
20 good?
21 MR. SILVERMAN: Chicken marsala.
22 MR. SHEVEIKO: It's all going to be gone by the
23 time we get out of here.
24 BY MS. CORDRY:
25 Q I've asked you to look at Mr. Sullivan's reports

Page 153

1 and a number of his charts that he has done from those in
2 terms of these isopleth charts that he has created. Can you
3 look first at the one that is labeled December 18th, 2012?
4 MS. CORDRY: And, again, this is in the evidence.
5 This would have been Exhibit 54(b). I am handing out these
6 individual pages.
7 MR. GROSSMAN: Thank you.
8 MS. CORDRY: I don't think we need to have these
9 admitted again, but --
10 MR. GROSSMAN: No.
11 MS. ADELMAN: Do you have it, Dr. Breyse?
12 MR. GROSSMAN: But it's --
13 MS. CORDRY: -- but yes.
14 THE WITNESS: Mine is not labeled as an exhibit
15 number. Is it Figure 6.3?
16 BY MS. CORDRY:
17 Q Yes. It's the one that's labeled Figure 6.3 and
18 has December 18th, 2012, at the top.
19 A Okay.
20 Q So if we start applying this discussion that we
21 just had about the EPA rule to some of these results that
22 we're seeing here, this one was done based on his original
23 inputs and with a 28 microgram per meter cubed background.
24 We'll get to the background level later. We'll just start
25 with this one for now. What's the highest point you see

Page 154

1 labeled on this, this chart?
2 A Hundred ninety.
3 Q Okay. And where are you seeing that?
4 A Along the roadway, running roughly north-south on
5 the right-hand side.
6 Q Okay. And if you kind of make a left turn from
7 there at the top, towards the top of the map?
8 A Yeah. There's another roadway, right.
9 Q Right. Okay. So is that in fact the kind of
10 on-roadway exposures that was being discussed in the rule?
11 A Yes.
12 Q Okay. So according to this chart and the
13 modeling, for the 28 microgram per meter cubed background,
14 we were at the EPA level --
15 A This is --
16 Q -- that is not to be exceeded?
17 A This micrograms per cubic meter. So I have to be
18 careful.
19 Q Right. Right.
20 MS. CORDRY: And I did give him, and I think --
21 did you give Mr. Grossman as well?
22 MS. ADELMAN: No. I don't do that.
23 MS. CORDRY: I put together a cheat sheet for him.
24 Again, I don't think this has to be an exhibit, but it has,
25 for a whole series of micrograms per meter and parts per

Page 155

1 billion, the conversion factor there.
2 THE WITNESS: Right. So this is roughly 100 parts
3 per billion.
4 BY MS. CORDRY:
5 Q Right.
6 MR. GROSSMAN: Well, let's make it an exhibit --
7 MS. CORDRY: All right. If you want to, that's
8 fine.
9 MR. GROSSMAN: -- since we're going to look at it.
10 And we'll call this Exhibit 439.
11 MS. CORDRY: And I have given one, obviously, to
12 the other side as well.
13 MR. GROSSMAN: And we'll call it -- you did this,
14 Ms. Cordry?
15 MS. CORDRY: Yes, I did this. I --
16 MR. GROSSMAN: Okay. So --
17 MS. CORDRY: -- put it on my Excel spreadsheet,
18 and I told it to multiply those out.
19 MR. GROSSMAN: Okay. Cordry -- are both sheets,
20 are both sheets translations like that?
21 MS. CORDRY: The second sheet is taking each one
22 of these figures that we have and putting the relevant data
23 in there. So --
24 MR. GROSSMAN: Okay.
25 MS. CORDRY: -- it shows, for December 2012 it

Page 156

1 shows that it was the rural model. It was based on the
2 November inputs. The background used was a 28. I've got my
3 little Google Earth and measured roughly what the
4 north-south limit was here, just because the charts get
5 smaller and smaller as we go along.
6 MR. GROSSMAN: All right. So, first of all, let's
7 say page 1 will be 439(a) --
8 MS. CORDRY: Okay.
9 MR. GROSSMAN: -- and that's Cordry --
10 MR. SILVERMAN: Conversion.
11 MR. GROSSMAN: -- conversion --
12 MS. CORDRY: Just a list of conversions, yes.
13 MR. GROSSMAN: -- of parts per billion to
14 micrograms per cubic meter.
15 (Exhibit No. 439(a) was marked
16 for identification.)
17 MS. CORDRY: Right.
18 MR. GROSSMAN: And 439(b) is --
19 MS. CORDRY: Compiling the data points that are
20 shown on each one of the various --
21 MR. GROSSMAN: All right.
22 MS. CORDRY: -- figures that were done there.
23 MR. GROSSMAN: Cordry compilation of data points
24 from what?
25 MS. CORDRY: From the various exhibits that are in

Page 157

1 Mr. Sullivan's reports that we'll be going through.
2 MR. GROSSMAN: All right. From Sullivan reports.
3 (Exhibit No. 439(b) was marked
4 for identification.)
5 MS. CORDRY: And the one part that I put in there
6 was converting the micrograms per meter cubed to parts per
7 billion.
8 MR. GROSSMAN: With conversions?
9 MS. CORDRY: Yes, because most of the studies that
10 we'll be talking about are done in parts per billion but
11 these charts are in micrograms per meter cubed. So --
12 MR. GROSSMAN: Right. Right.
13 MS. CORDRY: -- I thought it was easier sometimes
14 to keep the numbers in front of me when I was looking at
15 them.
16 MR. GROSSMAN: Right. I agree.
17 MS. CORDRY: Okay. So --
18 MR. GROSSMAN: All right.
19 MS. CORDRY: So, again, if we look at, if we look
20 at this chart where it shows that the 190, which equates to
21 the 100 parts per billion, 188 is actually the exact
22 conversion; so technically it's two micrograms over the EPA
23 limit.
24 BY MS. CORDRY:
25 Q Can you just describe what that then shows in

Page 158

1 terms of the drop-offs and the -- what happens with the rest
2 of the area on the chart?
3 A All right. So you can see kind of how things,
4 quickly things drop off if you look to the right of the --
5 I'm sorry. What's this road that runs north-south?
6 Q That's Georgia Avenue.
7 A Georgia Avenue. You can see how they kind of fall
8 off, you know, with distance if there's no other source, and
9 you see it gets more complicated as you move in other
10 directions and other roads. And certainly, as you move back
11 towards the -- the model predicts where the service station
12 is going to be; there's another hot spot there down in the
13 center, a little bit down to the left.
14 MR. GROSSMAN: And I'm sorry. Was the page, the
15 handout you gave from Mr. Sullivan's December 18, 2012,
16 report, is that the background level before or after the
17 correction?
18 MS. CORDRY: No, this is the, this is the
19 incorrect background level. So even with the --
20 MR. GROSSMAN: This is incorrect.
21 MS. CORDRY: -- incorrect background level, we are
22 showing a level at or above the EPA standard on the roads.
23 MR. GROSSMAN: Okay.
24 MS. CORDRY: Okay.
25 BY MS. CORDRY:

Page 159

1 Q Okay. Now let's look, the next one would be the
2 January 16th chart. This, again, is labeled Figure 6.3 but
3 should now have the January 16th --
4 A Yeah.
5 Q -- it says 2012, but it's actually the 2013 report
6 that he did.
7 MS. ADELMAN: Is there an exhibit number on this?
8 MS. CORDRY: That would be Exhibit 56(a).
9 MS. ADELMAN: What is it? 50?
10 MS. CORDRY: 56(a).
11 MS. ADELMAN: And what is the one before that?
12 MS. CORDRY: That was 54(b).
13 MS. ADELMAN: 54(b). Thank you.
14 MR. GROSSMAN: As I recall, the December report
15 was withdrawn or superseded --
16 MS. CORDRY: Right.
17 MR. GROSSMAN: -- entirely by the January.
18 BY MS. CORDRY:
19 Q One of the things I'd like to ask you is, if you
20 look at between the December report and the November report,
21 I mean, the January report, do these appear to be showing --
22 the lines appear to be in the same place, the calculation
23 the same, and so forth?
24 A I'm not quite sure what you're asking.
25 Q Okay. Do these appear to be showing the same

Page 160

1 thing? Are the lines, these isopleth lines, are they in the
2 same locations? Does this appear to be charting the same --
3 A Well, they're different. Right?
4 Q Okay. What difference do you see among others?
5 A Well, for example, the roadway is now 175, whereas
6 before it was 190, is an example. So there's been changes
7 in assumptions that resulted in a change in the output.
8 Q Okay. If the assumptions didn't change, does that
9 mean the roadway, we simply remove the roadway line, the 190
10 line on the roadway, we're not showing that one anymore?
11 A I don't know.
12 Q Okay. All right.
13 MR. GOECKE: Are you asking about the lines
14 themselves or the numbers shown on the lines?
15 MS. CORDRY: Well, I'm showing that in December he
16 showed a 190 line. In the January report, that line isn't
17 there anymore. I don't think anything changed in his
18 assumptions or his modeling. I think it's just not being
19 shown, that interior line, anymore. I'm not quite sure why,
20 but --
21 MS. ADELMAN: That's the Georgia Avenue?
22 MS. CORDRY: Yes.
23 MR. GROSSMAN: Well, just so I understand you, are
24 you suggesting that the removal of the line changed the
25 other numbers?

Page 161

1 MS. CORDRY: No. I'm saying that what we don't
2 see anymore in this report, which was the official report,
3 is that 190 line, which, from the exact same modeling, was
4 shown before and now has been taken out. It's not that it's
5 not -- that it doesn't go up to 190 anymore. It just, it's
6 just not being shown on this chart anymore, and this was the
7 chart that's being relied on then to discuss these things.
8 So now we don't -- in other words, in January we don't see a
9 190 line anymore.
10 MR. GROSSMAN: I understand. I just wanted to
11 make sure I --
12 MS. CORDRY: Right.
13 MR. GROSSMAN: -- understood whether you were
14 implying that somehow the absence of that line changed the
15 other numbers.
16 MS. CORDRY: No. No.
17 MR. GROSSMAN: Okay.
18 MS. CORDRY: I'm just suggesting that the line has
19 been removed for --
20 MR. GROSSMAN: The line is not there. Okay.
21 MS. CORDRY: -- whatever reasons it was removed,
22 but --
23 MR. GROSSMAN: Right.
24 MS. CORDRY: So, at this point, looking at this
25 chart, one would -- the most you can see from this chart is

Page 162

1 it went up to 175, but when we look at the December chart,
2 we see that there was actually a 190 line there. Okay.
3 BY MS. CORDRY:
4 Q And the one other thing that the January chart
5 does is in the top right-hand corner it has a blowup of the
6 gas station area. If you look back at the previous one,
7 were you able to see in that gas station area how high does
8 it get?
9 A It was hard to read.
10 Q Okay. So what is the highest line that it shows
11 here now for the gas station?
12 A One seventy-five.
13 Q Okay. And looking at your little cheat sheet, a
14 175 micrograms per meter cubed translates into what number
15 parts per billion?
16 A Slightly below 95 parts per billion.
17 Q Okay. And is that in that range of the studies
18 you were just talking about?
19 A Certainly.
20 Q Okay. If we look at levels of 85 to 95 parts per
21 billion, that roughly translates into 160 to approximately
22 180, if we look at our little cheat sheet, and the 50 parts
23 per billion translates into 94 micrograms per meter cubed.
24 Can we look, can we look at this chart, and keeping those
25 kind of numbers in mind, can we look at, for instance, how

Page 163

1 far out those, the numbers in the range of 140, I'm sorry,
2 160 to 180, for instance, go out?
3 A Karen, Ms. Cordry, are you talking about --
4 Q I'm sorry.
5 A -- parts-per-billion units or
6 micrograms/cubic-meter units when you ask me that question?
7 Q I'm asking in the micrograms per meter cubed,
8 because it's labeled that way here.
9 A Okay. So the 60 to 70 to 75 micrograms/cubic
10 meter isoconcentration lines go out into the neighborhood.
11 Q Okay. I'm sorry. Actually, I'm saying 160 to
12 180.
13 A Well, there's no 160 or 180 line on the --
14 Q Okay. So, at this point, under this chart you
15 would not be able to see that the, that levels in the
16 neighborhood -- this would not indicate that levels in the
17 neighborhood were in the 85- to 95-parts-per-billion range,
18 the 160 to 180 micrograms per meter cubed?
19 A Correct.
20 Q Okay. And that's with the 28 micrograms
21 background. Okay. Now, are you aware that it's been
22 determined that the background calculations were
23 miscalculated for this diagram?
24 A Yes.
25 Q Okay. And that the correct number should have

Page 164

1 been 98 and not 28; in other words, that the background
2 level which is shown here is 28 and that it should have been
3 98?
4 A Because of the unit conversion.
5 Q Correct. Okay.
6 MR. GROSSMAN: Right. Ninety-eight micrograms per
7 cubic meter.
8 MS. CORDRY: Per meter cubed, right.
9 BY MS. CORDRY:
10 Q Now, knowing that -- so that's, that's a 70
11 microgram per meter cubed difference -- knowing that and
12 looking now at this chart, now what do you look at this
13 chart and see if you add that 70 on?
14 A So, for example, if we added, you know, 70 to the
15 75 isopleth line, that now becomes 145, which is well within
16 the range that we see health effects in terms of the
17 literature that the EPA relied on for the previous NO2
18 standard. So, for example, the 75 line, if we add 70 to
19 that and we convert that to parts per billion, we would get
20 somewhere between, something a little less than 80 parts per
21 billion.
22 So we're documenting, I think, exposures here that
23 are reaching out into the neighborhood that are well within
24 the range of exposures that the EPA is trying to prevent by
25 regulating NO2 in the previous standard.

Page 165

1 Q And if you took the 175 that is now the highest
2 point that's shown either at the station or the roadway and
3 you added 75 to that, I'm sorry, 70 to that, what would you
4 get?
5 A Then I think you're in an, actually, a
6 noncompliance-type setting. If this was -- if the EPA
7 treated this as a roadway and they put a monitor close to
8 this, I think that based on these numbers and adding the
9 correction factor, 70 micrograms/cubic meter, that you were
10 -- I'd worry that this was actually a non-compliant, this
11 gas station creates a noncompliant situation.
12 Q And if you look at the pool and the school, the
13 pool is, there's this little black --
14 MR. GROSSMAN: Well, let me stop you for a second.
15 MS. CORDRY: Okay.
16 MR. GROSSMAN: You said this gas station creates.
17 I'm not sure that the question assumes that all of this is
18 created by the gas station, correct?
19 THE WITNESS: Okay. Right.
20 MS. CORDRY: Well, what I am asking --
21 THE WITNESS: This gas station -- the addition of
22 the gas station would create a situation that is
23 noncompliant.
24 MR. GROSSMAN: Can you tell from this whether the
25 situation, the noncompliant situation existed prior to the

Page 166

1 assumption of the addition of the gas station?
2 THE WITNESS: You'd have to model it without,
3 without that gas station there, and I have not seen those
4 data.
5 MR. GROSSMAN: Okay.
6 THE WITNESS: But it would be, it'd be hard to --
7 I think, I think if we go back to the previous graph and if
8 we look to the right of the road, as you see, if you just
9 move away from the road, you'll see the decline in NO2
10 concentration without another obvious source. You see how
11 it goes from -- you follow that to the right; it goes from
12 175 to 150 to 100 to 90 to 80 --
13 MR. GROSSMAN: You're looking at the one from
14 Exhibit 54(b), the December 18 --
15 MS. CORDRY: Right. Correct.
16 THE WITNESS: Yeah.
17 MR. GROSSMAN: -- one?
18 THE WITNESS: So I think this represents kind of
19 the natural decline as you move away from a road --
20 MR. GROSSMAN: Yes.
21 THE WITNESS: -- right? And I would expect that,
22 absent any other kind of source, that to kind of occur away
23 from that road. And so I would, if we just kind of use my,
24 my finger test, I would think we'd be well down below
25 compliance levels based on the natural decay that we see

Page 167

1 from that roadway to the right-hand side.
2 MR. GROSSMAN: Well, you're suggesting -- I just
3 want to understand what you're -- are you suggesting that
4 your assumption is that the addition of the gas station,
5 let's say, we're talking now around where the Stephen Knolls
6 School is, has moved the needle --
7 THE WITNESS: Yes.
8 MR. GROSSMAN: -- that far --
9 THE WITNESS: Yeah.
10 MR. GROSSMAN: -- at that distance?
11 THE WITNESS: Yeah.
12 MR. GROSSMAN: All right. And do you have --
13 MS. CORDRY: Well, I'm not sure what your
14 question --
15 MR. GROSSMAN: Ms. Cordry, are you suggesting the
16 data suggests that?
17 MS. CORDRY: Well, I'm not sure what your question
18 is.
19 MR. GROSSMAN: My question is this: Dr. Breyse
20 answered an earlier question by indicating that the gas
21 station had created this exceedance, or apparent exceedance,
22 if not of the NAAQS standard, then at least of the
23 administrator's, I don't want to say preference, but
24 suggestion that that area-wide should be between the 50 to
25 80 parts per billion and that that level would be exceeded

Page 168

1 in that area, and he suggested that that was created by the
2 addition of the gas station. And I'm asking, I'm trying to
3 pin down whether or not in fact this is a situation that
4 exists now, regardless of the gas station, in terms of NO2
5 one-hour concentrations 850 feet from the gas station --
6 MS. CORDRY: Well, okay.
7 MR. GROSSMAN: -- because my, my recollection of
8 the study, the Sullivan study, is that at that distance the
9 addition of NO2 was very attenuated, as well as other things
10 as well, and I just wondered whether or not there's an
11 assumption being made here that this is all caused by the
12 gas station when this is just preexisting.
13 MS. CORDRY: Well, number one, we don't have any
14 studies of preexisting pollution. So, again, I think to
15 hold us to tell you what the preexisting pollutions is, I
16 think, is not our job. But in terms of is the overall area
17 pollution comprised of a number of sources, obviously yes.
18 It's obviously not coming all just from the gas station, but
19 I think what we said, what the Planning Board staff said is,
20 that you can tell from this, is you had levels on the
21 roadway that under this modeling would be an exceedance,
22 which means the area is in exceedance, which means, overall,
23 you have a problem --
24 MR. GROSSMAN: Right.
25 MS. CORDRY: -- that those levels would drop off,

Page 169

1 that you would not have -- you'd have a buffer zone from the
2 road absent the gas station and, by putting that in there,
3 you have eroded that buffer, you have pushed the levels back
4 up. Exactly what the contribution is from each source is
5 difficult to say but that you clearly have a new source of
6 pollution creating additional problems, bringing --
7 MR. GROSSMAN: Right.
8 MS. CORDRY: -- and the levels near that source
9 are at --
10 MR. GROSSMAN: I'm not saying there's not --
11 MS. CORDRY: Okay.
12 MR. GROSSMAN: -- an argument to be made that
13 there's a question about whether or not you want to add an
14 additional source here. That's not really the question I'm
15 asking. My question is, is it fair to assume that it's the
16 gas station that's creating the symptomatology that is
17 evidenced in the exhibits you've presented --
18 MS. CORDRY: Well, I don't think -- okay.
19 MR. GROSSMAN: -- and that's a, I think that's an
20 assumption that Dr. Breyse made in his answer, and I'm not
21 sure that's justified.
22 MS. CORDRY: Well, I don't think he actually
23 stated that. I think what he was stating was what are the
24 levels that we see here on this chart and are those levels
25 at points where there are health effects.

Page 170

1 MR. GROSSMAN: No. He said, used the word,
2 created by the gas station. That's why I stopped and asked.
3 THE WITNESS: So maybe I can be clear.
4 MR. GROSSMAN: Okay.
5 THE WITNESS: So --
6 MR. GROSSMAN: Because that's my concern, is that
7 one can make --
8 THE WITNESS: So this is --
9 MR. GROSSMAN: Hold on one second. One can make
10 an argument that you're making -- that is, you've got a
11 problem here, why add to the problem; that's your argument
12 -- but there's also another question which was raised by
13 your statement and that's what I wanted to clarify, whether
14 or not the gas station is the cause or even a significant
15 contributor to the NO2 one-hour problem at the school.
16 THE WITNESS: Okay. So I think these data say
17 that it's a significant contributor. If you look at the
18 maps, right, there's a hot spot there. Right? Things are
19 not --
20 MR. GROSSMAN: There's a hot spot where, sir?
21 THE WITNESS: In the, right -- right in that
22 middle circle area, right there, right where the
23 concentration lines get closer to together and they get
24 higher.
25 MR. GROSSMAN: Right, but that's not where the

Page 171

1 school is.
2 THE WITNESS: Well --
3 MR. GROSSMAN: My question actually went to where
4 the Stephen Knolls School is.
5 THE WITNESS: Right. So --
6 MR. GROSSMAN: I understand that there's --
7 THE WITNESS: Yeah.
8 MR. GROSSMAN: -- there's a significant issue
9 right around there, but I think, as you may not be, you
10 know, weren't exposed perhaps to some of the earlier
11 testimony about concentrations in the area around the gas
12 station coming from the Costco warehouse loading docks,
13 which have nothing to do with what's before me, in a direct
14 way, anyway; so I'm not, I don't know -- I don't want to get
15 back into that at this moment. I'm right now just talking
16 about right around the Stephen Knolls School, 850 or so feet
17 away from the gas station, and whether or not the gas
18 station is actually, as you suggested in your answer,
19 creating the problem.
20 THE WITNESS: Okay. Perhaps it's contributing to
21 the problem. So it looks like there's a, based on these,
22 this modeling, this number, there's certainly exposures to
23 NO2 in this neighborhood around where the school is that are
24 in the concentrations that we think are going to be bad for
25 kids, particularly kids with respiratory problems.

Page 172

1 MR. GROSSMAN: Right.
2 THE WITNESS: Right? And the gas station, based
3 on these modeling numbers, suggests to me that it's clearly
4 contributing to that.
5 MR. GROSSMAN: Okay. All right.
6 BY MS. CORDRY:
7 Q All right. So just to point out specifically the
8 Stephen Knolls School, can you look at the levels on these
9 isopleths that are shown where that school is?
10 A Sorry, which one am I looking at again?
11 Q The Stephen Knolls School, which is the brown
12 place just to the, brown roof, that's just to the right of
13 the --
14 A Which figure, though, am I looking at again?
15 Q Looking at the --
16 A Oh, I'm looking at Figure 6.3 --
17 Q The -- yes.
18 A -- January 16th?
19 Q Yes, the color one, right. And there is a
20 brown-roofed building just to the right of the bottom
21 right-hand corner there.
22 A Is it outside the red box?
23 MR. GROSSMAN: Yes.
24 BY MS. CORDRY:
25 Q Yes.

Page 173

1 A Okay. Yeah. So the isopleth lines there suggest
2 it's, looks like it's between 170, but if we add 70 to that,
3 it's 170 to -- so these suggest that the exposures at school
4 are consistent with what we'd expect health effects to be
5 based on the literature that the EPA administrator cites in
6 her current evaluation on NO2 health effects.
7 Q And if you look on the, just inside the top
8 left-hand corner of the box, that black, the little black
9 diagram there --
10 A Uh-huh.
11 Q -- that's the pool. And, again, in terms of the
12 location of the pool, where is it in terms of these lines
13 here?
14 A The same, the same.
15 Q By the same, you mean between the 75 and the
16 100 --
17 A Right. Right.
18 Q -- to which we will add 70 to each one?
19 A Right.
20 Q Okay. So you would, again, say that those are
21 within the range of where we have been seeing health
22 effects?
23 A Right. So this is, this is an area where, if I
24 were the EPA administrator, I'd say we want to be lowering
25 NO2 concentrations, because things seem to be excessive.

Page 174

1 Q Okay. So let's turn then to --
2 MS. CORDRY: If you can hand out, Abigail --
3 MS. ADELMAN: Yes.
4 MS. CORDRY: -- this exhibit.
5 MS. ADELMAN: Which is this? The color --
6 MS. CORDRY: Yes.
7 MS. ADELMAN: -- isopleth?
8 BY MS. CORDRY:
9 Q These are several of the pages from Exhibit 255,
10 which was the August report, and if you look at the first
11 page there, it's labeled as Figure 1.
12 A Uh-huh. Yes.
13 Q And this refers to now having a 98 microgram per
14 meter cubed background. So this is the one that was done
15 after he added in the corrected background. And looking at
16 this one -- so now you don't have to add the numbers on --
17 can you look at this and tell us for the pool what levels
18 that are shown there?
19 A Looks like between 160 and 150.
20 Q Okay.
21 A Am I reading that right?
22 Q Right. And what about for the school?
23 A Roughly the same.
24 Q Okay. And, again, it's a little difficult to read
25 all the way in the center there, but what -- can you see in

Page 175

1 the center what the smallest isopleth line is there?
2 A It's either 300 or 800.
3 Q Three hundred, I will bet. At the top it's
4 labeled the maximum equals 388 micrograms per meter cubed.
5 So --
6 A Okay.
7 Q And I'm trying to read. And then on the roadways
8 now, for instance, just coming off the right-hand, midway up
9 the right-hand side there on the roadway?
10 A Three hundred.
11 Q Okay. So, again, based on the NO2 rule, where are
12 we at in terms of the roadways?
13 A We're out of -- we're already out of compliance.
14 Q And the station?
15 A Out of compliance.
16 Q By a little bit?
17 A By a good bit.
18 Q Okay. In terms of children using the pool -- we
19 already talked about the hypersensitivity of the kids at the
20 Stephen Knolls School -- is there any reason you would think
21 that children exposed at the pool would have a different
22 level of sensitivity than children elsewhere?
23 A So we expect, you know, based on numbers, for
24 example, 10 to 12 percent of kids to have asthma. Right?
25 So there's likely going to be asthmatic kids there. Asthma

Page 176

1 is the most common chronic disease in kids. If they're
2 African Americans, we expect maybe as high as 20 percent of
3 African-American kids to have asthma. So it's a very common
4 disease.
5 So I suspect there's going to be kids there that
6 would be labeled susceptible in terms of the EPA. I expect
7 -- COPD is a pretty common disease, as well, in terms of
8 adults -- I expect we're going to have susceptible adults
9 who attend this pool or maybe live in this area as well. So
10 I think there's the potential for a variety of susceptible
11 populations to be impacted by these exposures.
12 Q Okay. And if children are exercising, does that
13 have more or less effect?
14 A So the data are actually a little bit mixed on
15 that. So, in general, people think exercising is worse, but
16 different things happen when you exercise. So it's probably
17 not as clear, but in particular, I think, if you're an
18 asthmatic kid and you're exercising, depending on what kind
19 of phenotype of asthma you have, what kind of, the way your
20 disease presents itself, it could be a huge contributor or
21 maybe not so big a contributor.
22 Q Okay. All right. Are you aware that one issue in
23 this case is whether rural versus urban dispersion factors
24 should be used in the air quality monitoring?
25 A So we've discussed that.

Page 177

1 Q Okay. Is that issue an analysis, or is this issue
2 about that something with which you have a lot of
3 familiarity?
4 A You know, that's -- that probably gets beyond kind
5 of, you know, what I would consider my area of expertise in
6 terms of speaking to the justifiability of that. You know,
7 there's not like one is right and one is wrong.
8 Q In any case, though, if you were reviewing a study
9 using one method and the proponent says, well, it's really
10 more accurate to do another way, what would you expect the
11 person then to do with the differing analysis?
12 MR. GROSSMAN: I don't understand that question.
13 MS. CORDRY: Okay.
14 BY MS. CORDRY:
15 Q If somebody comes to you and says, well, this
16 analysis that I did using rural isn't really correct, I
17 really should use the urban model, what would you expect to
18 then get from them in terms of a report?
19 MR. GROSSMAN: Well, your problem is he's just
20 testified that he's not an expert in that distinction.
21 MS. CORDRY: Well, I understand. I said, whether
22 he should use one or the other.
23 BY MS. CORDRY:
24 Q But if somebody says -- let's see. If somebody
25 says to me, okay, I want to use a different model and a

Page 178

1 different approach, what would you then expect to get from
2 that person in terms of their study?
3 A I think, maybe --
4 MR. GOECKE: Objection.
5 BY MS. CORDRY:
6 Q Would you expect to get a copy of the study
7 with --
8 MR. GROSSMAN: Well, hold on. Hold on a second.
9 MS. CORDRY: Okay.
10 MR. GROSSMAN: I think it's a problematic
11 question. I'm going to let him take a stab at answering
12 it --
13 MS. CORDRY: Okay.
14 MR. GROSSMAN: -- but I think it's a problematic
15 question since he's already just said he's not an expert in
16 this area. So I will --
17 MS. CORDRY: Okay. You will see, I think --
18 MR. GROSSMAN: -- gauge the weight to give to the
19 answer.
20 THE WITNESS: So here's what I'd say. So I don't
21 know which of those two is right, right, but what I would
22 expect to see is maybe a bit of a sensitivity analysis to
23 see just how much are things changing as you kind of change
24 your model assumptions, which speaks to kind of the
25 introduction we had earlier today, that these models are all

Page 179

1 subject to kind of variability, depending on assumptions;
2 and, unless you take this distributional approach -- it's
3 not like one number is right and one number is wrong. The
4 question is, which number is closer to reality, and that, we
5 don't know because we can't put any kind of uncertainty
6 estimate on that, remember, when we just kind of keep
7 running the models or changing one thing and getting a
8 different answer.
9 BY MS. CORDRY:
10 Q Okay. In any case, if you're going to look at
11 Mr. Sullivan's urban analysis using these original modeling
12 factors but the corrected background, which -- do you have
13 any opinion as to which would be the more accurate result?
14 MR. GROSSMAN: Well, which -- no, I don't
15 understand that one. Which what would be the appropriate --
16 MS. CORDRY: Okay.
17 MR. GROSSMAN: -- or accurate result?
18 MS. CORDRY: All right. Let me ask -- let me put
19 it a different way.
20 BY MS. CORDRY:
21 Q Were you able to look at an urban analysis from
22 Mr. Sullivan using the same input factors that he did in
23 November but with the corrected background? Were you able
24 to look at something similar to this but with the urban
25 analysis?

Page 180

1 A No, I --
2 MR. GROSSMAN: Aren't you assuming, were you able
3 to, or did he look at it?
4 MS. CORDRY: No, I'm going to ask him, were you
5 able to?
6 THE WITNESS: No.
7 BY MS. CORDRY:
8 Q And why not?
9 A I don't know.
10 Q To your knowledge, was one like that ever
11 produced?
12 A I don't believe it was.
13 Q Okay. So if someone says I should use a different
14 analysis but they don't give you a comparable set of data,
15 what does that say to you --
16 A Well --
17 Q -- as a scientist trying to review the study?
18 A -- it creates difficulty kind of now, kind of
19 reviewing it, because the assumptions in the model are kind
20 of moving as we're trying to evaluate kind of the outputs.
21 And so, you know, like I said before, it's not like one is
22 wrong and the other is right, but it creates uncertainty and
23 it's hard to kind of evaluate in that case.
24 Q And is it more difficult to evaluate if you don't
25 have the other modeling done?

Page 181

1 A Well, you have to do what we just did. We're
2 sitting here, trying to evaluate this, the one model, where
3 we're trying to do the math and add kind of stuff to it off
4 the top of our head rather than kind of running the model
5 kind of directly.
6 Q And if you were going to try to compare, for
7 instance, under the original assumptions --
8 MR. GROSSMAN: But I think you've made your point
9 here. You --
10 MS. CORDRY: Well --
11 MR. GROSSMAN: -- don't have to keep on asking the
12 same question --
13 MS. CORDRY: Okay.
14 MR. GROSSMAN: -- three different ways.
15 MS. CORDRY: Okay. All right.
16 BY MS. CORDRY:
17 Q Now, all right, so then you are aware that after
18 seeing the results of the corrected background calculations,
19 which would be this Figure 1, are you aware that
20 Mr. Sullivan revised a number of his modeling inputs?
21 A Yes.
22 Q Okay. And do you know why he did that?
23 A I think the attempt was to become more realistic,
24 I believe. I don't remember the exact wording.
25 Q I'll quote from his August report at page 17 where

1 he said he had to, quote, reduce some of the conservatism in
2 the analysis in order to ensure that it has not
3 inappropriately concluded that elevated one-hour NO2
4 exposures will occur, when, in reality, actual exposure will
5 be far below the standards.

6 In terms of if you were peer-reviewing a study and
7 you found an error like this and that was the response
8 somebody gave you, what's your reaction to that?

9 A Well, I think it's clear what, what I've said
10 before about kind of what I would expect to see if this were
11 certainly a paper or something up for publication. Doing
12 these single-point estimates with kind of changing
13 assumptions one at a time doesn't help you too much. It
14 doesn't get you closer to the, to kind of the truth, in my
15 opinion.

16 Q Is there evidence in the case that you're aware of
17 that would suggest that the assumptions were not, the
18 original assumptions were not overly conservative?

19 A You know, when I first read the first report, I
20 took Mr. Sullivan's word that they were kind of conservative
21 assumptions, and I'm not quite sure what changed after that,
22 but some of those assumptions clearly did change. But this,
23 this again speaks to, if I could just -- I don't know if you
24 want to keep beating this, but conservatism is in the eye of
25 the beholder, right, and that's, that's the problem with

1 running the models like this, is we don't know -- if I were
2 running this from scratch, would I pick the same
3 conservatism, would another modeler pick the same
4 conservatism? Maybe, maybe not.

5 Q Are you aware of some of the concerns that
6 Dr. Cole has raised about the assumptions?

7 A Yes.

8 Q Okay. And what would those do in terms of the way
9 the model would come out if his assumptions were --

10 A Well, he would --

11 MR. GOECKE: Objection. Foundation and --

12 MR. GROSSMAN: Yes. I mean, first of all, the
13 witness has answered at least four or five times that he
14 would approach modeling by -- instead of changing the
15 assumptions, he would have done multiple data inputs and run
16 it numerous times to get a series of results --

17 MS. CORDRY: Right. But --

18 MR. GROSSMAN: -- that could be compared. So I
19 don't think you have to keep on harping on it over and over
20 and over again.

21 MS. CORDRY: I understand, but I'm trying to get
22 specifically to Dr. Cole's suggested changes in the
23 assumptions and what effect that would have on the models.

24 MR. GOECKE: Well, Dr. Cole has already testified
25 about that.

1 MR. GROSSMAN: Well, I think she can ask him about
2 what, if he has an answer for that, what changes from what
3 Dr. Cole said. I don't know. What specifically are you
4 referring to?

5 MS. CORDRY: Well, among other things, that
6 Dr. Cole said that he thought the MOVES versus the MOBILE6
7 modeling, that the traffic congestion could be worse, that
8 there was a number of factors --

9 MR. GROSSMAN: All right. So let's --

10 MS. CORDRY: Okay.

11 MR. GROSSMAN: -- let's ask him about each of
12 those so we know what his answer means. Any change in
13 assumption, you're talking about MOVES versus MOBILE6 and so
14 on.

15 MS. CORDRY: Okay. Well, I was actually just
16 trying to ask more generally, are you -- whether he was
17 aware that Dr. Cole had suggested that there were
18 assumptions that could make the model come out higher, that
19 really --

20 MR. GROSSMAN: But he doesn't like changing
21 assumptions. He likes doing a different approach
22 entirely --

23 MS. CORDRY: Well, one of the --

24 MR. GROSSMAN: -- but he's already answered that.

25 MS. CORDRY: Well, one of the changes in that is

1 that there, that there would be assumptions that could be
2 higher, that it's not just a monolithic possibility, that
3 there, that we've had a -- you know, I'm just really trying
4 to set the background: Are you aware that there's been
5 suggestions that would make the numbers higher than
6 Mr. Sullivan has said?

7 MR. GROSSMAN: Well, all right, try asking the
8 question. I would keep -- I'm trying to get it to be a more
9 specific question than your open-ended one, which keeps on
10 leading back to the same answer --

11 MS. CORDRY: Okay. Well --

12 MR. GROSSMAN: -- okay, that we've heard many
13 times. That's all. So if you want to ask something
14 specific about his understanding of what Dr. Cole suggested,
15 then address it to that specific thing so we get a more
16 specific answer rather than just a repetition of the general
17 principle that he's enunciated many times. I know this is
18 not easy to do. So --

19 MS. CORDRY: I understand. I understand.

20 MR. GROSSMAN: -- I've done many expert
21 examinations.

22 MS. CORDRY: I mean, partially is, he is not the
23 meteorologist either. So he is --

24 MR. GROSSMAN: Right.

25 MS. CORDRY: -- not really in a position to, you

Page 186

1 know, when Dr. Cole testifies, there are a number of changes
2 that could be made that would produce -- those are the
3 changes you've already got. I'm simply saying that are you
4 aware that there, that there are a basis for, a valid
5 basis --
6 MR. GROSSMAN: Right, but you're maybe trying to
7 get something out of this witness that is not the thing that
8 this witness is here to testify about. That may be --
9 MS. CORDRY: Okay.
10 MR. GROSSMAN: -- the problem, but I'm trying to
11 -- I'm just trying to make sure that the answers are
12 specific rather than --
13 MS. CORDRY: Okay. Okay.
14 MR. GROSSMAN: -- more general again. That's all.
15 BY MS. CORDRY:
16 Q Let me ask you a different question then. These
17 backgrounds -- these charts that have been done using this
18 28 or 98, as properly calculated, background, if there are
19 reasons to look at the backgrounds in this area and find
20 others that have a higher value of, say, 118 micrograms per
21 meter cubed, what effect would that have on these charts?
22 A Obviously, the model values would go higher --
23 Q Okay.
24 A -- right? So it's -- and output is sensitive to a
25 variety of inputs, including the background that you choose.

Page 187

1 A lower background is going to produce lower numbers. A
2 higher background is going to produce higher numbers.
3 Q So if you added another 20 micrograms per meter
4 cubed onto these results --
5 MR. GROSSMAN: He's already answered that.
6 MS. CORDRY: Okay.
7 MR. GROSSMAN: If you increase it, the output will
8 be different.
9 BY MS. CORDRY:
10 Q All right. Let me turn, ask you to turn back to
11 what's labeled as page 24 in this document.
12 MR. GROSSMAN: Which document?
13 MS. CORDRY: In the excerpts from Exhibit 255.
14 MR. GROSSMAN: Okay. That's the August 2013
15 report.
16 MS. CORDRY: Right.
17 BY MS. CORDRY:
18 Q And these are ones where the inputs were then
19 changed. They were refined assumptions, according to
20 Mr. Sullivan's testimony, and the background level was
21 reduced from 98 to 90. So we have these two new charts that
22 are done here, one using the urban dispersion and one using
23 the rural dispersion. And if you look at the first, at
24 Figure 10 there, can you describe a little bit about that in
25 terms of the levels that are seen and how far out they go

Page 188

1 and where there are levels that are, relate to the EPA rule
2 standard levels.
3 A So it suggests, again, that there's a hot spot,
4 right, where the service station sits at the center, where
5 it's 200 micrograms/cubic meter, and that concentrations
6 upwards to 170 to 160 micrograms per cubic meter kind of
7 extends into the neighborhood. It's hard to say, kind of,
8 what the impacts in the pool are going to be and the school
9 are going to be because this is a more limited analysis, but
10 if we're concerned about protecting the neighborhood in
11 general, these results suggest that concentrations certainly
12 in the, in the homes, near the homes of the people in this
13 area or within the area, that we'd see excess respiratory
14 disease based on the studies that the EPA cited.
15 Q Okay. Can you tell from this figure what the
16 roadway levels will be anymore?
17 A No.
18 Q Okay. And that's because they're not showing the
19 roadways?
20 A Correct.
21 Q Okay. So we can't take that into effect. Okay.
22 And for Figure 9, which is this urban dispersion?
23 MR. GROSSMAN: I just want to make sure I
24 understand in terms of -- you're looking at Figures 9 and 10
25 now --

Page 189

1 MS. CORDRY: Yes.
2 THE WITNESS: Uh-huh.
3 MR. GROSSMAN: -- on Exhibit 255? And what number
4 are you referring to that suggests to you that the exposure
5 in the residences would be problematic?
6 THE WITNESS: So if we -- so we see the 160 line
7 in the neighborhood in Figure 10.
8 MR. GROSSMAN: Oh, I see. Okay, in Figure 10,
9 160.
10 THE WITNESS: Right. And then I'm assuming the
11 next one is 150, right?
12 MR. GROSSMAN: Okay.
13 THE WITNESS: And so 150 micrograms per cubic
14 meter is 80 parts per billion.
15 MR. GROSSMAN: Okay.
16 THE WITNESS: And so these are values that are in
17 the range that the EPA administrator thinks are problematic
18 in terms of disease risk.
19 MR. GROSSMAN: Okay. That's right at the edge, if
20 I understand it.
21 THE WITNESS: Well --
22 MR. GROSSMAN: It was 50 to 80, right?
23 THE WITNESS: Yeah.
24 MR. GROSSMAN: Okay.
25 THE WITNESS: Remember, they're reevaluating --

Page 190

1 MR. GROSSMAN: Right.
2 THE WITNESS: -- as well, and everybody, you know,
3 we can't bank on it, but there's been a lot of science since
4 then.
5 MR. GROSSMAN: Yes, but once again, as you
6 suggested, there is a point at which you have to say I'm
7 going to rely on what's, what's, the agencies that determine
8 the standards have now. And I understand, you know, what
9 the testimony has been about those standards, but it's a
10 little bit different to suggest that I have to go, I have to
11 assess this based on material that hasn't yet been accepted
12 for standard establishment by the EPA. So that's a
13 distinction, but go ahead.
14 MS. CORDRY: Well, that is a question that you're
15 going to have to answer, and I think our --
16 MR. GROSSMAN: Right.
17 MS. CORDRY: -- position is going to be that --
18 MR. GROSSMAN: I understand.
19 MS. CORDRY: -- those are issues to look at.
20 MR. GROSSMAN: I understand.
21 MS. CORDRY: Okay. So --
22 MR. GROSSMAN: The reason I asked my question, by
23 the way, is I was looking at Figure 9 --
24 MS. CORDRY: Right.
25 MR. GROSSMAN: -- and I saw that the isopleth in

Page 191

1 the neighborhood was at 110 micrograms per cubic meter and,
2 when I did the math, that was lower --
3 THE WITNESS: True.
4 MR. GROSSMAN: -- well below the 80. So that's
5 why I wondered what you were referring to. I hadn't seen
6 the one down in Figure 10.
7 BY MS. CORDRY:
8 Q But the 110, which would translate, if I'm looking
9 at my little cheat sheet here, to about 58 parts per
10 billion, that is still in that range of 50 to 75 that they
11 were trying to keep the rates at or below if you kept the
12 roadway levels, is that correct?
13 A Yes.
14 MR. GROSSMAN: Yes, but 50 to 75 was at or below.
15 So that's why -- I wouldn't --
16 MS. CORDRY: Right.
17 MR. GROSSMAN: -- say that that's necessarily
18 problematic, but okay.
19 MS. CORDRY: It's based on the evidence that they
20 had in mid-2008.
21 MR. GROSSMAN: Once again --
22 MS. CORDRY: Okay. Which we will be going beyond
23 shortly.
24 BY MS. CORDRY:
25 Q All right. Now, I think you had mention that

Page 192

1 there was a limited number of monitors out there for NO2.
2 Are you aware as to any changes that were going to be made
3 in those monitoring as part of the NO2 rule?
4 A In terms of more monitoring closer to roadways?
5 Q Yes. Yes, that there, are you aware that there's
6 going to be a -- that there is a requirement in the rule for
7 additional monitors --
8 A Yes.
9 Q -- near roads? Okay. And what effect would you
10 expect that to have on background-level readings?
11 A Well, the background readings are going to change,
12 and I expect, you know, the background is going to be higher
13 if you incorporate near-roadway measures into that. And it
14 comes to the point, well, what are you considering
15 background, but certainly, we're going to see higher levels,
16 in general, when EPA starts monitoring more frequently
17 closer to bigger roadways.
18 Q And another from Dr. Cole, he did suggest one way
19 to look at perhaps the most accurate number was to take
20 Mr. Sullivan's original approach, which was to roughly
21 average the urban and rural numbers, and in his testimony,
22 when he took that 168 max from Figure 9 and the 217 max from
23 Figure 10, he came out with a level of approximately 190.
24 And, again, how do you react to that number in terms of --
25 A I'm sorry.

Page 193

1 Q Okay.
2 MR. GOECKE: Objection. Are you saying Dr. Cole
3 said you should average them or Mr. Sullivan?
4 MS. CORDRY: Dr. Cole quoted from Mr. Sullivan's
5 report, which said the most accurate number was somewhere
6 between the urban and the rural number. That was his
7 original position, was that the most accurate way to deal
8 with this area was to take a position between the two
9 numbers. And Dr. Cole then did that calculation and
10 essentially averaged these two numbers and came out with a
11 value of roughly 190.
12 MR. GOECKE: Okay. Well, the record will speak
13 for itself, but I just want to object to the extent that
14 she's making assumptions about what's in the record and not
15 showing us those points of the record.
16 MR. GROSSMAN: You're talking about in that
17 affidavit that Dr. Cole did?
18 MS. CORDRY: In the affidavit, then in his
19 testimony, both --
20 MR. GROSSMAN: Right.
21 MS. CORDRY: -- and certainly the point about -- I
22 can find the quote from Mr. Sullivan about how you should
23 combine the two, like, if --
24 MR. GROSSMAN: Right. Okay. Subject to that
25 qualification in your objection, we'll go ahead and let you

Page 194

1 ask that question.
2 MR. GOECKE: Thank you.
3 BY MS. CORDRY:
4 Q So, again, if that would be one way of determining
5 the most appropriate number, the most accurate number, would
6 be the average of the two would be 190, again, can you just
7 comment on that in terms of the health effect concerns?
8 A You know, I don't think I can comment on it.
9 First of all, accuracy in this case is something we don't
10 know. Right? There's a statistical meaning to accuracy
11 that, again, means kind of just how close to the truth is
12 it. We can talk about, you know, how appropriate it is to
13 use one or the other, we can see how the thing is going to
14 change when we do that, but the reality is probably
15 somewhere in between, and the question is, do we pick one or
16 not or -- I again go back to my premise that this
17 one-assumption-at-a-time kind of approach --
18 Q Actually --
19 A -- doesn't get us where we want to be.
20 Q -- my question was a little simpler. If you
21 picked -- if you say, whether it's a good approach or not,
22 but if you say the number is 190, is that a problem in terms
23 of health effects, if the maximum point at this area back
24 here is 190, let's hypothesize that, whether it's based on
25 Dr. Cole's testimony or anything else?

Page 195

1 A Well, clearly, you know, it would be a problem.
2 Q Okay. All right. And then one last question
3 here. At one point in his cross-examination, Dr. Chase was
4 asked whether a level of 277 micrograms per meter cubed that
5 Dr. Cole had, again, had estimated as one of the potentials
6 for the highest point on the, I'm sorry, excuse me, he had
7 estimated in his affidavit might be the highest point using
8 the, this rural modeling but with the new inputs, Dr. Chase
9 was asked whether a level of 277 micrograms per meter cubed,
10 whether that could cause, whether he'd have concerns about
11 that as causing health effects, and his answer was basically
12 that it would depend on whether there was a sufficient --
13 MR. GOECKE: Objection. If we're going to quote
14 him or cite something, let's quote him, not say basically
15 what he said.
16 MS. CORDRY: I can find the exact quote, but --
17 MR. GOECKE: Okay.
18 MR. GROSSMAN: Let's let her finish asking the
19 question anyway.
20 BY MS. CORDRY:
21 Q The question is basically that it might or might
22 not, depending on whether there were sufficient margins of
23 safety in the EPA rule. Do you agree with the conclusion
24 that there is, that the level of 277 is a debatable level?
25 MR. GROSSMAN: I think it's fair, the point that

Page 196

1 Mr. Goecke made is fair. Why don't we get the specific
2 statement that was made --
3 MS. CORDRY: All right.
4 MR. GROSSMAN: -- if you're going to quote him.
5 MS. CORDRY: All right.
6 BY MS. CORDRY:
7 Q And let me ask you just a different way. Would
8 you agree that there's any question that -- let me put it
9 differently. Would you view the level of 277 micrograms per
10 meter cubed as a debatable question in terms of health?
11 MR. GROSSMAN: Well, first of all, of what? Two
12 hundred seventy-seven --
13 MS. CORDRY: Micrograms per meter cubed.
14 MR. GROSSMAN: Of?
15 MR. SILVERMAN: NO2.
16 MS. CORDRY: Of NO2 --
17 MR. GROSSMAN: Okay.
18 MS. CORDRY: -- as being a debatable level of risk
19 for health effects.
20 MR. GROSSMAN: On a one-hour --
21 MS. CORDRY: On a one-hour standard --
22 MR. GROSSMAN: Okay. Just --
23 MS. CORDRY: -- the one we've been doing all the
24 way through here, yes, right.
25 THE WITNESS: I think that's well in excess of

Page 197

1 what I would think is an acceptable level exposure. We saw
2 asthmatic increases in symptoms of kids with asthma in our
3 studies in homes with exposures, you know, 30, 40 parts per
4 billion, which is 50 micrograms/cubic meter, so a quarter, a
5 fifth of that.
6 MS. CORDRY: Okay. This might be a good place to
7 take a break --
8 MR. GROSSMAN: All right.
9 MS. CORDRY: -- before we get -- if you're going
10 to use the cafeteria.
11 MR. GROSSMAN: You can tell that Mr. Silverman was
12 getting hungry.
13 MS. CORDRY: Yes.
14 MR. SILVERMAN: I was, yes.
15 MR. GROSSMAN: All right. About how much --
16 MS. CORDRY: I think --
17 MR. GROSSMAN: -- more examination?
18 MS. CORDRY: I am more than halfway through. I
19 think, hopefully, it'll go relatively fast because some of
20 these things I think he has talked about somewhat before.
21 If we could take a slightly shorter break, because he really
22 would like to get out of here before the end of the day.
23 So --
24 MR. GROSSMAN: Well, I want to make sure that
25 people have time to get a bite.

Page 198

1 MS. CORDRY: Yes.
2 MR. GROSSMAN: Do you want to come back at 2
3 o'clock? It's 1:30 now.
4 MS. ADELMAN: Wow.
5 MR. GROSSMAN: You said a slightly shorter break.
6 MS. CORDRY: Yes.
7 MR. GROSSMAN: We usually try to do 45 minutes,
8 but --
9 MS. CORDRY: Let's say 2:10.
10 MR. GROSSMAN: 2:10?
11 MS. CORDRY: Yes.
12 MR. GROSSMAN: Okay. All right. We'll break for
13 lunch until 2:10.
14 (Whereupon, at 1:27 p.m., a luncheon recess was
15 taken.)
16 MR. GROSSMAN: All right. Ms. Cordry, the ball is
17 in your court.
18 MS. CORDRY: All right.
19 BY MS. CORDRY:
20 Q So up until now we've been talking about the EPA's
21 NO2 standard as it was announced in December 2010. Are you
22 aware of whether that standard is being reviewed again?
23 A Yes. It's being -- it's under review now.
24 Q Okay. And in what stage is it at, to your
25 knowledge?

Page 199

1 A They're doing the review of the literature,
2 assessing all the studies and trying to come up with a
3 composite review document.
4 Q Okay. In looking at these studies, the last one
5 or this one, any of them, what effect does this fact that
6 pollution is often a mixture of chemicals, how does that
7 play into what they have to do in terms of setting their
8 levels for each individual pollutant?
9 A Right. So it creates, it creates this problem,
10 right, because oftentimes there are studies that identify
11 the mixture but can't tease out the individual pollutant
12 really well and they'll see health effects in the mixture,
13 that the combined -- the individual levels of the two
14 pollutants are both below their perspective standards, but
15 the EPA administrator has a hard time using those for
16 setting individual standards. Right?
17 So that the challenge now is, from a public health
18 perspective, is, where is the threshold? And the health
19 threshold was clearly below those levels, but you know, is
20 it PM by itself, is it NO2 by itself, is it combined PM and
21 NO2 by itself, and that's the challenge. And oftentimes the
22 administrator will look at studies and say the -- suggest
23 there's a health risk at NO2 below the level that we think
24 the standard should be but we can't use this study because
25 it can't say how much of that excess versus exactly due to

Page 200

1 SO2 -- NO2 versus PM. So that's a big challenge.
2 Q Okay. And do they refer to that in the rules?
3 A Well, they address on that. So they'll mention
4 studies in their review that say this study suggests there's
5 a health effect at some level below that we currently have a
6 standard, but we can't use this in our standard setting
7 rule-making because we're, we're handcuffed, if you will, by
8 looking at things one at a time.
9 Q Okay. And does that apply to both the NO2 and the
10 PM2.5 standards?
11 A Yeah, that does, right.
12 Q And talking about the Southern California study
13 that you had mentioned before, does that relate to this
14 problem you just mentioned?
15 A Yes, it does. That's a perfect example.
16 Q Okay.
17 MS. CORDRY: Let me hand out, if you would, let me
18 just go ahead and give out three right now so we can discuss
19 these -- this one, this one, and this one. All right.
20 MR. GROSSMAN: Thank you.
21 MS. CORDRY: If we can mark these as exhibits and
22 have them --
23 MR. GROSSMAN: Okay.
24 MS. CORDRY: I guess the other ones were previous
25 exhibits. We didn't -- those were not new pieces. So --

Page 201

1 MR. GROSSMAN: Well, some. We have, we marked
2 your résumé --
3 MS. CORDRY: Right. Right.
4 MR. GROSSMAN: -- as 438, and 439(a) and (b), your
5 conversion package. The others were just parts of
6 previously --
7 MS. CORDRY: Right, but we didn't have to mark
8 these, for instance, because they were already in, right.
9 Okay. So these would be new exhibits to mark.
10 MR. GROSSMAN: So --
11 MS. CORDRY: The first one is --
12 MR. GROSSMAN: -- first one?
13 MS. CORDRY: -- about six or seven pages from the
14 2008 Integrated Science Assessment. So this is the one that
15 the EPA has acted on already.
16 MR. GROSSMAN: All right. So this is Exhibit 440,
17 and this is pages --
18 MS. CORDRY: 3-56 through 3-62.
19 MR. GROSSMAN: Okay. Pages 3-56 to 3-62, did you
20 say?
21 MS. CORDRY: Right.
22 MR. GROSSMAN: 62, from -- this is an EPA
23 publication?
24 MS. CORDRY: Yes.
25 MR. GROSSMAN: EPA --

Page 202

1 MS. CORDRY: Well, it's called their Integrated
2 Science Assessment.
3 MR. GROSSMAN: -- Integrated Science Assessment.
4 Dated what?
5 MS. CORDRY: It was done in mid-2008. I'll have
6 to find you the exact date.
7 MR. GROSSMAN: Okay, 2008. Does it have any
8 subtitle to it or this is just it? This is just pages from
9 that overall thing?
10 MS. CORDRY: Yes, it's just pages from the overall
11 document.
12 MR. GROSSMAN: Okay. Okay. So 440 is marked.
13 (Exhibit No. 440 was marked
14 for identification.)
15 MS. CORDRY: Oh, I'm sorry. I'm sorry. And then
16 the next one would be a, this is an -- we're going to
17 discuss a study in here, and this is an article that
18 discusses the study. That would be 441, and --
19 MR. GROSSMAN: Which one is that?
20 MS. CORDRY: That's this one, the article.
21 MR. GROSSMAN: Okay. So Pollution Damages Lung
22 Development?
23 MS. CORDRY: Right.
24 MR. GROSSMAN: All right. That's Exhibit 441 and
25 that's -- this is written by Dr. Breyse?

Page 203

1 MS. CORDRY: He is quoted in there --
2 MR. GROSSMAN: I see.
3 MS. CORDRY: -- and it describes the study, and
4 he's quoted in that article.
5 MR. GROSSMAN: I see. Okay. So article:
6 Pollution Damages --
7 MS. CORDRY: Okay.
8 MR. GROSSMAN: -- Lung Development, and who --
9 where does this appear?
10 MS. CORDRY: This particular article appears in
11 the Environmental Health Perspectives journal at the bottom.
12 THE WITNESS: I think he's talking about --
13 MS. CORDRY: Oh, I'm sorry --
14 MR. GROSSMAN: No.
15 MS. CORDRY: -- the particular article itself was
16 a, it's a --
17 MR. GROSSMAN: A CBS News?
18 MS. CORDRY: Cbsnews.com, yes.
19 MR. GROSSMAN: Article. All right. So CBS News
20 article. All right. And let's see. The date on that
21 was --
22 MS. CORDRY: September 9th, 2004.
23 MR. GROSSMAN: Okay. 9/9/04. And Exhibit 442?
24 (Exhibit No. 441 was marked
25 for identification.)

Page 204

1 MS. CORDRY: Is another study. That particular
2 one is dated July 2010.
3 MR. GROSSMAN: Okay. July 2010 study from -- so
4 that's a study of Childhood --
5 MS. CORDRY: Incident Asthma and Traffic-Related
6 Air Pollution.
7 MR. GROSSMAN: -- Incident Asthma and
8 Traffic-Related Air Pollution at Home and at School.
9 (Exhibit No. 442 was marked
10 for identification.)
11 MS. CORDRY: Right.
12 MR. GOECKE: And I'm sorry. That's 442?
13 MS. CORDRY: Yes, that would be 442.
14 MR. GROSSMAN: Yes, it's 442.
15 MS. CORDRY: And I did look up -- that EPA
16 Integrated Science Assessment was done in July of 2008.
17 MR. GROSSMAN: Okay. Okay. We're set to go.
18 BY MS. CORDRY:
19 Q So the Southern California studies, can you just
20 give a brief idea of what the overall study pattern was that
21 was going on, what was being done in these studies?
22 MR. GROSSMAN: That's Exhibit 440?
23 MS. CORDRY: Yes.
24 MR. GROSSMAN: Okay.
25 THE WITNESS: Well, Southern California had a

Page 205

1 grant from the EPA and the NIHS as part of a Children's
2 Study -- Children's Environmental Health Research Center,
3 and as part of that, they established a number of cohort
4 studies of kids. And the whole purpose of their center was
5 to evaluate the impact of air pollution on asthma and
6 respiratory health in children.
7 MR. GROSSMAN: Oh, well, that's Exhibit 442.
8 MS. CORDRY: There's a number of studies, and
9 they've done a number of different studies. This particular
10 one --
11 MR. GROSSMAN: What are we talking about now?
12 MS. CORDRY: Okay. In -- well, right now I'm
13 talking, in general, there's a whole pattern of studies that
14 was done by this group.
15 MR. GROSSMAN: Okay.
16 MS. CORDRY: We're going to discuss some of them
17 that are referred to in 240, I mean, in 440, and then a
18 later one is 442.
19 MR. GROSSMAN: Okay.
20 MS. CORDRY: So I'm just, in general, the study,
21 okay, was --
22 BY MS. CORDRY:
23 Q And was it being done in one area, more than one
24 area?
25 A Well, across Southern California.

Page 206

1 Q Okay. So a number of different communities in
2 Southern California?
3 A Yes.
4 Q Okay. So if we look back at page 3-59, is that
5 chart taken from one of those studies?
6 A Yes.
7 Q Okay. And it's got Source: Derived from
8 Gauderman et al. (2004) --
9 A Yeah.
10 Q -- at the bottom there on the right-hand side?
11 And if you look back on the first page of this, page 3-56,
12 it talks about -- the last paragraph there talks about: In
13 2004, Gauderman et al. reported results, and so forth?
14 A Correct.
15 Q So that's the discussion of that page of that
16 chart? Okay.
17 A Yes, ma'am.
18 Q And if you look at that, what are these, what does
19 this -- what are these charts showing to you?
20 A So it suggests there's a host of pollutants that
21 are impacting the lung development in children. Right? So
22 there's an exposure-response relationship for both PM and
23 NO2, for example. So that as exposure goes up, the fraction
24 of kids who have, you know, 80 percent of predicted values,
25 so the fraction of those kids that are less than that -- and

Page 207

1 80 percent is a value typically used as normal -- so the
2 fraction of kids that are abnormal goes up as the air
3 pollution exposure goes up.
4 Q And what is FEV?
5 MR. GROSSMAN: I don't quite understand. What's
6 on the vertical axis here, first?
7 THE WITNESS: So if we pick the second, on the
8 left-hand side, the second panel down.
9 MR. GROSSMAN: Okay.
10 THE WITNESS: So this is kids who have -- a
11 proportion of 18 years old with FEV1 below 80 percent.
12 So --
13 MR. GROSSMAN: FEV1 stands for?
14 THE WITNESS: Right. So that's fixed expiratory
15 volume. So what that means is they have -- if you're
16 normal, you would have a volume of 100 percent. Right?
17 So --
18 MR. GROSSMAN: Okay.
19 THE WITNESS: -- you blow into a machine, they
20 measure your lung capacity, and if you're normal, you have
21 what's 80 to 100 percent of what's expected for your age.
22 MR. GROSSMAN: All right.
23 THE WITNESS: Okay? So --
24 MR. GROSSMAN: And that's called FEV1?
25 THE WITNESS: Right.

Page 208

1 MR. GROSSMAN: Okay.
2 THE WITNESS: Okay. And so this is that lung
3 development study I showed you before. So notice that the
4 percentage of kids who have abnormal lung development/lung
5 function goes up as the pollution levels go up. So this was
6 the study I talked about before that was remarkable, that
7 really got a lot of people's attention.
8 BY MS. CORDRY:
9 Q Right. So, again, the left-hand axis that he was
10 asking about, that's the percentage of kids who have this
11 abnormal level. So --
12 A Right.
13 Q -- zero at the bottom up to 10 percent?
14 A Right. So if you're less than 80 percent, it's
15 not good.
16 Q Okay. So, and what one would expect to be in a
17 hypothesis like this, the lowest level of abnormal kids is
18 at the lowest point of NO2 exposure, is that correct? In
19 other words, the zero to two level is down there where the
20 NO2 is between zero and 10.
21 A Well, it goes up as you move from the low
22 exposures --
23 Q Right.
24 A -- right, up.
25 Q Right.

Page 209

1 MR. GROSSMAN: What exactly is going up? That's
2 what I don't --
3 THE WITNESS: That's the fraction of kids who have
4 poor lung function.
5 MR. GROSSMAN: I see. So the bottom -- what is
6 the horizontal axis here? It says 25 to 40. What does that
7 mean?
8 THE WITNESS: I'm not sure what that 25 is, but
9 that's the NO2 concentration going up from 10 to 20 to 30 to
10 40.
11 MR. GROSSMAN: So that's the NO2 --
12 THE WITNESS: That's increasing pollution
13 concentration. So as their estimate of the pollution
14 concentration went up in these kids, their lung function --
15 a fraction of kids who had bad lung function went up.
16 MR. GROSSMAN: Oh, I see. So that 25, that's
17 strange what that --
18 MS. CORDRY: Yes. I think that's a, it looks --
19 it just looks like a misprint or something. I'm not sure.
20 It looks like it was carried down from the one above there.
21 See where it had --
22 MR. GROSSMAN: Yes, but the one above it also.
23 Are you saying the one above it? Doesn't that start at
24 zero?
25 MS. CORDRY: Right. Well, that one is saying --

Page 210

1 these ones were looking at certain values there, and within
2 the value range that they had, they looked at these levels.
3 So for ozone it doesn't look like there was much effect.
4 Ozone does not seem to be having a correlation here, but NO2
5 and PM2.5 and PM10 and acid vapor and elemental carbon, all
6 of these other different things do appear to have a
7 cause-effect, dose-effect relationships.
8 MR. GROSSMAN: Okay. So if I'm reading this chart
9 correctly, that second one down on the left --
10 MS. CORDRY: Yes.
11 MR. GROSSMAN: -- if you have NO2 concentrations
12 even as low as five --
13 MS. CORDRY: Right.
14 MR. GROSSMAN: -- parts per billion, you start to
15 see some effect, and then that increases as you go up to 40
16 parts per billion. Is that correct?
17 THE WITNESS: Correct.
18 MS. CORDRY: Right.
19 MR. GROSSMAN: Okay. What does the R equals .75
20 and the P equals .005 mean?
21 THE WITNESS: So the R is a measure of how well
22 one is correlated with the other. It's a statistical
23 term --
24 MR. GROSSMAN: Okay.
25 THE WITNESS: -- the higher, the better. And the

Page 211

1 P value means it's significant. So that means there's a
2 statistically significant. So if we look at the one above
3 it, the R value is .04, which means they're not really
4 related to one another; as one goes up, the other doesn't go
5 up --
6 MR. GROSSMAN: Right.
7 THE WITNESS: -- and it's not significant. So you
8 see the P value as .89. Right? So we look for a P value
9 that's less than .05.
10 MR. GROSSMAN: Right, but I -- oh, I was just
11 seeing that it was .005. So that's --
12 THE WITNESS: Right. So that's even, that's even
13 better than .05, right.
14 MR. GROSSMAN: Okay.
15 MS. CORDRY: That's really, really significant.
16 MR. GROSSMAN: Thank you --
17 MS. CORDRY: It's got an extra zero in it.
18 MR. GROSSMAN: -- but you're not the witness. All
19 right. All right. I'm sorry to ask you this a second time,
20 if not a third time, what do the words FEV stand for again?
21 THE WITNESS: So forced expiratory volume.
22 MR. GROSSMAN: Forced?
23 THE WITNESS: In one --
24 MR. GROSSMAN: Right.
25 THE WITNESS: -- second.

Page 212

1 MR. GROSSMAN: I remember. So expiratory volume.
2 BY MS. CORDRY:
3 Q And, again, looking at the PM2.5 chart, which is
4 the one next to that on the same line?
5 A We see a similar relationship, and I think herein
6 lies the conundrum, because we also know that NO2 and PM2.5
7 are correlated with one another, and so the question
8 becomes, you know, what's driving the risk here? And you'll
9 see that the administrator, in fact, goes on to say, if you
10 look on the top of page 3-57, that these results are, the
11 authors, the authors concluded the effects of NO2 could not
12 be distinguished from the effects of particulate matter as
13 NO2 was strongly correlated with particulate matter
14 contaminants. So we see a risk with this mix of
15 traffic-related pollutants, but it's hard to say just how
16 much is due to one versus the other.
17 BY MS. CORDRY:
18 Q And on page 3-60, at the bottom there, is there a
19 reference to another study by this group?
20 A Yes.
21 Q Okay. And, again, if you read the last sentence
22 there, going over to the next page?
23 A Thus, while the study presents important findings
24 with respect to traffic pollution and respiratory health in
25 children, it did not provide evidence that NO2 was

Page 213

1 responsible for these effects -- these deficits in lung
2 function.
3 Q And actually, if you read actually the sentence
4 before that, which is explaining really why, I think, it's
5 having this problem with sorting this out.
6 A Yeah. So this study did not attempt to measure
7 specific pollutants near freeways or to estimate exposure to
8 specific pollutants for study subjects.
9 Q Instead, what was this particular study doing?
10 What was it --
11 A So they have a combined kind of traffic-related
12 pollutant kind of exposure measure. So this is, this is the
13 challenge today, and I think this is in part the challenge,
14 Mr. Chairman, that you have to kind of sort out, is they're
15 both there and they're -- you can't, you can't think
16 exclusively about one being there by itself and that's the
17 reality, and unfortunately, the EPA doesn't know how to
18 grapple with that just yet, but hopefully that'll be coming
19 down the road soon.
20 MR. GROSSMAN: Well, if they don't know, I
21 certainly won't. I don't have to grapple with it because
22 there's no words for me to determine that.
23 MS. CORDRY: Well, except that you are not setting
24 an EPA standard on a pollutant-by-pollutant basis. You are
25 looking at the effect of the global effects of this station.

Page 214

1 That is in fact what the special exception standard is.
2 MR. GROSSMAN: But I'm not going to create my own
3 separate standard. I've told you that. I don't think that
4 that, it's not --
5 MS. CORDRY: I understand, but if there --
6 MR. GROSSMAN: -- it is unwise for a land use
7 Hearing Examiner to create a separate air pollution
8 standard.
9 MS. CORDRY: But if there is no EPA standard that
10 deals with traffic-combined pollution -- and that is in fact
11 the issue to be determined here: what is the effect of the
12 traffic, the global traffic pollution from this station --
13 your question that you're going to have to grapple with a
14 little more is what do you do if there is in fact no EPA
15 standard that governs the issue that you have to decide, and
16 that's what we're trying to give you evidence on. Where is
17 the evidence here, and if you cannot come up with a standard
18 on that, does that not weigh against the applicant, not the
19 objecting parties?
20 MR. GROSSMAN: I fear that you are asking me to
21 create a scenario that is impossible for any of the parties
22 that are regulated to ever meet. So that's, that's the
23 problem with -- there has to be some level of predictability
24 in a standard that's set up, and you're asking me to
25 evaluate all the science and create my own standard that the

Page 215

1 EPA hasn't even been able to come up with yet. That's
2 not --
3 MS. CORDRY: But if --
4 MR. GROSSMAN: -- that would not be an appropriate
5 function for me.
6 MS. CORDRY: We will do this more in the argument,
7 but --
8 MR. GROSSMAN: Yes.
9 MS. CORDRY: -- if the EPA was regulating X and
10 you're job is to evaluate Y -- I understand, it is certainly
11 much simpler if there was an EPA standard for it -- but we
12 are going to continue to ask you to evaluate what the
13 special exception standard is, is whether the gas station,
14 taken as a whole, with the mixture of traffic-related
15 pollutants that it creates, can cause harm. And if you
16 can't say that you know the answer to that one way or the
17 other, we believe that the answer under the special
18 exception is --
19 MR. GROSSMAN: That I reject all gas stations.
20 MS. CORDRY: No, but you certainly reject a gas
21 station that inherently is far outside the norm of all gas
22 stations.
23 MR. GROSSMAN: The logical extension of your
24 argument is a rejection of everything --
25 MS. CORDRY: No.

Page 216

1 MR. GROSSMAN: -- that's the problem.
2 MR. SILVERMAN: No.
3 MR. GROSSMAN: I understand your point. I
4 understand your point, but that's what I fear is the logical
5 extension of what you want me to do, and I think it would be
6 unwise for me to do the extrapolation that you want me to
7 do.
8 MS. CORDRY: But, okay, one point -- was trying to
9 ask him about the thresholds and so forth -- is, there is a
10 difference between is it inherent in a small neighborhood
11 gas station to have some level of pollutants that we may
12 have to accept, is that inherent in this gas station.
13 Clearly this gas station is not at the same level. So it
14 goes to the question of non-inherent effects.
15 MR. GROSSMAN: I don't think it's disputed that
16 there are non-inherent effects from -- their own witnesses
17 testified that there are non-inherent effects from this gas
18 station.
19 MS. CORDRY: All right. And then I have to show
20 you there are adverse effects, which is what we're trying to
21 do, and if we just say --
22 MR. GROSSMAN: Right.
23 MS. CORDRY: -- we cannot say anything is adverse
24 unless the EPA has already ruled it's adverse, then we might
25 as well go home.

Page 217

1 MR. GROSSMAN: No.
2 MS. CORDRY: But --
3 MR. GROSSMAN: Well, I haven't gone that far.
4 MS. CORDRY: Okay.
5 MR. GROSSMAN: That's a little different from --
6 MS. CORDRY: All right.
7 MR. GROSSMAN: -- what you're saying.
8 MS. CORDRY: Which is --
9 MR. GROSSMAN: I think you want me to -- I think
10 that part of the thrust of what you said is to ask me to
11 create a standard that the experts who, generally speaking,
12 govern these standards haven't yet come up with, and I'm
13 unwilling to march into that territory because I think it is
14 not within my jurisdiction, nor is it wise to do it. So
15 that's part of what you're asking me. There is another part
16 of what you're asking me, and I understand that. I
17 understand your argument, and I think you understand what
18 I'm saying; so let's not argue it now.
19 MS. CORDRY: Right. Well, we will put this in and
20 then that will --
21 MR. GROSSMAN: Right.
22 MS. CORDRY: -- leave us to go from what the legal
23 effect of that is --
24 MR. GROSSMAN: All right.
25 MS. CORDRY: -- because we do need to put this

Page 218

1 evidence in the record regardless. Okay.
2 MR. GROSSMAN: Yes.
3 BY MS. CORDRY:
4 Q All right. And, again, if you look now at Exhibit
5 442. Was this also from the same group?
6 A Yeah.
7 Q Yes. Okay. And in terms of all three of these --
8 well, let me stick with the 2004 study, which is the one
9 that had the PM2 levels and the NO2 levels, and this 2010
10 study as well. In terms of looking at the absolute levels
11 of pollution that were dealt with in here, how did those,
12 how did those levels relate to the levels that we're seeing
13 in Mr. Sullivan's analysis?
14 A So they're below those levels.
15 Q Okay. And let me say, can you say specifically
16 what kind of levels we're talking about for these that are
17 being looked at here, where effects are being found on
18 health?
19 MR. GROSSMAN: By here, you're talking about --
20 MS. CORDRY: In the studies.
21 MR. GROSSMAN: -- this article on Childhood
22 Incident Asthma and Traffic-Related --
23 MS. CORDRY: Yes.
24 MR. GROSSMAN: -- Air Pollution? And you're
25 saying that the levels that were studied in this study were

Page 219

1 lower than those that are reflected in the Sullivan study;
2 is that what you're saying?
3 MR. SILVERMAN: Yes.
4 MS. CORDRY: Yes, in terms of the levels.
5 BY MS. CORDRY:
6 Q And let me ask you, these studies are ones with
7 essentially long-term pollution levels, is that correct?
8 A Correct. Correct.
9 Q All right. So in terms of looking at that,
10 because we mostly, until this point, have been talking about
11 the short term, the one-hour piece --
12 MR. GROSSMAN: Right.
13 BY MS. CORDRY:
14 Q -- in the same exhibit, 255, the set of charts, if
15 you turn to the second page there, the one that's labeled
16 Figure 2 --
17 A Okay. What page?
18 MR. GROSSMAN: Page 12, Figure 2.
19 BY MS. CORDRY:
20 Q This is one that was done in, I'm sorry, in August
21 of this year with the corrected background level. It had to
22 be recalculated for both the annual and the one-hour
23 standard. So this was done with the corrected levels here,
24 and what levels do we see marked on this particular chart?
25 A A particular area or --

Page 220

1 Q In general. What's the range covered in the
2 chart?
3 A It's a black background; it's hard to read. Looks
4 like the maximum is 46 micrograms/cubic meter and out into
5 the neighborhood it gets down to 28 micrograms/cubic meter.
6 Q Okay. And actually, if I look out again on
7 Georgia Avenue there, it looks like I'm actually seeing some
8 numbers above 46. Do you see that?
9 A Yes.
10 Q So I think we gathered that the 46 must be the
11 determination of what's the max just at the station itself.
12 Okay. All right.
13 MS. CORDRY: Now, if we look back at our little
14 cheat sheet that I did, one of the things I wanted to do
15 here was to try to make it easy to compare these microgram
16 numbers with the parts per billion that show up in most of
17 the studies. So the one, if we go to the bottom set of
18 figures there, there's four, four lines at the bottom.
19 MR. GROSSMAN: Which page are you on?
20 MS. CORDRY: This would be 439(b).
21 MR. GROSSMAN: Okay.
22 MS. CORDRY: And you see the four lines at the
23 bottom?
24 MR. GROSSMAN: Yes.
25 MS. CORDRY: The top one of that four is labeled

Page 221

1 August 2012, Figure 2.
2 MR. GROSSMAN: Yes.
3 MS. CORDRY: So if we go across there, the 28 to
4 45 -- and 45 is the --
5 MR. GROSSMAN: This should be August 2013,
6 shouldn't it?
7 MS. CORDRY: I'm sorry, yes, August 2013. This
8 should all be August 2013, sorry.
9 MR. GROSSMAN: Okay. Thank you.
10 MS. CORDRY: In any case, with the range of 28 to
11 45 that's shown on the isopleth lines, I just converted that
12 into parts per billion, so roughly 15 to 24 parts per
13 billion --
14 MR. GROSSMAN: Okay.
15 MS. CORDRY: -- 14.9 to 23.9, and then the 46 max
16 is 24.5.
17 MR. GROSSMAN: Okay.
18 BY MS. CORDRY:
19 Q So if this one is showing a range of 15 to 24, how
20 does that compare with the ranges you're seeing --
21 A It's very comparable. It overlaps. Table 2 in
22 the 2010 publication suggests the pollutant exposures that
23 they saw ranged from 8.7 to 32 parts per billion. So we're
24 looking at exposures that are in the range on an annual
25 average with the levels that are predicted to occur at this

Page 222

1 station.

2 Q Okay. And the same would be true of the study

3 that's in the ISA report, this one where we had the charts?

4 A Yes. Yeah.

5 Q Okay.

6 MR. GROSSMAN: You're saying that's on Table 2 in

7 Exhibit 442?

8 THE WITNESS: This paper? Mine aren't, mine

9 aren't numbered.

10 MS. CORDRY: Yes, this one, yes.

11 MR. GROSSMAN: Yes, that paper. And you're saying

12 that's in Table 2, the comparable number?

13 THE WITNESS: Right, central site NO2

14 measurements, the bottom half of Table 2.

15 MR. GROSSMAN: Bottom half. Oh, I see. Okay.

16 So --

17 BY MS. CORDRY:

18 Q Yes. Can you just describe these various column

19 labels where it's Mean, Median, IQR?

20 A Yeah. So the average was 20.4 parts per billion.

21 The median, which is a value which half are above or below,

22 is --

23 MR. GROSSMAN: Right.

24 THE WITNESS: -- is 21.2. Interquartile range is

25 the range from the 25th percentile distribution to the 75th.

Page 223

1 That's 12.8, but the numbers I was quoting gives you the

2 minimum, which was 8.7, and the maximum was 32.3.

3 BY MS. CORDRY:

4 Q And when you say that 12.8 number, that's saying

5 that from the 25th value up to the 75 value, there's a,

6 there's a range --

7 A Right.

8 Q -- of 12.8 micrograms there? Okay. And the total

9 range is that 23.6. That's the difference between the 8.7

10 and the 32.3, correct?

11 A Correct.

12 Q Okay. All right.

13 A But the strength of this paper was coming up with

14 that combined traffic-related kind of exposure index. That

15 was the big contribution of this paper, the TRP.

16 MS. CORDRY: The next one I'd like to introduce

17 would be this one here. That would be 443.

18 MR. GROSSMAN: Okay.

19 BY MS. CORDRY:

20 Q Can you describe what was studied in this paper?

21 A So this study took advantage of kind of a natural

22 experiment where they --

23 MR. GROSSMAN: Hold on one second. Let's identify

24 the paper first.

25 MS. CORDRY: I'm sorry. It's labeled Traffic

Page 224

1 Congestion and Infant Health: Evidence from E-ZPass --

2 MR. GROSSMAN: Okay. So April --

3 MS. CORDRY: -- done April 2012.

4 MR. GROSSMAN: -- 2012, Traffic Congestion and

5 Infant Health --

6 MS. CORDRY: And it's discussing what happened

7 when they put the ubiquitous E-ZPass system in place at toll

8 plazas in New Jersey.

9 MR. GROSSMAN: Not much on the George Washington

10 Bridge.

11 MS. CORDRY: Well, for Fort Lincoln or Fort Lee or

12 whatever that was, but yes --

13 MR. GROSSMAN: Right, Fort Lee.

14 MS. CORDRY; -- as long as you are not idling at

15 the toll plaza, which E-ZPass --

16 MR. GROSSMAN: Right. All right. So Traffic

17 Congestion and Infant Health: Evidence from E-ZPass --

18 MS. CORDRY: Right.

19 MR. GROSSMAN: -- on April 2012 and that's Exhibit

20 443. Okay.

21 (Exhibit No. 443 was marked

22 for identification.

23 BY MS. CORDRY:

24 Q Okay. All right. And if you can just briefly

25 discuss what this paper was dealing with and what the

Page 225

1 results were that it found.

2 A So it's just, it's just getting at the same sort

3 of question. So they're able to take advantage of this with

4 or without the E-ZPass and that there was a reduction of

5 pollution around the toll plaza with the introduction of the

6 E-ZPass because cars can now speed through; they didn't have

7 to stop and idle. And they showed that pollution went down,

8 and then more importantly, they also suggested there were

9 these impacts on these birth outcomes, which is relatively

10 novel, in terms of the reduced prematurity and low birth

11 weight among mothers within two kilometers of the toll plaza

12 by 10.8 and 11.8 percent, suggesting that the reduced air

13 pollution kind of improved the birth outcome for the mothers

14 who were pregnant before versus after.

15 Q And did that give an indication of how much of a

16 decline in NO2 levels resulted in that?

17 A On page 18 they say the estimates indicate that

18 NO2 fell by about 10.8 percent, but I don't know if they

19 give a total concentration drop.

20 Q I was not able one to find one in there. They

21 didn't seem to have a lot of actual monitors in the areas,

22 but they were able to apparently evaluate how much dropped.

23 So -- and that 10 percent drop, you're saying then, they

24 correlated with these improved birth results, is that

25 correct?

Page 226

1 A Right. So this --
2 Q Okay.
3 A -- this is part of the bigger picture again of
4 kind of the traffic-related air pollution being bad for
5 people living close to a lot of it.
6 MR. GROSSMAN: And they concluded that there was a
7 cause-and-effect relationship just from that --
8 THE WITNESS: No. I think they say --
9 MR. GROSSMAN: -- that use of E-ZPass between --
10 THE WITNESS: -- they said there's an association.
11 MR. GROSSMAN: Right. A correlation?
12 THE WITNESS: Yeah.
13 BY MS. CORDRY:
14 Q I mean, did they control for other -- I'm sorry.
15 MR. GROSSMAN: What do they control for? Yes.
16 Where is that?
17 BY MS. CORDRY:
18 Q Well, yes. I mean, did they control for other
19 possible things that might have happened before and after
20 the introduction of E-ZPass?
21 A I cannot recall.
22 Q I would ask you to look at, let's see -- well, in
23 the first place, look at the, about the third sentence in
24 the abstract on the front page there, third and fourth
25 sentence there.

Page 227

1 MR. GROSSMAN: Yes, they are concluding that
2 there's --
3 MS. CORDRY: Yes.
4 MR. GROSSMAN: It makes me wonder. So what other
5 factors did they --
6 MS. CORDRY: Well, let's see if we can find what
7 all else --
8 MR. GROSSMAN: -- control for?
9 THE WITNESS: They mentioned housing prices, which
10 would be a control for socioeconomic status.
11 MS. CORDRY: What are they looking at? They
12 looked at housing data --
13 THE WITNESS: And the mother's age --
14 MS. CORDRY: -- they looked at racial composition:
15 did that change from -- I mean, again, because you're doing
16 something that's over a very short period of time: putting
17 in a toll plaza.
18 MR. GROSSMAN: Yes. What period of time was that
19 that --
20 MS. CORDRY: Well, they looked at each toll plaza
21 separately. So --
22 MR. GROSSMAN: Yes.
23 MS. CORDRY: -- between building a toll plaza,
24 before and after, is presumably -- actually, putting E-ZPass
25 in at a toll plaza is presumably a pretty --

Page 228

1 MR. GROSSMAN: Right.
2 MS. CORDRY: -- short process. So they looked at
3 a period of time before that and a period of time after
4 that.
5 MR. GROSSMAN: Just that there could be so many
6 other factors --
7 MS. CORDRY: Right.
8 MR. GROSSMAN: -- involved in that. That's
9 just --
10 MS. CORDRY: But if you do that over a number of
11 different toll plazas and you have similar results --
12 MR. GROSSMAN: Yes, just --
13 MS. CORDRY: -- and again, they controlled for, as
14 they say, race and income levels and smoking --
15 THE WITNESS: Mother's age, smoking, yeah.
16 MS. CORDRY: -- and so forth, and so they
17 controlled for quite a few factors. I mean, I can go
18 through all of those, but the point being that their
19 conclusion was that it really was -- the most logical
20 conclusion they could come to was that it was a substantial
21 reduction, because I mean, it's a reduction of whatever they
22 said, 10 point something percent of NO2.
23 MS. ADELMAN: Ten point eight.
24 MS. CORDRY: In terms of the idling, it was like
25 an 80 percent reduction in idling from the E-ZPass. So it

Page 229

1 really made a dramatic difference in --
2 MR. GROSSMAN: Right.
3 MS. CORDRY: -- in that kind of effect, a very --
4 MR. GROSSMAN: Okay.
5 MS. CORDRY: -- quick effect.
6 MR. GROSSMAN: It's --
7 BY MS. CORDRY:
8 Q In Exhibit 372(a), Mr. Angelo Bianca of the
9 Maryland Department of the Environment stated that the
10 cumulative impact of the range of pollutants associated with
11 gas stations was not well understood and that a prudent
12 approach would be to establish buffers between the station
13 and the public. What's your view of that statement?
14 A Where are you?
15 Q I'm --
16 MR. GROSSMAN: He's somewhere -- I mean, she's --
17 BY MS. CORDRY:
18 Q I'm reading from --
19 MR. GROSSMAN: -- in a completely different
20 exhibit.
21 BY MS. CORDRY:
22 Q I'm sorry. We're moving on. We're moving on.
23 A Okay. What's the exhibit we're in?
24 Q It's an exhibit that's already in the record,
25 372(a).

Page 230

1 A Can you show me the cover, because mine aren't
2 numbered?
3 Q I didn't bring that in because it's already in the
4 record. I'm just --
5 MR. GROSSMAN: She's just quoting from a Maryland
6 health official.
7 BY MS. CORDRY:
8 Q I'm just quoting it. I'm quoting you a statement
9 and asking you to --
10 A Oh, okay.
11 Q -- agree or disagree or whatever your view of the
12 statement is.
13 A Say it again.
14 Q He stated that the cumulative impact of the range
15 of pollutants associated with gas stations was not well
16 understood and that a prudent approach would be to establish
17 buffers between the station and the public. What would be
18 your view of that statement?
19 A I think that's prudent. I agree that it's not
20 well understood, it's not well studied, and in the face of
21 uncertainty, you have to decide what's prudent, and a buffer
22 is certainly a prudent approach to dealing with that.
23 Q Okay. Next, I'd like to, again, just sort of
24 making that point -- and this may be a bit of overkill to
25 put the whole article in to make the point -- but this one

Page 231

1 would be the next exhibit. It's labeled --
2 MS. ADELMAN: Is this the U.S. EPA?
3 MS. CORDRY: Yes.
4 BY MS. CORDRY:
5 Q It's the one that's labeled U.S. EPA particulate
6 matter research centers: summary of research results for
7 2005 to 2011. And is this the study you were associated
8 with?
9 A Well, it's a number of studies. Right? So a
10 little bit of just quick background. So the EPA funded --
11 MR. GROSSMAN: Can you hold on one second? I'm
12 sorry, but I do have to mark the exhibit --
13 MS. CORDRY: Yes.
14 MR. GROSSMAN: -- and identify it --
15 MS. CORDRY: Right.
16 MR. GROSSMAN: -- before we proceed. So Exhibit
17 -- we have to go through all this folder, also, that there's
18 a record that somebody else can understand. Exhibit 444 --
19 MS. CORDRY: Right.
20 MR. GROSSMAN: -- is U.S. EPA particulate matter,
21 which I'm going to abbreviate as PM, research centers:
22 summary of research results for 2005 to 2011. Okay.
23 (Exhibit No. 444 was marked
24 for identification.)
25 BY MS. CORDRY:

Page 232

1 Q All right. And, again, what was your role with
2 respect to this, preparing this particular article?
3 A So very briefly, the EPA funded a variety of
4 centers at different universities around the country to look
5 at research on particulate matter air pollution to help them
6 regulate particulate matter air pollution, and I
7 participated in the center at Johns Hopkins. And at the end
8 of the five-year funding, they asked us all to get together
9 and write one paper that kind of hits the highlights of
10 everybody's findings. So this is a summary of research
11 from, I think there were seven centers. I can't remember
12 exactly, had to be there.
13 Q So I will proffer to you that the cutoff date
14 stated in the Federal Register for its assessment on PM2.5
15 was mid-2009. That being the case, this paper was done
16 when? Your paper --
17 A I'm sorry?
18 Q -- your summary was done when?
19 A Well, this was published in 2012, but we probably
20 worked on it for a good year and a half before that. It's
21 hard to write a paper with this many people.
22 Q Right. So in any case, but this is dealing with
23 research, a good bit of which took place after the cutoff
24 date --
25 A Yes. Yes.

Page 233

1 Q -- for the PM2.5 rule? Okay. And I am not going
2 to try to go into all of these things here because, having
3 read it myself, it's more confusing than it is to do
4 everything. But what I would like to do is, if you'd go to
5 the last page, like the text there before all those many,
6 many, many citations --
7 MR. GROSSMAN: Okay.
8 BY MS. CORDRY:
9 Q -- the part labeled Future Directions.
10 MR. GROSSMAN: Yes. That's page something.
11 MS. CORDRY: I can't really find a page number on
12 it. It must have one.
13 MR. GROSSMAN: Maybe it's in the --
14 THE WITNESS: This is the electronic version. So
15 they don't page number it.
16 MS. ADELMAN: Is this in Conclusions?
17 MR. SILVERMAN: Future Directions. It's right
18 before --
19 MS. CORDRY: Yes.
20 MR. GROSSMAN: They ought to page number it.
21 MS. CORDRY: What?
22 MR. GROSSMAN: I said they ought to page number
23 it --
24 MS. CORDRY: Yes, they ought to, but --
25 MR. GROSSMAN: -- even though they don't.

Page 234

1 MS. CORDRY: -- in any case, it's relatively easy
2 to find because you --
3 MR. GROSSMAN: Yes. I got it.
4 MS. CORDRY: -- stop reading all the tiny fine
5 print that you can't find and right above there.
6 MR. GROSSMAN: Right.
7 BY MS. CORDRY:
8 Q In terms of the future directions, can you point
9 out whether some of these things relate to what you've been
10 saying now about the pollution regulation?
11 A Sure. So, for example, we say that the, in
12 particular, the focus should shift from single components
13 and sources to understanding the effects of multi-pollutant
14 mixtures. So we want more long-term research to kind of
15 address this. And so I think that's, that's relevant to
16 this. This is, in part, giving direction to the EPA,
17 further direction to them to kind of explore the
18 multi-pollutant regulation.
19 Q Okay. All right. Moving on from these other
20 people's studies to your own work, do you have other bases
21 for concern with respect to the NO2 levels, short or long
22 term, with respect to the kind of levels you're seeing
23 around the mall?
24 A So we measure NO2 in kids' homes and the homes of
25 people with COPD. So it's a little difficult to translate

Page 235

1 our data exactly to the EPA levels because the measurement
2 technology we use is different from the EPA's. So we can
3 measure pollutant concentrations over a weeklong period of
4 time, and so it's not clear, you know, kind of how that
5 relates to the annual average, but I think it's probably
6 closer to kind of representative of kind of a long-term
7 chronic exposure. But we certainly saw effects of kids with
8 asthma, in terms of NO2 exposures, in the 2- to 200-, kind
9 of, parts-per-billion range, certainly within the range of
10 model values we see here. We saw exposures to adults with
11 COPD, the long-term exposures of adults with COPD, in a
12 range of exposures we're seeing here that are associated
13 with exacerbations of adults with COPD.
14 Q Okay. And if we can wait just -- if you can hold
15 up just a minute.
16 MS. CORDRY: If we could put in -- Abigail,
17 please.
18 BY MS. CORDRY:
19 Q I'm going to hand you two, two additional studies
20 and ask you to identify those first.
21 MS. ADELMAN: And they are In-Home and the
22 Longitudinal study?
23 MS. CORDRY: These two. I guess that would be 445
24 and 446.
25 MR. GROSSMAN: Well, I didn't want to go -- oh,

Page 236

1 another one coming?
2 MS. CORDRY: Oh, it's coming.
3 MR. GROSSMAN: Okay. So Exhibit 445, thank you,
4 is an October 2008 study: A Longitudinal Study of Indoor
5 NO2 Levels and Respiratory Symptoms in Inner-City Children
6 with Asthma. And then Exhibit 446, In-Home Air Pollution Is
7 Linked to Respiratory Morbidity in Former Smokers with COPD,
8 and that's dated somewhere. That's 5/15/2013. Okay.
9 (Exhibit Nos. 445 and 446 were
10 marked for identification.)
11 BY MS. CORDRY:
12 Q Okay. So were these the two studies you've been
13 referring to when you've talked about the study of children
14 and the study of --
15 A Yes.
16 Q -- COPD patients? Okay. And in terms of looking
17 at the children's study, what was one of the main variables
18 you had in terms of the level of NO2 in the home, for
19 instance?
20 MR. GOECKE: I'm sorry. Which exhibit?
21 MS. CORDRY: 445.
22 MR. GOECKE: Thanks.
23 THE WITNESS: Well, the mean in-home NO2
24 concentration was 30 parts per billion, and it ranged from
25 2.9 to 394.

Page 237

1 BY MS. CORDRY:
2 Q Who had the 394?
3 A They have an odd practice in some inner-city
4 homes: when they run out of fuel oil to heat their homes,
5 they use the oven to kind of heat their home, and so in some
6 cases, the parents would huddle in the kitchen in the
7 morning and they'd turn the oven on, open the door, and
8 they'd crank it up. And of course, the oven is a flame, and
9 the same flame in an oven creates NO2 just like a car would
10 create it. So there's some extreme circumstances like that.
11 MR. GROSSMAN: I take it, that wouldn't happen,
12 though, with an electrical stove, just with a --
13 THE WITNESS: Correct.
14 MR. GROSSMAN: -- with an open flame?
15 THE WITNESS: Yes. Yeah.
16 BY MS. CORDRY:
17 Q So in addition to ambient air levels, are people
18 then also -- didn't they also have the background of being
19 exposed to other kinds of sources of --
20 A Certainly.
21 Q -- NO2, as well, that --
22 A Yeah.
23 Q And is that all part of the burden that they --
24 A Yes.
25 Q -- they bear when they go out in the world? Okay.

Page 238

1 And -- okay. And did you find an effect as NO2 levels went
2 up in your study?
3 A Yes. We saw increased asthma symptoms, and
4 specifically, we saw limited speech due to wheeze; wheeze,
5 cough, or chest tightness while running; coughing without a
6 cold; and nocturnal awakening to a cough, wheeze, or
7 shortness of breath. These are all kind of typical kind of
8 symptom indicators of asthma morbidity, and they were all
9 significant, and it ranged from a 12 percent to a 17 percent
10 increase. And then the way we expressed this kind of
11 exposure-response relationship, so for every 20-ppb increase
12 in NO2 exposures, we saw, you know, a range from like a nine
13 to a 17 percent increase in these symptoms. So every time
14 it went up that much, we saw that much.
15 Q And do you have to have a full 20 percent, or is
16 that just --
17 A No. That's just a factor that we kind of
18 calculated. We could have expressed it as the percent,
19 symptoms per each one-part-per-billion increase or for each
20 10-part-per-billion increase. It's just the number we chose
21 because other studies had published it that way in the --
22 Q Right.
23 MR. GROSSMAN: And what happened in houses where
24 it was 390?
25 THE WITNESS: So, you know, we didn't look at it

Page 239

1 that way, right, because, you know, that's just part of the
2 mix. We follow kids, and a kid might be at a 390 one visit;
3 they might be down at a 100 the next visit because, of
4 course, during the summer, he's not going to be a 390. But
5 clearly, the risk was being driven by the high end of the
6 exposure as well as kind of the middle, and so we started
7 with a big campaign to get kids -- get parents, to educate
8 them about not using their stove to heat their kitchen; if
9 they need to do that, just buy an electric heater and just
10 kind of heat it up with an electric heater.
11 MR. GROSSMAN: Okay.
12 BY MS. CORDRY:
13 Q And so that study was done in -- it was published
14 in 2008. Do you recall what time period you basically were,
15 time period you were studying these kids?
16 A A good five or so years before that.
17 Q Okay. And then we have the, your second study,
18 which is 446, and that was done, looks like it was published
19 in 2013. Can you talk about that one a little bit in terms
20 of, also, the mean and median levels and so forth that
21 you're talking about?
22 A Right. So this is a similar design, though
23 instead of following kids to see how their asthma symptoms
24 vary, we follow adults with COPD and we look for
25 exacerbations of COPD. And there's a specific medical

Page 240

1 definition for an exacerbation, but certainly -- by
2 definition, a severe exacerbation is one that requires you
3 to go to the hospital; so you have to, like, have a health
4 encounter based on that. And the NO2 exposures here were
5 much lower, so -- for a couple of reasons: they have, the
6 frequency of gas stoves were lower in this population; this
7 was not primarily an inner-city population, like we see in
8 the Baltimore City asthma cohort, so their exposure to kind
9 of traffic-related pollutants is going to be less, so the
10 infiltration from outside is going to be less.
11 So it's not unusual in an elderly population to
12 see indoor exposures that are different than an active home
13 full of lots of young kids and everything that comes along
14 with having a lot of young kids. And so these exposures
15 were much significantly lower. So the NO2 concentrations
16 were, on average, 10 to 10.8 parts per billion in the
17 bedroom and 11.8 parts per billion in the main living area
18 of these homes.
19 Q And if we translate those into micrograms per
20 meter cubed, which is roughly doubling them, a little less
21 than that, we're talking in the range of about 20
22 micrograms?
23 A Correct.
24 Q That was your average level?
25 A Yeah.

Page 241

1 Q Okay. And what about for PM2.5 -- was that also
2 something you measured and studied?
3 A Yes, we did. And so our PM2.5 exposures are, if
4 you see here, are 11 to plus or minus 13 micrograms/cubic
5 meter in the, in the bedroom and 12 micrograms per cubic
6 meter in the living area.
7 Q And if we go back to this interquartile range,
8 which is your 25 to 75 percent of people there, what was
9 your range there for the PM2.5?
10 A The interquartile range for PM2.5 was 8.3. That
11 means it went from 4.9 to 14.4 and 8 -- and 4.8 to 15.1 for
12 the, for the bedroom and the living area. The mean indoor,
13 the mean indoor for NO2 was 6.8 and 8.0 respectively for
14 the, for the living area and the bedroom.
15 Q I'm sorry. That's your interquartile range?
16 A Right. That's on --
17 Q Okay. So --
18 A -- page 213.
19 MR. GROSSMAN: Although, strangely, you didn't
20 find an association between PM2.5 concentrations in the
21 bedroom and respiratory morbidity.
22 THE WITNESS: Right. So there's some odd things
23 we saw in this study, and in part, it -- you learn some
24 things when you do a study, but one of the things we asked
25 people is, you know, we note where their bedroom is, but we

Page 242

1 didn't know a good enough job about where they slept, right,
2 and we got information afterwards that very often, you know,
3 people slept -- if they're very morbid in terms of their
4 COPD, they didn't move around a lot, and so they tended to
5 sit in their chair and spend their day in their chair, and
6 they slept in the chair.
7 So our original kind of model was, you know,
8 they're going to be sleeping in the bedroom, we want to
9 measure the bedroom; they're going to spend the rest of the
10 day around the house, which is true for kids, but probably
11 not true for this population. So I think we saw some
12 differences in terms of the placement of the monitor and the
13 morbidity that are probably a little bit confounded by not
14 knowing exactly where the people slept, and we learned on
15 this study that we have to do that better next time.
16 BY MS. CORDRY:
17 Q Again, did you use one of these standard sort of
18 change per so many parts per billion?
19 A Yes. Yes.
20 Q And let's look at severe exacerbations since that
21 seems to be a fairly significant health effect there. What
22 did you find there?
23 A If you looked at Figure 1, you'll see that the NO2
24 in the bedroom was associated with severe exacerbations and
25 the PM2.5 in the living area was associated with severe

Page 243

1 exacerbations.
2 Q If you look at Table 2 above there, does that give
3 you those specific results?
4 A Yes, they do.
5 Q Okay. So, for instance, for that 10 -- you said,
6 I think, that there was about an 8.3 range between the 25th
7 and the 75th percentile. So over that slightly broader
8 range in that, that would be about 10 micrograms. What
9 would be the result of somebody who was at that five versus
10 somebody moving up to the 15 level?
11 A Well, you'd expect a 50 percent increase in severe
12 exacerbations.
13 Q Did you essentially have a chart, again, coming
14 back to this, did you see any threshold in your numbers over
15 that range that you were looking at?
16 A Well, you know, we didn't look for threshold or in
17 that sense. Right? So if you designed a study kind of
18 looking for threshold, it would be something differently.
19 We just looked at what exposures were there, and we saw
20 health effects at those exposures.
21 Q Okay.
22 A So it's probably not fair to say did you find a
23 threshold --
24 Q Okay.
25 A -- because we really didn't look for it --

Page 244

1 Q Did you --
2 A -- but there's no evidence of one here.
3 Q Okay. Were you seeing these effects all the way
4 up and down the scale that you were --
5 A Yes.
6 Q -- of ranges that you were looking at? Okay. And
7 by the same token and if you move over to the NO2 on that
8 same Table 2, it says 1.86 for severe exacerbations. Would
9 that say that then you had an 86 percent higher chance of
10 that for a 20-part-per-billion increase in NO2?
11 A Yes, but that wasn't -- that was not particularly
12 significant.
13 Q Okay. Even that much isn't -- okay.
14 A Yeah.
15 Q But the other one was? The NO2 was --
16 A Yes. Yes.
17 Q Okay. I'm sorry. The PM2.5 was. All right.
18 A So it's complicated, right, but there's a, this is
19 one of the first suggestions -- and I think this got
20 published in a very prestigious journal, in part because
21 it's one of the first papers, like I said, before they began
22 to look at air pollution and health effects in people with
23 COPD. And we felt there was enough of a signal here to
24 suggest that air pollution is a, is a cause of exacerbation
25 in people with COPD, and we used these data, by the way, to

Page 245

1 get a big grant from NIH to look at this more clearly, both
2 in a national study and to do an intervention study here in
3 Baltimore, where we're going to take people with COPD and
4 we're going to put air cleaners in homes and see, if we
5 lower the pollution on purpose, can we improve their
6 morbidity. And those are the kind of studies that I think
7 are going to begin to nail this question a little bit
8 better.
9 Q Okay. And if you look at, again, going back to
10 our 255 chart here, if you look at the page that has Figures
11 11 and 12 on it, these are ones using the annual average NO2
12 results. So between -- if you're looking at one-week
13 levels, would you, are those somewhere between one-hour and
14 annual but probably closer to the annual level? Is that
15 what you were saying?
16 A I suspect they're probably more appropriately
17 compared to an annual average --
18 Q Okay.
19 A -- than a one-hour average --
20 Q So even --
21 A -- but it's not a perfect comparison in either, in
22 either way.
23 Q Right. If we look at these, we're seeing that --
24 these levels I look at, I see going from, looks like about
25 30 now in Figure 12 up to a 34 line, with a maximum of 35?

Page 246

1 MR. GROSSMAN: Figure 12?
 2 MS. CORDRY: Figure 12.
 3 MR. GROSSMAN: Okay.
 4 BY MS. CORDRY:
 5 Q Or actually, it's actually two lines, it looks
 6 like, below the 31. So it looks like it maybe goes down to
 7 29 there, so 29 up to 34, with the maximum being 35. So
 8 that would put us in a range of 15.4 to 18-and-a-half parts
 9 per billion --
 10 A Right.
 11 Q -- and is that in the range of what you were
 12 looking at in your study there for the NO2?
 13 A Those are consistent with the exposures, part of
 14 the distribution exposures we saw in our studies.
 15 Q Okay. And that's rural, and the urban is not
 16 hugely different. It looks like it's going from 26 up to 31
 17 as a max, which would, again, give us numbers of roughly 14
 18 to 16 and a half.
 19 A Yeah.
 20 Q So these would be levels that you would look at,
 21 even with these refined assumptions, as being in the range
 22 that you were seeing health effects from long-term exposures
 23 in this range?
 24 A Absolutely. These are the type of levels right
 25 now that are the focus of our expanded study on the national

Page 247

1 level to look at kind of, on a broader scale, do we see the
 2 same health effects that we saw on our smaller-scale study.
 3 Q And those levels are going out to the backyards of
 4 people's houses on these lines and so forth?
 5 A It appears so, yes.
 6 Q Okay. All right. In his testimony on September
 7 16th, at page 197, Dr. Chase testified he thought you
 8 wouldn't likely have health effects from PM2.5 until you got
 9 up to about 15 micrograms per meter cubed. Would you agree
 10 or disagree with that statement?
 11 A Well, I think I'd have to disagree with that
 12 statement. The current standard is 12 micrograms/cubic
 13 meter. So clearly the EPA administrator thinks there's
 14 health effects down to that level currently. So even, I
 15 think, the state of the regulatory science, which I said
 16 before is usually a few years behind kind of the published
 17 science, already suggests that that's probably, the
 18 threshold is probably below the 15 level.
 19 Q All right. So you said that actually the NO2 now
 20 is out for, there's a -- review has been done. Do you know
 21 what status that is under, what's going on with that at this
 22 point?
 23 A They have a draft document that's floating around.
 24 Q Okay. And as it floats, do you know what, what is
 25 -- what's the process there? What's --

Page 248

1 A Well, it's floating around because, you know,
 2 people, they don't, they don't keep it secret. It's not
 3 like that, but you're not allowed to, you know, certainly
 4 you can't, it's not -- it's a draft; so you can't say here's
 5 what the, definitively --
 6 Q Right.
 7 A -- what the document has concluded or what the EPA
 8 administrator has said, and so they ask you not to, like,
 9 cite it in a document or publication or quote it
 10 specifically.
 11 Q Right, but it's out for public comment at this
 12 point, is that --
 13 A Yeah. Yeah.
 14 Q Okay. For people to analyze. Okay.
 15 MR. GROSSMAN: Well, is that the same draft we're
 16 talking about, that we've seen before here?
 17 MS. CORDRY: Yes, the 2013 draft, right. I
 18 just --
 19 BY MS. CORDRY:
 20 Q So it is definitely not something where you're
 21 supposed to take this as the EPA's opinion yet, correct?
 22 A Right.
 23 Q Okay. I am going to, though, show you a few pages
 24 from that, and I will let you decide whether you think these
 25 are fair questions to ask from that for a moment.

Page 249

1 MR. GOECKE: I would object to the use --
 2 MS. CORDRY: Well --
 3 MR. GOECKE: -- of the document for the reasons
 4 just discussed. It's not --
 5 MS. CORDRY: Well --
 6 MR. GOECKE: -- it's not --
 7 MR. GROSSMAN: Well, let's see what the question
 8 is first. We don't know if it's objectionable until we hear
 9 the question.
 10 MS. CORDRY: Right. I understand those strictures
 11 he just mentioned, and I think what I'm going to suggest is
 12 not going to go outside them, but you can decide.
 13 MR. GROSSMAN: And what am I --
 14 MS. CORDRY: Okay.
 15 MR. GROSSMAN: -- what was I handed here?
 16 MS. CORDRY: Okay. These are 16 pages of excerpts
 17 from the 2013 ISA Draft that is currently out for public
 18 comment.
 19 MR. GROSSMAN: Okay. So this is Exhibit 447.
 20 MS. CORDRY: 447.
 21 MR. GROSSMAN: Exhibit 447 is excerpts from ISA
 22 Draft -- what should I call it? Draft what?
 23 MS. CORDRY: Just call it the 2013 Draft.
 24 MR. SILVERMAN: ISA.
 25 MS. CORDRY: The 2013 ISA Draft. That's probably

1 the --
 2 MR. GROSSMAN: Okay. 2013 ISA Draft.
 3 (Exhibit No. 447 was marked
 4 for identification.)
 5 MS. CORDRY: And it came out at the end of
 6 November of 2013.
 7 MR. GROSSMAN: Okay.
 8 BY MS. CORDRY:
 9 Q All right. So if you're looking at that draft and
 10 you're trying to decide what to comment on it, can you just
 11 tell us what these kind of figures that you're seeing here,
 12 what these would be compiling, what these figures are and
 13 the table?
 14 A So they're trying to summarize as much as the
 15 literature as possible on a, in a concise a way as possible.
 16 Q Okay. And I see, you know, it talks about odds
 17 ratios. Now, what is that?
 18 A So an odds ratio, it's similar to a relative risk.
 19 So the odds of suffering occurring is, you know, if the odds
 20 are the same, then an odds ratio one; an odds ratio is
 21 higher than one, it's something, you increase your risk of
 22 whatever it is you're looking at being, being present.
 23 Q So when you were saying that there was a 50
 24 percent higher ratio, or 50 percent higher chance, it would
 25 be like an odds ratio of 1.5?

1 A Yes.
 2 Q Okay. And it talks about effects estimates are
 3 standardized to a, particular levels of increase. What's
 4 going on with that?
 5 A Well, you know, every study kind of presents their
 6 data kind of differently. So they try and standardize it so
 7 you can compare apples to apples.
 8 Q Okay. So for any study that was using a 24-hour
 9 average, they would look at a 20-parts-per-billion --
 10 A Yes.
 11 Q -- they'd adjust it all so that all their, so you
 12 can --
 13 A Right.
 14 Q -- line these numbers up? Okay. And then right
 15 behind there there's a table.
 16 A Yes.
 17 Q Okay. And what's in the table?
 18 A So --
 19 MR. GOECKE: Are you talking about Table 4.17?
 20 MS. CORDRY: Yes. I'm sorry. Yes, Table 4.17.
 21 THE WITNESS: So this just summarizes for a range
 22 of studies the -- for a number of studies, the range of
 23 exposures that they're looking at in terms of the health
 24 effects that they're seeing.
 25 BY MS. CORDRY:

1 Q Right. So this would be the details of what is --
 2 if the front page is kind of the bottom line, what's behind
 3 there is some of the details of those studies, is that
 4 right, in the table?
 5 A Yeah.
 6 MR. GOECKE: Objection. Leading.
 7 MR. GROSSMAN: No. I think it's fair to have the,
 8 to summarize what she thinks the witness is saying. So I
 9 don't have that as a problem.
 10 MR. GOECKE: Okay.
 11 MR. GROSSMAN: It's overruled.
 12 BY MS. CORDRY:
 13 Q So is that --
 14 A Yeah. So these summarize kind of the exposure
 15 levels associated with the health effect studies.
 16 Q Okay. So if you're trying to determine for
 17 yourself, to look at some of these things and look at what
 18 studies you find, you can look at, you can look at this list
 19 and look at where the studies are, what the range is, what
 20 the EPA is now going to be examining, is that correct?
 21 A Yeah.
 22 Q Okay. And when you look at this list, what do you
 23 see in terms of what you've been saying about health effects
 24 you've been seeing at levels below the standard?
 25 A Right. So --

1 MR. GROSSMAN: I'm going to stop you now, and let
 2 me go back to the question of the, of whether or not this is
 3 objectionable. So if I understand you right now, this is,
 4 what you're discussing now is a compilation of studies --
 5 MS. CORDRY: Right.
 6 MR. GROSSMAN: -- not of the proposed, any
 7 proposed EPA --
 8 MS. CORDRY: Right.
 9 MR. GROSSMAN: -- thing? Okay. I think, to that
 10 extent, it's not objectionable.
 11 MS. CORDRY: Okay.
 12 MR. GROSSMAN: Would you agree with that,
 13 Mr. Goecke?
 14 MR. GOECKE: Because the studies stand on their
 15 own and this is just a --
 16 MR. GROSSMAN: A compilation of the studies,
 17 right.
 18 MS. CORDRY: Right.
 19 MR. GOECKE: -- document that purports to compile
 20 them?
 21 MS. CORDRY: Right.
 22 MR. GOECKE: That's fine.
 23 MS. CORDRY: Right. They're --
 24 MR. GOECKE: I don't understand why we're not just
 25 talking about those studies instead of using this document.

Page 254

1 It --
2 MS. CORDRY: Well --
3 MR. GOECKE: -- clearly says do not rely on it,
4 but --
5 MR. GROSSMAN: Well, it's a convenient summary, I
6 suppose, is what --
7 MS. CORDRY: Well, for one thing, there's 900
8 pages' worth of studies, or 900 pages of discussion of the
9 studies. The studies themselves, if you went through all of
10 this, would be --
11 MR. GROSSMAN: Right.
12 MS. CORDRY: -- thousands of pages --
13 MR. SILVERMAN: Our record --
14 MR. GROSSMAN: And I think that's --
15 MS. CORDRY: -- and we are trying not to actually
16 ask you to do all of this.
17 BY MS. CORDRY:
18 Q What I am trying to do is, at a high-level
19 summary, if you look at what is currently under the
20 examination and you look at these in terms of your evidence
21 about health effects and looking at this compilation, I'm
22 really just asking you, if you look at this, what are the,
23 what are the ranges of the studies that the EPA is going to
24 be considering and how -- and then the second question will
25 be, how does that relate to the kind of levels we're seeing

Page 255

1 around here?
2 A So I think we see exactly what we talked about at
3 the beginning, that we're now seeing more and more studies
4 being done at lower concentration levels than we had in the
5 past. So the evidence base -- you know, as the standards
6 come down, the evidence base and health effects and
7 exposures at those levels/below those levels is increasing.
8 So this creates a pool of studies now that the EPA can take,
9 draw more evidence from in terms of their rule-making.
10 So we see a number of studies that have short-term
11 exposures that are, you know, certainly down in the, you
12 know, less than 20-parts-per-billion range, and you know,
13 it's up to the EPA now to integrate this into kind of one
14 assessment to kind of make sense out of it. But certainly
15 we're seeing studies now that are under consideration that
16 are looking at exposures that are consistent with what
17 we're, might expect based on the modeling that's been done.
18 And so we would anticipate, I think, a more informed kind of
19 standard to come out that might look at, more specifically,
20 at the types of exposures --
21 MR. GROSSMAN: Well, I'm not going to anticipate
22 what they're going to do, but let me, let me ask if you'd
23 explain what this chart, how to read this chart on page
24 4-124, which is the first page of Exhibit 447. What do the
25 location of these little dots and lines mean to me?

Page 256

1 THE WITNESS: I'm sorry. I don't have that same,
2 what --
3 BY MS. CORDRY:
4 Q The very first page of the exhibit here.
5 MR. GROSSMAN: First page.
6 THE WITNESS: Okay. All right. So the most
7 important thing you can take from this line is that if, if
8 there was a negative effect, that means if there was no
9 effect between NO2 and these health effects -- this is
10 respiratory symptoms and asthma medication use, right -- if
11 there was no association, you'd expect half those dots to be
12 on one side of one, half those dots to be on the other side
13 of one.
14 MR. GROSSMAN: Okay.
15 THE WITNESS: Right? Because, by chance, you're
16 getting some that show high, some that say low.
17 MR. GROSSMAN: Right.
18 THE WITNESS: Right. So just looking at overall,
19 the fact that almost all the dots are to the right-hand side
20 tells me something. Right? Now, any one study -- so the
21 line now represents whether it's significant or not. So if
22 that bottom, the back of the line crosses one, you'd say
23 that was a not-significant study by itself, but what the EPA
24 is going to do then, is they're going to take all these
25 studies -- that's why they kind of put them on the same

Page 257

1 basis -- and they're going to combine them into one study,
2 because the more studies you have, the more power you have,
3 and they're going to come up and see is there a combined
4 estimate that represents a risk and is that risk significant
5 or not, does it cross that one line.
6 MR. GROSSMAN: Okay. So the one line, that
7 vertical line at the one axis there, things to the left of
8 that would be an indication of no effect --
9 THE WITNESS: Right.
10 MR. GROSSMAN: -- from these levels of NO2, and I
11 guess this is 24-hour NO2 levels or --
12 THE WITNESS: Well, I think they have different,
13 they have different studies here. So they're trying to --
14 MR. GROSSMAN: Okay.
15 THE WITNESS: -- they're trying to pull lots of
16 different --
17 MS. CORDRY: That's what we said about, they
18 standardize all of them. So --
19 MR. GROSSMAN: Okay.
20 MS. CORDRY: -- they all should have about the
21 same amount of effect based on that the levels of change.
22 MR. GROSSMAN: All right. And these were at
23 levels of 20, 25, or 30 parts per billion --
24 MS. CORDRY: No. That's the standardized effect.
25 That's the point of the table 4-7, I mean, 4-17. 4-17 tells

Page 258

1 you the absolute levels, the actual measured levels.
2 THE WITNESS: So the studies that -- the exposures
3 that these studies represent --
4 MR. GROSSMAN: Yes.
5 THE WITNESS: -- are typically kind of in the
6 ranges that we're talking about now.
7 MS. CORDRY: For instance, if you look under
8 Wheeze there on the first page, the first --
9 MR. GROSSMAN: I'm looking for 4-17.
10 MS. CORDRY: It's the second page there.
11 MS. ADELMAN: It's the second page.
12 MR. GROSSMAN: Oh.
13 MS. CORDRY: The table, 4-17.
14 MR. GROSSMAN: Yes. Okay.
15 MS. CORDRY: So if you look under Wheeze and you
16 see the study there that's labeled Mann et al. (2010) --
17 MR. GROSSMAN: Look under Wheeze?
18 MS. CORDRY: Wheeze. That's the effect. There's
19 several different effects they're looking at here.
20 THE WITNESS: Wheeze. No, on the first page.
21 MR. GROSSMAN: Oh, wheezing.
22 MS. CORDRY: Wheezing, yes.
23 THE WITNESS: Look on the first page under Wheeze.
24 MS. ADELMAN: First page.
25 MR. GROSSMAN: All right.

Page 259

1 MS. CORDRY: I'm sorry. On the first page --
2 MR. GROSSMAN: Trying to confuse the Hearing
3 Examiner, you know.
4 MS. CORDRY: I'm trying not to. If you look at
5 the first page under Wheeze, it has Mann et al., a 2010
6 study.
7 MR. GROSSMAN: Yes. I see it.
8 MS. CORDRY: And then you go over there and you
9 find the little dot and that's the calculated odds ratio.
10 MR. GROSSMAN: Right.
11 BY MS. CORDRY:
12 Q That line, Dr. Breyse, that represents the
13 confidence interval, is that correct --
14 A Yes.
15 Q -- that we've been talking about?
16 A Yeah.
17 Q What does it mean how long or short the line is?
18 A Well, the longer the line, the more uncertain you
19 are; the shorter the line, the more certain you are about
20 that.
21 MR. GROSSMAN: Right.
22 BY MS. CORDRY:
23 Q Okay. So that would go with a higher P -- no, I
24 guess a smaller P value, a greater --
25 A Well, yeah. It's a smaller confidence interval,

Page 260

1 yeah.
2 Q -- a greater confidence interval?
3 MS. CORDRY: And then if we go down on Table 4-17
4 on the second page there, if you look up just above the
5 bottom, you'll see that Mann study referenced.
6 MR. GROSSMAN: Yes.
7 MS. CORDRY: So you can see it was done in
8 California, it was done at a particular period of time, it
9 happened to use 24-hour measurements on NO2. The median
10 level is 18.6. So that's the mean, the mean kind of point
11 there. The highest level, the very highest level they
12 measured was 52.4.
13 MR. GROSSMAN: Right, but what I -- I was
14 referring to the fact that right at the bottom on the front
15 page --
16 MS. CORDRY: Right.
17 MR. GROSSMAN: -- you'll see just below the
18 horizontal index --
19 MS. CORDRY: Right.
20 MR. GROSSMAN: -- there's the words odds ratio --
21 THE WITNESS: Right.
22 MR. GROSSMAN: -- per 20, 25, or 30 parts per
23 billion in NO2.
24 MS. CORDRY: Increase. Increase.
25 THE WITNESS: Right. So let me -- so in the study

Page 261

1 they looked at exposures that ranged from 20 to 50 parts per
2 billion, something like that. For each
3 20-micrograms-per-cubic-meter increase, they would see a, I
4 can't read down exactly, but somewhere less than one -- less
5 than a 50 percent increase in symptoms of wheeze, but that
6 scaling factor is just a mathematical thing. I could have
7 put that as per one part per billion, I could have put it as
8 10 parts per billion, I could put it as five. It's just a
9 standard way of kind of expressing it: for each unit
10 increase in exposure, how much pollution-related risk do you
11 expect to see? And then the next question is at what levels
12 did they see that increase, and that's what the second table
13 shows.
14 MR. GROSSMAN: Right. I was just trying to
15 understand what they were getting at by that labeling of the
16 odds ratio per 20, 25, or 30 parts per billion.
17 MS. CORDRY: Okay. That goes with, if you go
18 down, the two little hard-to-read lines, text under there:
19 Effect estimates are standardized to a 20-part-per-billion
20 increase for 24-hour average or 15-hour average, 25 parts
21 per billion for four-hour average, six-hour, eight-hour, and
22 30 for one-hour --
23 MR. GROSSMAN: I see.
24 MS. CORDRY: -- because the shorter the time
25 period, the bigger volume you get. So --

Page 262

1 MR. GROSSMAN: Okay. All right. Now I understand
2 that. I just wondered what --
3 MS. CORDRY: So now they try to pull all of them
4 together so we can put all of them on one chart.
5 MR. GROSSMAN: Right. Right. Okay.
6 THE WITNESS: It's an attempt to standardize.
7 MR. GROSSMAN: All right. I got you.
8 MS. CORDRY: All right. So that, that -- and it's
9 just, we did several examples, and we won't go through all
10 of them again, but Figure 4-4 is respiratory-related
11 hospital admissions and, again, the same kind of table
12 behind there.
13 MR. GROSSMAN: The implication of this exhibit,
14 447, at least as far as you've gone, is to say that it
15 appears that at these levels studied, that there's some
16 impact?
17 MS. CORDRY: That there are a lot of studies and a
18 lot more that have come out since the EPA report that they
19 have, and if you look at the levels that are being done, we
20 are looking at levels where health effects are being seen
21 right in the range of where we're at.
22 MR. GROSSMAN: I understand. Okay.
23 MS. CORDRY: So that's the point of that.
24 MR. GROSSMAN: Okay.
25 MS. CORDRY: To cite to one specific study here --

Page 263

1 and we're only going to do one --
2 MR. GROSSMAN: Bless your heart.
3 MS. CORDRY: -- if you go down to, it's about the
4 11th or 12th page in there, but it's one of the few ones
5 that has text. It looks like this. It says,
6 Concentration-Response.
7 MR. GROSSMAN: What's the number on the bottom of
8 the page?
9 MS. CORDRY: Oh, I'm sorry. Yes, 4-172. I
10 forgot, it did have page numbers on this.
11 MR. GROSSMAN: Okay. I've got it.
12 MS. CORDRY: And then 4-173 has a chart there, and
13 we actually --
14 MR. GROSSMAN: Okay.
15 MS. CORDRY: -- pulled that study out and have
16 that particular study available to give to you all. So that
17 would be this one. Down to our last two exhibits.
18 MR. GROSSMAN: That's good because I'm running out
19 of room on the page here to list them.
20 MS. CORDRY: So that would make that one 448, I
21 believe.
22 MR. GROSSMAN: Yes.
23 MS. CORDRY: Do you want to start writing while I
24 tell you? It says: Short-Term Associations Between Ambient
25 Air Pollutants and Pediatric Asthma Emergency Department

Page 264

1 Visits, and you got the rest of it there.
2 MR. GROSSMAN: Okay.
3 (Exhibit No. 448 was marked
4 for identification.)
5 MS. CORDRY: With that particular graph that's on
6 page 4-173 --
7 THE WITNESS: It shows an exposure-response curve.
8 MS. CORDRY: Right. And it does come out of the
9 same study that we're now just putting, that he is
10 introducing on the record as 448. I like this one in
11 particular because it's blown up. So when we look at, in
12 4-48, or I'm sorry, 448, you'll see it's a little smaller
13 and a little harder to read. Okay.
14 MR. GROSSMAN: What page are we on?
15 MS. CORDRY: We're looking at page 4-173 --
16 MR. GROSSMAN: Okay.
17 MS. CORDRY: -- in Exhibit --
18 MR. GROSSMAN: Right.
19 MS. CORDRY: -- 447, and that is a graph taken out
20 of Exhibit 448.
21 MR. GROSSMAN: Okay.
22 BY MS. CORDRY:
23 Q And can you talk to us just a little bit about
24 this study, the 448 study?
25 A So this is a large study of asthma emergency

Page 265

1 department visits in Atlanta, and it was from 1993 to 2004.
2 And so they looked at 91,000 ED visits, and they tried to
3 associate the ED visit pattern with the air pollution
4 pattern. And here you see that exposure-response curve,
5 that when the concentrations were low, the risk ratio was
6 low; when the concentrations were higher, the risk ratio was
7 higher, and it goes up in a, not in a linear exact fashion,
8 but in a, certainly in an increasing fashion with increasing
9 exposure.
10 So this is one of the studies that, I think, are
11 going to help inform the new EPA standard on nitrogen
12 dioxide, and they saw this, interestingly, during the warm
13 season and not as much during the flu season; this is --
14 during the winter season -- this is for pediatric asthmatic
15 patients. And so the EPA document is kind of highlighting
16 this study as an example, one that's got good
17 exposure-response relationship. And, again, we're seeing
18 increased risk ratios. So, again, 1.15 says there's a 50
19 percent increase in a, in an ED visit at increasing
20 exposures, and certainly, again, the exposures are kind of
21 in the area that, in the ranges that we are worried about
22 seeing as associated with the gas station in this --
23 Q I'm sorry. I'm sorry. You said a 50 percent. Do
24 you mean 15?
25 A Fifteen.

Page 266

1 Q Fifteen percent, yes.
2 A If I said 50, I meant 15.
3 Q Okay. And the range of exposures we're looking at
4 there, it looks to me like that is probably, it doesn't go
5 down all the way to zero, I don't believe, because it's
6 talking about between the fifth and the 95th percentile. So
7 that would, if I eyeball that chart, it looks to me like
8 it's probably starting at about five parts per billion --
9 A Yes.
10 Q -- and going up to a little bit over 35. Is that
11 -- that's the range that they're looking at in terms of
12 short-term exposures.
13 MR. GROSSMAN: I thought it was a no-no to start a
14 chart at any place other than zero.
15 MS. CORDRY: Well, it is --
16 MR. GOECKE: Only when Costco does it.
17 MS. CORDRY: No. It's not a problem --
18 MR. SILVERMAN: Only when it's misleading.
19 MS. CORDRY: -- if you label what you're doing.
20 MR. SILVERMAN: Only when it's misleading.
21 MS. CORDRY: When you label what you're doing and
22 saying I am particularly studying a fifth to 95th
23 percentile, yes.
24 MR. GROSSMAN: Just saying I'm paying attention.
25 MS. CORDRY: I understand, and we're explaining

Page 267

1 why this is a valid study.
2 BY MS. CORDRY:
3 Q Okay. And just, just to sort of sum this up, if
4 you look at his, on the very last page there, his
5 conclusions as to what -- oh, I'm sorry, not his since
6 there's about, as usual with these things, about 10 authors
7 -- if you look at their conclusions, the last sentence on
8 page 315 --
9 A In fact, the senior author is a woman.
10 Q Right. I --
11 MR. GROSSMAN: Page 315? Okay.
12 MS. ADELMAN: Which exhibit?
13 MS. CORDRY: Page 315 in Exhibit 448.
14 MR. GROSSMAN: And so what was her conclusion?
15 Which --
16 MS. CORDRY: In the fourth --
17 MR. GROSSMAN: -- the last paragraph?
18 MS. CORDRY: Yes, the last paragraph of text in --
19 MR. GROSSMAN: Right.
20 MS. CORDRY: -- in there, in the very last
21 sentence there. It starts, Further.
22 THE WITNESS: So it says: These associations were
23 present at relatively low ambient concentrations,
24 reinforcing the need for continued evaluation of the
25 Environmental Protection Agency's National Ambient Air

Page 268

1 Quality Standards to ensure that the standards are
2 sufficient to protect susceptible populations.
3 MR. GROSSMAN: Well, actually, it says susceptible
4 individuals.
5 MS. CORDRY: Okay, sorry.
6 THE WITNESS: Individuals? Individuals, sorry.
7 MS. CORDRY: Now, for my last exhibit, is -- we'll
8 do this one.
9 THE WITNESS: The Harvard study?
10 MS. CORDRY: Right. I guess we'll make that one
11 449.
12 MR. GROSSMAN: Thank you. I appreciate that,
13 Mrs. Adelman. Exhibit 449. All right. So this is July
14 2012 study: Chronic Exposure to Fine Particles and
15 Mortality, and I'm going to put three dots so that --
16 (Exhibit No. 449 was marked
17 for identification.)
18 MS. CORDRY: Okay, exactly.
19 BY MS. CORDRY:
20 Q All right. First, can you tell us what the
21 Harvard Six Cities Study is?
22 A So it's actually a famous study where they --
23 well, the first studies looked comprehensively at
24 particulate matter air pollution and health, and they looked
25 at six cities -- in Steubenville, Ohio, through Topeka,

Page 269

1 Kansas -- across the U.S., and they published their initial
2 findings maybe 10 years ago, and it was key for setting the
3 original PM2.5 National Ambient Air Quality Standard that
4 was set. And this is an update of that, and they're trying
5 to take advantage of the fact that exposures have come down,
6 and the question is, are they still seeing the same health
7 effects that they saw? And if you look -- what's
8 informative, if you look at Figure 1, this illustrates kind
9 of the good and the bad news, if you will, but I think
10 there's a lot of good news here, and that's, as across these
11 six cities, the exposure concentrations over time has come
12 way down.
13 Q That's the good news, right?
14 A Right, that's good -- that's the good news. And
15 so, in fact, if you look back in the late, in the
16 1980s/early 1990s, it would be hard to study exposures less
17 than 10 micrograms per cubic meter because there weren't
18 any, right, but now almost all the cities are, you know,
19 between, you know, five and 15 micrograms/cubic meter. So
20 what they're asking, the question is now, are we seeing
21 health effects at these lower levels -- we know we saw them
22 previously at the higher levels -- and the study concludes
23 that there are health effects, and they said that health
24 effects extend down to concentration ranges that include
25 eight micrograms per cubic meter. So --

Page 270

1 Q And where is that? Is that on the front page
2 there?
3 A That's, I'm reading that from the abstract. So
4 the authors conclude that this study provides additional
5 evidence that there's ambient PM2.5 health effects at
6 concentrations that are lower than we thought of, than we
7 saw before, and in part, it's because they're able to study
8 these exposures now because they didn't exist. And so while
9 the current standard is 12 micrograms per cubic meter, I
10 think studies like this suggest quite clearly that perhaps
11 that needs to be reconsidered and needs to be brought down
12 as well.
13 Q And if you look at the very end of this one again
14 on their conclusion.
15 A Including recent observations with PM2.5 exposures
16 well below the U.S. annual standard of 15 micrograms per
17 cubic meter, which it was when this was --
18 Q Right.
19 A -- written, and going down to eight micrograms per
20 cubic meter, the relationship between chronic exposure to
21 PM2.5 and all-cause, cardiovascular, and lung-cancer
22 mortality was found to be linear without a threshold. So
23 they, they had not documented a threshold.
24 Q Right.
25 A Furthermore, estimated effects of PM2.5 did not

Page 271

1 change over time, suggesting that there's a stable toxicity.
2 That means each unit of exposure seemed to have the same
3 sort of risk. So if you reduced it by 10, you know, it's
4 the same reduction in kind of morbidity. So the PM is just
5 as toxic as it was before; there's just less of it there.
6 Q And the last sentence?
7 A Then finally: These results suggest that further
8 public policy efforts that reduce fine particulate matter
9 air pollution are likely to have continuing public health
10 benefits.
11 Q So if you will again pick up your Exhibit 255, and
12 this time look at page 29, and these are the revised
13 estimates with the new assumptions. This is with using a
14 10.8 microgram per meter cubed background for both rural and
15 urban. Now, are you aware that in an earlier point in the
16 case a 12.1 background was used?
17 A Yes.
18 Q Okay. And obviously -- well, let me ask you this,
19 a different question first. Between the 10.8 and the
20 maximum of 11.2 that's shown here, that's a .4 addition from
21 the, what's being modeled here, is that correct?
22 A Yes. Yes.
23 Q Okay. So if we had a 12.1 background before and
24 added another .4, we'd be well above the current 12
25 standard, is that correct?

Page 272

1 A Correct.
2 Q Okay. If we are looking at an area that is 10.8
3 over this entire area, or that's the area background, and
4 you're adding, even if it's only 10.8 and you're adding
5 another close to half gram, half microgram, with these kind
6 of levels and with seeing, with seeing what's being said in
7 these studies, do you have a concern about adding additional
8 pollution, even if you're below the 12 level?
9 MR. GROSSMAN: Let me stop you for a second.
10 MS. CORDRY: Okay.
11 MR. GROSSMAN: When you say adding half a
12 microgram, what are you talking about?
13 MS. CORDRY: Well, this would show that the
14 modeling shows that we're adding up to an additional, you
15 know, we're showing the background at 10.8 and the max level
16 of 11.2. So that's .4, and the other one is .42 micrograms
17 per meter cubed.
18 MR. GROSSMAN: The other what is .42?
19 MS. CORDRY: Figure 20. If you look down there,
20 the difference there between 11.22 and 10.8.
21 MR. GROSSMAN: All right. So you're just saying
22 that the difference between the 10.8 background level and
23 the max background level --
24 MS. CORDRY: Right.
25 MR. GROSSMAN: -- is about four --

Page 273

1 MS. CORDRY: Right.
2 MR. GROSSMAN: -- micrograms?
3 MS. CORDRY: Point four.
4 MR. GROSSMAN: Point four, I'm sorry, point four.
5 MS. CORDRY: Right.
6 BY MS. CORDRY:
7 Q All right. So let me do the question a little bit
8 different. Knowing what you do with the studies you've been
9 looking at, the studies you've been reading and so forth,
10 are you satisfied that being below 12 is sufficiently
11 healthy, that it doesn't matter if we add this additional
12 amount of pollution?
13 A I think we have to move below 12, and I think the
14 EPA will follow eventually.
15 Q And, again, did you look at the background memo at
16 all in terms of the backgrounds we discussed about
17 alternative potential background levels?
18 A Well, you know, I know -- like I've commented
19 before, I don't want to get too much into the detailed
20 inputs in the modeling per se, but I'd like to note that,
21 you know, it's very sensitive to assumptions you make. And
22 so we see, again, that the values that we pick are going to
23 change depending on the background assumption you make.
24 Q And does that also depend on which background
25 monitors you pick?

Page 274

1 A Well, they have to choose the monitors to kind of
2 give you a background value. So picking a monitor -- you
3 know, which one you pick and which one you call, which one
4 you call background are all going to affect kind of the
5 final answer that you get.
6 Q Okay. And then if you turn the page there on that
7 Exhibit 255 that you had -- let me just back up a second.
8 With the levels that we have here, whether they are 11.2 or
9 whether there's any of those higher background levels that
10 have been used at different times by Mr. Sullivan or added
11 in, in the range, in this kind of range here, are you
12 confident that there is not a health effect being -- that
13 would be derived from this station?
14 A Well, these exposures all suggest the
15 concentration would be above, I think, what studies like the
16 Harvard Six studies, the revision of the Harvard Six studies
17 suggest are going to be a health base. So I think these --
18 MR. GROSSMAN: What's the antecedent of these?
19 Which figure are you looking at? When you said these
20 effects and these, which -- what are you pointing to?
21 THE WITNESS: These, the Harvard Six studies
22 suggest that --
23 MR. GROSSMAN: No. What are you pointing to?
24 THE WITNESS: I'm looking at Figures 19 and 20, I
25 guess.

Page 275

1 MR. GROSSMAN: Okay. Thank you.
2 THE WITNESS: You know, the micrograms per cubic
3 meter are all above the levels at which the Harvard Six
4 studies suggest there would be a health concern.
5 MR. GROSSMAN: Okay.
6 BY MS. CORDRY:
7 Q You would believe there are already health
8 effects, even if only in background. Would that be fair to
9 say?
10 A Yeah.
11 Q And that adding additional pollution to that,
12 would that have --
13 A Would only increase it.
14 Q Okay. All right. To move to a slightly different
15 area now, which we're almost to the end, turning the page,
16 on Figures 21 and 22, these are graphs where the one-hour
17 standards were taken and then there was an adjustment for
18 the assumed time that somebody would spend in the queue of
19 being 20 minutes and then the rest of the time the
20 assumption was that they would be at a background level of
21 90. Looking at these figures and with that explanation, in
22 your scientific opinion, is that an appropriate way of
23 calculating concentrations for particular chemicals?
24 A I'm sorry. Say that again, please.
25 Q If you look at these charts and knowing what they

Page 276

1 say they're doing --
2 MR. GROSSMAN: Which charts are you talking about?
3 MS. CORDRY: 21 and 22, Figures 21 and 22.
4 MR. GROSSMAN: Okay. All right.
5 BY MS. CORDRY:
6 Q This approach for determining what is an urban
7 concentration, with using these 20 minutes here and 40
8 minutes elsewhere, is that an appropriate way of determining
9 concentrations, in your opinion?
10 A Well, it's actually a lot more complicated than
11 that. Right? So a person's exposure is going to,
12 integrated over time and space, and we know their personal
13 exposure is going to, going to vary greatly. I don't know
14 if you can assume that there's only two places you can be in
15 your whole day that's going to account for your NO2
16 exposure.
17 Q And in any case, would -- if you're trying to
18 determine what is the concentration level for modeling or so
19 forth, is this the way you determine what a concentration
20 level is as opposed to --
21 MR. GROSSMAN: Well, let's not give him as
22 opposed.
23 MS. CORDRY: Okay. All right.
24 THE WITNESS: I guess I still don't --
25 BY MS. CORDRY:

Page 277

1 Q Let me ask this: Is there a form of analysis
2 known as risk exposure for a particular person or a
3 population? Is there risk exposure assessment calculations
4 that are done?
5 A Yes. Yes.
6 Q Okay.
7 A So you can do an exposure assessment based on an
8 estimate of what a person's personal exposure is going to
9 be.
10 Q Okay. And do you have to, when you're doing that,
11 do you have to start with established concentrations at
12 particular places and see whether they're going to be there
13 or not?
14 MR. GROSSMAN: The right way to say it is how do
15 you start; not, do you start with.
16 MS. CORDRY: Okay. All right.
17 MR. GROSSMAN: You gave him the leading form.
18 MS. CORDRY: All right.
19 THE WITNESS: So you need to ask me what the
20 person's personal exposure is going to be to do that.
21 Right? In order to do that, you have to know where they
22 are, how much time they spend there, and what the
23 concentration is, and you can --
24 BY MS. CORDRY:
25 Q Right.

Page 278

1 A -- kind of sum that across a period of time.
2 Q And is a determination of concentration
3 independent of whether a person is there or not?
4 A Is a determination of concentration independent of
5 whether a person is there or not? Well, the concentration
6 at a fixed spot is the concentration at a fixed spot.
7 Right? So you just need to know how much time somebody
8 spends at that spot to assign them a concentration-time
9 profile.
10 Q Okay. So that would be looking at that person's
11 own personal risk exposure?
12 A That would be one way to do it, yes.
13 Q But in terms of whether you would define that as
14 saying what is the concentration at a point, is that how you
15 would -- by mixing the person's personal time at the
16 exposure and the levels that are there, is that how you
17 would set a concentration --
18 MR. GOECKE: Objection. Can we stop the leading
19 questions?
20 MR. GROSSMAN: Yes, but let me ask you something
21 different. Where are you going with this particular set of
22 questions?
23 MS. CORDRY: Okay. Well, with this particular set
24 of questions is, is this a meaningful or appropriate way of
25 doing anything? Is this, is this mixing up two concepts

Page 279

1 that don't belong together? This purports to be a --
2 MR. GROSSMAN: So you're saying this mixes up the
3 question of concentration with the question of personal
4 exposure; is that your --
5 MS. CORDRY: Yes. This purports to be a level of
6 concentration, but this, this is not -- I mean, this isn't
7 the way you do concentrations.
8 MR. GROSSMAN: Well, you're not allowed to
9 testify, really.
10 MS. CORDRY: I understand that, but you asked me
11 why I was -- you know, where I'm trying to get at is
12 dividing up the question of is this the way you determine
13 what a concentration level is --
14 MR. GROSSMAN: Okay.
15 MS. CORDRY: -- versus how do you --
16 MR. GROSSMAN: Is this the way to determine what a
17 concentration level is?
18 THE WITNESS: I don't understand that question.
19 MR. GROSSMAN: All right. Let's go with something
20 else because we --
21 MS. CORDRY: Okay.
22 BY MS. CORDRY:
23 Q If you are trying to determine somebody's risk
24 assessment here, their risk exposure, even assuming they --
25 A Their personal exposure. Is that what you mean?

Page 280

1 Q Well, yes, a person's exposure, yes.
2 MR. GROSSMAN: I think we've been over this same
3 set of questions and this a number of times now, and --
4 MS. CORDRY: Well, I don't think --
5 MR. GROSSMAN: -- the witness has said he's --
6 MS. CORDRY: I was going to a different --
7 MR. GROSSMAN: -- he's not following the gist of
8 what you're getting to.
9 MS. CORDRY: Okay. I'm trying to ask a different
10 question, in the first place, that will actually go to --
11 but I think he can answer it, reasonably.
12 MR. GROSSMAN: All right. Go ahead.
13 BY MS. CORDRY:
14 Q I think you said that it wasn't clear whether the
15 person would just simply be at 90 micrograms per meter
16 cubed, they wouldn't necessarily be at the background. How
17 does that relate to what you're talking about in terms of
18 determining somebody's own exposure to risk?
19 A I apologize, Ms. Cordry. I'm --
20 Q Okay.
21 A -- having a hard time following exactly where you
22 want to get at, but what I would do is I would -- you need
23 to know kind of what the concentration is at a space in time
24 and how much time a person spends in that space in time, or
25 you put a sampler on that person and walks around with it

Page 281

1 and that person -- it measures their exposure as they kind
2 of walk around, which is the gold standard way of doing it.
3 But otherwise, if we knew what the exposure was while
4 they're sitting in line -- so obviously that would have to
5 be what their exposure is in their car while they're sitting
6 in line, not necessarily what the exposure is outside their
7 car, right -- and then how much time they spend in line, how
8 much time they spend driving on the road, what's the
9 concentration while they're driving on the road, how much
10 time they spend home, how much time they spend outside if
11 they're home, we can piece together a person's exposure
12 across a day that way.
13 Q So if someone --
14 MR. GROSSMAN: No. Let's move on to something
15 else, okay? I think you've --
16 MS. CORDRY: Okay. All right.
17 MR. GROSSMAN: The witness has tried to answer
18 three times.
19 MS. CORDRY: Okay. Well, I'm trying, I'm trying
20 to get the questions to the point that he can answer them
21 easily, which is --
22 MR. GROSSMAN: No, we've --
23 MS. CORDRY: -- for instance, let me --
24 MR. GROSSMAN: Just move to something else.
25 MS. CORDRY: All right.

1 BY MS. CORDRY:

2 Q I'd like to finish up with just talking a little
3 bit about occupational issues there and that's my last few
4 questions. Dr. Chase was asked on, in his testimony on
5 September 20th at page 234 whether he would expect to see
6 health effects from being exposed to levels of NO2 for one
7 hour, and he testified: I'm not going to say none, but I've
8 been practicing occupational medicine for 35 years, both in
9 a full-time academic setting and in an active private
10 practice, and I've never seen a single patient with such an
11 exposure scenario who was symptomatic. In your opinion, is
12 this sufficient evidence that exposures at that level will
13 not cause adverse health effects in anyone?

14 A Well, there's a couple of problems, right, is, one
15 is a lot of times if people are -- there's a bias called
16 healthy worker effect -- if people are bothered by
17 something, they leave the job. It doesn't mean if they
18 aren't, but the people maybe who are, are more vigorous
19 stick around than people who don't stick around. So just
20 because you don't see somebody doesn't mean it can't happen.
21 It doesn't mean it does happen. It might mean that they
22 just don't stick around with those jobs.

23 All right. So that's part of the problem, but you
24 have to compare kind of what a -- I would have to start by
25 looking at what a person's eight-hour exposure was over a

1 day and compare it to guidelines that are published and
2 probably not OSHA's exposure limits because we know they're
3 out of date and they aren't routinely used other than just
4 for deciding whether you're legally compliant or not. But I
5 would refer to groups like the ACGIH, like I held, like
6 NIOSH that I held, and the standard of practice would be, if
7 your exposure approaches half of what we think is
8 acceptable, you'd begin to kind of talk to those workers
9 about are you having any health complaints and is there
10 anything we can do to reduce your exposure, to kind of keep
11 your exposure kind of at a healthy level.

12 So I'm not going to say a scenario like this, if
13 somebody were working outdoors around this traffic queue for
14 long periods of time or at this loading dock, they wouldn't
15 -- they would a priori have no concern about occupational
16 exposures, but --

17 Q And even before you get to occupational exposures,
18 because I think, in context, his question, his answer was
19 not necessarily limited to that, if you did not see
20 reactions as an occupational practitioner to a level of 388,
21 would that tell you that there was not adverse health
22 effects for the population as a whole?

23 A No, that's probably not the best way to answer
24 that question; so -- there's a lot of reasons why people
25 might come and, why people might be complaining, when they

1 might seek out health care, and there could be lots of
2 morbidity that's under the radar, so to speak --

3 Q And --

4 A -- so I wouldn't rule it out a priori.

5 Q And what I'm asking you is, does the occupational
6 setting, who you see in an occupational setting, does that
7 approximate the entire range or population subject to those
8 kind of exposure levels?

9 A No. Actually, you know, workers tend to be
10 younger; they tend to be fitter than the normal population,
11 you know. So there's lots of reasons why you wouldn't see
12 something in an occupational cohort that you would see in a
13 non-occupational cohort just because of that.

14 Q And the existing OSHA standards, do you know when
15 most of them were adopted?

16 A 1970. Actually, 1968.

17 Q And based on science that was developed when?

18 A Well, you know, prior to 1968.

19 Q So are you saying that most of them have not been
20 changed since 1968?

21 A The vast majority of them have not been changed
22 since then. A number of important ones have, but the vast
23 majority have not.

24 Q To your knowledge, has either NO2 or PM2.5 been
25 addressed by OSHA since then?

1 A Well, OSHA doesn't have exactly a PM2.5 standard.
2 So it's hard to compare that directly, but the respirable
3 dust standard is a generic standard, and their NO2 standards
4 I don't think have been reevaluated since 1968.

5 Q And as a general principle, would an industrial
6 hygienist say that the OSHA standards are acceptable now in
7 terms of providing adequately for workers' safety?

8 A No. I think, as a general rule, you'd look at the
9 breadth of exposure guidelines that you have available to
10 you as a professional -- OSHA, the National Institute for
11 Occupational Safety and Health, the ACGIH, there's European
12 Union guidelines -- and you'd look at all those together and
13 you'd probably pick the one you think was lowest and most
14 defensible, and that's probably not going to be the OSHA
15 standard for most things.

16 Q So are you saying that something like the ACGIH
17 standard, is that the one that an industrial hygienist would
18 normally look to in terms of determining --

19 MR. GOECKE: Objection. Leading.

20 MS. CORDRY: No.

21 MR. GROSSMAN: I'll sustain that objection.

22 MS. CORDRY: Okay.

23 MR. GROSSMAN: What is the standard; not, is that
24 the standard.

25 MS. CORDRY: Well, I think he testified -- okay.

Page 286

1 I am trying to ask specifically about that.
2 BY MS. CORDRY:
3 Q What is the standard an industrial hygienist in
4 the United States would look at first in terms of trying to
5 determine appropriate levels within a factory?
6 A So as I mentioned before, I'd look at all -- I'd
7 look at OSHA, I'd look at the ACGIH TLV, and I'd look at the
8 NIOSH recommended exposure limit, and I'd even look at the
9 -- EPA has a toxicity database that has reference doses for
10 susceptible people. So I'd look at all those values, and
11 I'd come to some judgments about what I, what I think is
12 appropriate for the type of workers that I'm trying to
13 protect.
14 Q And would you, as a hygienist, would you want to
15 look at the most recent standards?
16 A Most certainly I'd put more faith in the ones that
17 are most recently done.
18 Q Okay. And as an industrial hygienist, if you were
19 called in by management to advise on conditions in a
20 facility, would you view your job as simply determining if
21 it fell below --
22 MR. GOECKE: Objection. Leading.
23 MR. GROSSMAN: Well, no, no. Once again, you're
24 leading. What would you view your job as; not, would you
25 view your job as. You're putting words in the witness's

Page 287

1 mouth.
2 MS. CORDRY: Okay. Well, but there's an awfully
3 broad range of what you might do if you were called in as an
4 industrial hygienist. I'm trying to get him to a
5 particular --
6 MR. GROSSMAN: I understand, but --
7 MS. CORDRY: -- range here.
8 BY MS. CORDRY:
9 Q If you were called in as management to advise on
10 conditions at a facility that had hazardous pollutants
11 there, what would be your approach? How about that?
12 A So I'd look at the range of exposures, and I'd
13 look at the ranges in susceptibilities. I'd look and see if
14 there's any health complaints, if there's any kind of
15 concern from the medical provider. I'd look at the range of
16 exposure guidelines that are present. I'd look at the type
17 of training that the workers have received, and I'd make
18 some judgment about whether it's acceptable or not based on
19 all that.
20 Q Assuming you were below the OSHA limit, would you
21 consider that your job was done at that point?
22 A No.
23 MR. GOECKE: Objection. Leading.
24 MR. GROSSMAN: No, I don't think that's leading --
25 THE WITNESS: No.

Page 288

1 MR. GROSSMAN: -- so I'll overrule that objection.
2 THE WITNESS: I would not.
3 MR. GROSSMAN: But he's already answered it.
4 THE WITNESS: Yeah. Just like the --
5 MR. GROSSMAN: At least five times. So --
6 THE WITNESS: -- just like the EPA standard, none
7 of these guidelines or standards are fine lines between
8 hazardous and non-hazardous. People can, people can be
9 underexposed compared to ACGIH and still suffer and still
10 have complaints. Right? And so that's why it's a
11 guideline. It's a tool used in the hands of professionals
12 to make judgments. You don't assume that just because
13 you're magically above or below some number that you can or
14 cannot have a health effect.
15 BY MS. CORDRY:
16 Q What I was getting at actually, the next question
17 is, with that view in mind, is there a way you discuss with
18 management how they should structure the facility and their
19 operations, keeping those issues in --
20 MR. GROSSMAN: What relevance is that for me, what
21 he discusses with management?
22 MS. CORDRY: Well, because you are in a role, in a
23 sense, you are being asked to approve whether a facility
24 should operate or not and the argument that's being made to
25 you is, I am just under the level and that's okay, and I am

Page 289

1 saying, in a similar field, you look at these things; you
2 don't just say, am I just below the standard? You look at
3 trying -- well, I was going to let him answer the question,
4 but what do you do when you're trying to deal with public
5 health and personal safety, and how do you --
6 MR. GROSSMAN: I know, but he's already answered
7 numerous times what he would do in terms of analyzing the
8 health --
9 MS. CORDRY: Well, I'm not talking --
10 MR. GROSSMAN: -- health effects.
11 MS. CORDRY: Well, I'm not talking about analyzing
12 the health effects. I'm talking about then, as a practical
13 matter, what's the next step, what do you tell management to
14 do about that --
15 MR. GROSSMAN: All right.
16 MS. CORDRY: -- that was the question.
17 MR. GROSSMAN: Go ahead. As a practical matter,
18 what's the next step? What do you tell management to do?
19 THE WITNESS: So clearly, if you think exposures
20 are at the point where you're having health, overt kind of
21 health effects or they're approaching guidelines if you have
22 that, you tell them they need to reduce the exposures. But
23 even in the absence of that, if there are steps you can take
24 to kind of minimize exposures, you should always take
25 advantage of those because we never know kind of when the

1 exposures are going to, are going to be lowered and when the
 2 guides are going to get lowered, and so it's kind of prudent
 3 to always look at opportunities to reduce your exposure.
 4 If there's things you're doing that you don't have
 5 to do, you know, a worker who leans over a vat to stir it
 6 versus kind of standing off to the side to stir it, you tell
 7 him don't lean over the vat. You make sure they understand
 8 what they're exposed to, what the health effects are, and
 9 how to protect themselves and how to do their job in a way
 10 that's going to reduce their exposure. So even the, even
 11 the absent kind of a number that says this is a problem, you
 12 still sit down and look at what people are exposed to and
 13 how can they protect themselves a little bit better.
 14 MR. GROSSMAN: Or what conditions you can set up
 15 to make it workable?
 16 THE WITNESS: Yes.
 17 BY MS. CORDRY:
 18 Q The question is, do you try to use conditions to
 19 protect them from exposure, or is it your preference to
 20 not --
 21 MR. GROSSMAN: I think he's already answered the
 22 question. So let's just move on.
 23 MS. CORDRY: Well, I think it is an important
 24 point, do you try to reduce exposure or do you try to
 25 eliminate the exposure possibility to begin with, and that's

1 the question I was just going to ask him, which is --
 2 MR. GROSSMAN: He answered the question. He's
 3 already answer the question. You've asked it in a number of
 4 different forms. He's answered the question. You would
 5 like the exposure to be lower, but you also look at other
 6 things that can be done to reduce on the job. He's answered
 7 the question.
 8 MS. CORDRY: But I think his answer was going to
 9 be, if you have a chance, you eliminate the exposure, you
 10 don't try to just condition it, and that's the question
 11 you're not letting me ask him.
 12 MR. GROSSMAN: Sure. Sure. If you have a chance
 13 to make a perfect world, you make it perfect. If I have a
 14 chance to make a perfect world, I'd make it perfect. If I
 15 don't --
 16 MS. CORDRY: I understand.
 17 MR. GROSSMAN: -- if I don't, then maybe I have
 18 conditions. It's not --
 19 MS. CORDRY: I understand, but I --
 20 MR. GROSSMAN: You're belaboring the obvious.
 21 MS. CORDRY: Yes. Okay. That was just -- because
 22 I think there really is a question here. Okay. So I really
 23 was down to my last question before we got to this point.
 24 BY MS. CORDRY:
 25 Q I would like to ask you as a summation, in view of

1 all of your education and experience and the facts that you
 2 have looked at here with respect to the station, the studies
 3 you've looked at, put all of that together, what is your
 4 view as to whether this station presents inherent, I'm
 5 sorry, presents adverse health effects?
 6 A So I do not believe that this station is going to
 7 be benign in terms of the health impacts of the people who
 8 live around it. I think it's inevitable that the type of
 9 source is going to produce pollutants that are going to
 10 raise people's exposures to levels that I think are within
 11 the range that the health literature suggests are hazardous,
 12 are dangerous. Hazardous is probably a difficult --
 13 certainly they're going to increase morbidity for a variety
 14 of respiratory concerns, in particular.
 15 So when I make that judgment, I'm not constrained
 16 by what the EPA standards are, you know. I make judgments
 17 about health, as a public health professional, based on
 18 obviously what the standards are but also what I think the
 19 literature suggests. And, you know, if someone would come
 20 to me and say is this, is this going to be a risk for me,
 21 and I wouldn't rely solely on whether I estimate whether
 22 it's above or below the standard. I'd certainly look and
 23 see whether I think there's health effects below the
 24 standard because I know they're five to 10 years behind
 25 already and I know the literature is suggesting that the

1 model is, the air pollution literature, the literature is
 2 five years ahead of the EPA regulations. The EPA
 3 regulations come down; they catch up, but they're always
 4 five years behind. And so I have no reason to expect that's
 5 not going to occur, and I think that there's going to be air
 6 pollution produced by this source, it's undeniable, and I
 7 think those levels are going to put the people around there
 8 at a greater risk for health effects than they are now.
 9 MR. GROSSMAN: Okay.
 10 MS. CORDRY: Okay. I have no further questions.
 11 MR. GROSSMAN: All right. Before we take a little
 12 break, are there any questions from --
 13 MS. ADELMAN: No, the Coalition has no questions.
 14 MR. GROSSMAN: -- your, from the Coalition? No?
 15 How about from -- well, I don't see Ms. Duckett here.
 16 MS. ADELMAN: No. She's --
 17 MS. SAVAGE: She just left.
 18 MR. GROSSMAN: Okay. So we won't take -- all
 19 right. So let's take a five-minute break, and then we'll
 20 proceed to the applicant's cross-examination.
 21 (Whereupon, a brief recess was taken.)
 22 MR. GROSSMAN: Been informed that there are no
 23 rooms available on February 26.
 24 MR. GOECKE: Okay.
 25 MS. ADELMAN: Okay.

Page 294

1 MR. BRANN: Okay. So we're off the 26th.
2 MS. ADELMAN: Or you can come to my house.
3 MS. HARRIS: But I did learn that Mr. Guckert is
4 available the 24th.
5 MR. GROSSMAN: Okay.
6 MS. HARRIS: So do we put that one back on?
7 MR. GROSSMAN: Yes. Well, I haven't, I haven't
8 formally taken it off. So --
9 MS. HARRIS: Okay.
10 MR. GROSSMAN: So we're still on for the 24th and
11 25th. So we'll -- let me turn back to that.
12 MS. HARRIS: But with the caveat, obviously, that
13 if Mr. Guckert finishes at 2 o'clock, we're not going to put
14 Mr. Sullivan back on until the opponents have completed
15 their case.
16 MR. GROSSMAN: Certainly.
17 MS. SAVAGE: Are we meeting on the 14th or no?
18 MR. GROSSMAN: We are keeping it on the calendar
19 because it's quite possible that the 13th may be snowed out.
20 There are a series of weather alerts that have just been
21 issued --
22 MS. SAVAGE: Oh, really?
23 MR. GROSSMAN: -- they're expecting heavy snow.
24 MS. SAVAGE: Really?
25 MS. ADELMAN: So an inch.

Page 295

1 MR. GROSSMAN: I wouldn't lie to you.
2 MS. HARRIS: Donna, you need to look at the
3 Montgomery --
4 MR. GROSSMAN: I don't know. So --
5 MS. HARRIS: -- we'll follow the Montgomery County
6 Schools.
7 MS. SAVAGE: Ah, okay. Right.
8 MR. GROSSMAN: Right. We're going to follow
9 Montgomery County School. That's our published policy.
10 MS. SAVAGE: Yeah. Yeah. No, I know that, but --
11 MR. GROSSMAN: So --
12 MS. SAVAGE: -- I haven't seen the weather in 24
13 hours.
14 MR. GROSSMAN: So it's possible that we'll be
15 delayed or whatever. So --
16 MS. SAVAGE: Aha.
17 MR. GROSSMAN: -- we'll keep the 14th on --
18 MS. SAVAGE: Okay.
19 MR. GROSSMAN: -- and if we are here on the 13th
20 and we complete what needs to be completed, then we'll --
21 MS. SAVAGE: Okay.
22 MR. GROSSMAN: -- announce publicly that the 14th
23 will be canceled.
24 MS. SAVAGE: Okay. Thank you.
25 MR. GROSSMAN: All right. So we're back on for

Page 296

1 2/24 and 2/25.
2 MS. HARRIS: And then, Mr. Grossman, I had another
3 procedural question.
4 MR. GROSSMAN: Yes.
5 MS. HARRIS: I'm trying to figure out the issue
6 with rebuttal reports because, to the extent we're hearing
7 information today or when Dr. Jison testifies and we're
8 preparing reports in response to those, we may be up -- we
9 may not be in compliance with the 10-day rule. So --
10 MR. GROSSMAN: Right.
11 MS. HARRIS: -- I'm not sure how we handle that.
12 MR. GROSSMAN: Well, let's, at this point, get
13 them as fast as we can, but we want to keep the calendar.
14 So I understand that. Rebuttal is often different from
15 case-in-chief in terms of what has to be produced in a court
16 setting, in any event. I mean, I'd like to in this kind of
17 a case try to get the other side, as I've said, that 10
18 days' notice of anything, but to the extent that it can't be
19 done and there's some kind of a report, as you suggest, in
20 rebuttal -- I mean, rebuttal isn't necessarily a report. It
21 may be a witness testifying. So that's --
22 MS. HARRIS: Yes, correct. Correct.
23 MR. GOECKE: Right.
24 MR. GROSSMAN: All right.
25 MS. HARRIS: Okay.

Page 297

1 MR. GOECKE: But to the extent that Ms. Cordry has
2 raised issues in her, quote/unquote, summary, and
3 Dr. Breyse's testimony today goes greatly beyond the scope
4 of his two letters that he submitted before, so we've got --
5 MR. GROSSMAN: Right. His letters were shorter.
6 MR. GOECKE: Yes.
7 MR. GROSSMAN: All right.
8 MS. CORDRY: As was Dr. Chase's.
9 MR. GROSSMAN: Yes, Dr. Chase's was even shorter.
10 MS. CORDRY: Everybody seemed to put in short
11 letters and then have lots to say.
12 MR. SILVERMAN: Except the lawyers.
13 MR. GROSSMAN: All right. I just try to make sure
14 I get as much information to the other side as possible, to
15 be as fair as we can. All right. Are we ready to begin our
16 cross-examination?
17 MR. GOECKE: We are.
18 MR. GROSSMAN: Mr. Goecke, it's all yours.
19 MR. GOECKE: Thank you.
20 CROSS-EXAMINATION
21 BY MR. GOECKE:
22 Q Good afternoon, Dr. Breyse. Can you tell us when
23 you first got involved in this case?
24 A Probably over a year ago.
25 Q And how did it come about that you got involved in

Page 298

1 this case?

2 A I got a phone call from a fellow who calls me on
3 occasion to help with, give advice on environmental matters
4 that -- in support of kind of community groups who don't
5 have a lot of resources, and I'm blanking on his name.

6 MS. ADELMAN: Richard.

7 THE WITNESS: Sorry?

8 MS. CORDRY: Richard Klein.

9 MR. SILVERMAN: Klein.

10 MS. ADELMAN: Richard Klein.

11 THE WITNESS: Richard Klein, and Richard Klein --

12 MR. GROSSMAN: And as tempting as it is, let's try
13 not to call out to the witness from the audience.

14 MS. CORDRY: Okay. Right.

15 MS. ADELMAN: Sorry.

16 THE WITNESS: And so I've helped, I've helped
17 Richard with things over the years, and --

18 MR. GROSSMAN: If he doesn't remember, he'll just
19 say he doesn't remember.

20 THE WITNESS: -- and he introduced the group to
21 me.

22 BY MR. GOECKE:

23 Q And who is Richard Klein?

24 A He runs a company called Community/Environmental
25 Defense Services, I believe is its name.

Page 299

1 Q I'm sorry. Say that again.

2 A Community/Environmental Defense Services.

3 Q Community/Environmental Defense Services?

4 A Yes.

5 Q And do you know what that company does?

6 A It supports groups that have, community groups
7 that have concerns about environmental matters. He does
8 probably more broad stuff, but I -- he calls me if there's a
9 question about something that has an air pollution focus.

10 Q Okay.

11 A So, for example, he put me in contact with the
12 group for that Harford County case I did before.

13 Q And so does Mr. Klein's company provide consulting
14 services for community organizations?

15 A I believe so.

16 Q Yes. And is this typically in situations where
17 they're opposing a development?

18 A You know, I can't speak to what his typical
19 consulting is. I only know when he gets me involved.

20 Q Yes. But is that the type of projects that you're
21 aware that he works on? I mean, I know you don't know
22 what's typical, but would that --

23 A It's typical for what he gets me involved with.

24 Q -- would that be included in what his --

25 A Yeah. It's typical for what he's gotten me

Page 300

1 involved with.

2 Q Yes. And what happened after Mr. Klein contacted
3 you?

4 A You know, I can't remember the details, but I --
5 he put me in touch with the, I believe with the Kensington
6 Heights Civic Association and asked if I could kind of help
7 them out.

8 Q And you testified that you don't do a lot of
9 consulting work. Is it -- besides the work that you do
10 through Mr. Klein, is there other consulting work that you
11 do these days?

12 A What am I doing right now? I don't think I'm
13 doing anything else.

14 Q Okay. So is it fair to say that most of your
15 consulting work is on behalf of community organizations that
16 are opposing a commercial project of some sort?

17 A No. In fact, I do this on rare occasions.

18 Q Okay. And what other type of consulting projects
19 have you done lately that does not fit that description?

20 A So, for example, I spent four years consulting
21 with the Hanford Concerns Council about exposures in the
22 Hanford tank farms out in the state of Washington. I did
23 some consulting -- I gave some advice to an attorney, but we
24 didn't, we didn't get to the point of testifying, about
25 popcorn lung, and the attorney represented a company that

Page 301

1 made butter flavoring, and they were interested in how to
2 protect themselves from lawsuits about, I don't know if you
3 know what popcorn lung is, but workers --

4 Q No.

5 A -- workers who work at popcorn manufacturing
6 facilities can get this horrible lung disease, and nowadays
7 there's a lot of lawsuits.

8 MR. GROSSMAN: I never knew. What causes that?

9 THE WITNESS: Well, they think they know, but
10 they're not sure. It's a chemical called diacetyl, I think.
11 So it's artificial butter flavoring, but it's interesting
12 because, when you eat it, it's safe; but, when you heat it
13 up, when you make, when you make microwave popcorn, and
14 because of vapor, you inhale it, it destroys your lungs.

15 BY MR. GOECKE:

16 Q Yes.

17 A So eating it is fine. Breathing it is bad.

18 MR. GROSSMAN: So you shouldn't microwave your
19 popcorn?

20 THE WITNESS: Well, you know, there's a couple of
21 papers that come out, suggesting that people who microwave
22 popcorn a lot are probably at risk for this or might be at
23 risk for this. So by a lot, I mean, they -- there's one
24 case where somebody who microwaved about seven or eight bags
25 of popcorn every day for like 25 years.

Page 302

1 MS. HARRIS: Who died of malnutrition.
2 MR. GROSSMAN: Popcorn addict. All right.
3 THE WITNESS: But I think insurance, something.
4 So that's, that's another example. So I pick and choose the
5 consulting I do, mostly just for what kind of interests me
6 and what I think I have the time to do, but I think this is
7 a small fraction of what I do.
8 BY MR. GOECKE:
9 Q Okay. And when you got put in touch with the
10 Kensington Heights Community Association, who there did you
11 speak with?
12 A You know, I'm sorry. I'm not trying to obfuscate,
13 but I don't keep those kind of records. I can't remember
14 the details of it at all.
15 Q Yes. And do you remember what was asked of you to
16 do on this case?
17 A So the initial case was asking me to kind of
18 review some of the siting guidelines that the state of
19 California produced for large service stations and to place
20 this service station in context with those guidelines.
21 Q But you don't remember who asked you to do that?
22 A No.
23 Q Okay. And did you review the siting guidelines --
24 you're referring to the CARB guidelines, I take it?
25 A Yes. Yes.

Page 303

1 Q And did you review the CARB guidelines and apply
2 them to this situation?
3 A Well, we tried to as much as possible. This size
4 service station is probably a little bit outside the CARB
5 guidelines, but I attempted to kind of apply the CARB
6 guidelines.
7 Q Yes. And you talked about that attempt to apply
8 the CARB guidelines in your letters of March 5th, 2012, and
9 February 22nd, 2013, is that correct?
10 A Yes.
11 Q Okay. And I noticed one difference between your
12 March 5th, 2012, letter and the February 22nd, 2013, letter.
13 The February 22nd, 2013, letter, which --
14 MR. GROSSMAN: I have the exhibit numbers. I
15 don't know. So let's -- I'll mention that.
16 MR. GOECKE: Let's do it that way then.
17 MR. GROSSMAN: The February 22, 2013, is 88(a).
18 MR. GOECKE: Thank you.
19 MR. GROSSMAN: And the -- which one was the other
20 one?
21 MR. GOECKE: The other one was --
22 MR. GROSSMAN: There's a March 5, 2012 --
23 MR. GOECKE: Correct.
24 MR. GROSSMAN: -- and then there's a -- the March
25 5, 2012, is 88(b), and then -- and I thought there was one

Page 304

1 other, but --
2 MR. GOECKE: Was that the CV?
3 MR. GROSSMAN: Oh, yes, there was a March 25,
4 2013. I didn't have an exhibit number on that. I don't
5 know what the exhibit number is on that one. Do you know,
6 Ms. Cordry, what the exhibit number is on the March 25,
7 2013, letter that -- entitled, from Dr. Breyse, entitled
8 Expert Opinion on Costco's Air Quality Assessment?
9 MS. CORDRY: I don't offhand. Let me see if I can
10 figure it out as we go along here.
11 MR. GROSSMAN: All right. Well, while she's
12 looking, checking on that, you can go ahead and question.
13 MR. GOECKE: Thank you.
14 BY MR. GOECKE:
15 Q Just one thing I wanted to clarify, the exhibit
16 88(a), February 22nd, 2013, letter, is on Johns Hopkins
17 letterhead, but you're not here today as a representative of
18 Johns Hopkins?
19 A I am not, yeah, yeah.
20 Q Okay. And why did you include a letter on Johns
21 Hopkins letterhead?
22 A I probably did it from my office instead of from
23 home.
24 Q And you said you attempted to apply the CARB
25 siting guidelines to this situation but that, I don't want

Page 305

1 to put words in your mouth, but you said it was difficult to
2 do that?
3 A I'm sorry. Can I see my -- those two reports?
4 Ms. Cordry, do we have copies of them or --
5 MS. CORDRY: I don't have copies of them right
6 with me.
7 MR. GROSSMAN: I'll show you my copies.
8 MS. CORDRY: Okay, great.
9 MR. GROSSMAN: There were three of them that I
10 have. One is February -- well, the first one was March 5,
11 2012, and that's 88(b), I think. Then there's a February
12 22, 2013, 88(a), and then there's one I didn't have an
13 exhibit number for, for March 25, 2013. I might be able to
14 locate an exhibit number. Let me see.
15 MS. HARRIS: Mr. Grossman, do you have an extra
16 copy of the March 25th letter? I'm not so sure we have
17 that.
18 MR. GROSSMAN: I don't have an --
19 MS. HARRIS: Okay.
20 MR. GROSSMAN: -- well, it's probably in the
21 file --
22 MS. ADELMAN: Might be --
23 MR. GROSSMAN: -- if you want to look up -- the
24 files are over there.
25 MS. ADELMAN: It might be similar to the one from

Page 306

1 Planning Board.
2 MR. GROSSMAN: Yes, they're -- I don't think they
3 were too dissimilar, but if you want to --
4 MS. ADELMAN: Yes.
5 MS. HARRIS: Okay.
6 THE WITNESS: So I think the issue was that the
7 size of the facility that we're talking about here, the 12
8 billion gallons per year, was bigger than the facility that
9 the CARB risk assessment was estimating. So I had to
10 extrapolate to the bigger size, if I remember correctly.
11 BY MR. GOECKE:
12 Q Okay. In other words, the CARB guidelines didn't
13 contemplate a distance that we have here?
14 A For this size facility.
15 Q For this size facility?
16 A Yes.
17 Q Yes.
18 MR. GROSSMAN: My guess is that the, just looking
19 back at the dates here, that the March 25, 2013, letter
20 might be Exhibit 96(c). It says: Opinion on Costco Air
21 Quality Assessment by Dr. Patrick Breyse. So I'm --
22 MS. HARRIS: 96(c)?
23 MR. GROSSMAN: Yes. That's -- 96(c) is the March
24 25, 2013, one, I believe.
25 MR. GOECKE: Thank you.

Page 307

1 BY MR. GOECKE:
2 Q And, Dr. Breyse, in your March 5th, 2012, letter,
3 88(b), on page 2 you stated that using the CARB assessment,
4 we were able to estimate that the excess risk for a 12 MGPY,
5 which I assume means million-gallon-per-year facility, at a
6 distance of 100 meters is nearly three times higher than
7 that recommended in the CARB Land Use Handbook. How did you
8 calculate that risk assessment?
9 A So I said: Note, the CARB risk assessment did not
10 extend beyond 100 meters; so we don't have to extrapolate
11 beyond that distance. But I think we just did a linear
12 extrapolation from the higher throughput, but I don't have
13 my notes in front of me about this, the exact kind of -- the
14 exact calculation.
15 Q So when you say that there is a three times higher
16 risk than that recommended by CARB, you're talking about at
17 a distance of 100 meters?
18 A Yes.
19 Q Okay. But you don't remember exactly how you
20 calculated that?
21 A Correct.
22 MR. GROSSMAN: And you said 100 meters, not 100
23 feet or 100 yards, 100 meters?
24 MR. GOECKE: One hundred meters is what he says in
25 his letter, that's right.

Page 308

1 MR. GROSSMAN: Okay.
2 BY MR. GOECKE:
3 Q So did you perform a risk assessment for the
4 Stephen Knolls School?
5 A No, I did not.
6 Q Okay. Or for the swimming pool?
7 A No.
8 Q For any of the residential homes?
9 A No.
10 Q And after you reviewed the CARB guidelines, what
11 did you do next for this case?
12 A There was a hiatus where I probably didn't do
13 much, and then at some point, I can't remember the exact,
14 the exact dates, I was asked if I could kind of help provide
15 some input into the broader air quality assessment
16 associated with the gas station, which was the focus of --
17 Q Meaning what?
18 A -- focus of what I talked about today.
19 Q When were you asked to do that?
20 A I can't remember exactly.
21 Q Was it three months ago, six months ago, nine
22 months ago?
23 A Well, I touch on it on my March 23rd letter. So
24 it must have been somewhere around that time.
25 MR. GROSSMAN: That's what year?

Page 309

1 THE WITNESS: March 25th, 2013.
2 MR. GROSSMAN: Okay.
3 BY MR. GOECKE:
4 Q Have you done anything on this matter since March
5 25th, 2013?
6 A I've had extensive discussions with Dr. Cordry and
7 -- Ms. Cordry and other people and, obviously, kind of tried
8 to place some of this in context with the research that I'm
9 aware of, in the meantime, but no formal work product, such
10 as these letters.
11 Q Okay. Have you reviewed any of the transcripts
12 from these proceedings?
13 A A little bit but not much.
14 Q Which transcripts have you reviewed?
15 A I don't recall. I've received a -- I received a
16 number of transcripts, but I don't recall exactly the ones
17 that I reviewed.
18 Q Do you remember which witnesses you reviewed?
19 A I believe I reviewed some of Dr. Sullivan's
20 testimony, but I didn't, I didn't focus on it in great
21 detail. I probably focused on the bits where he critiqued
22 my reports, but beyond that I don't think I did much.
23 Q Yes. For the portions of Mr. Sullivan's testimony
24 that you reviewed, to the extent that you recall, did you
25 disagree with anything that he testified, statements?

Page 310

1 A Well, I think, you know, I agree with some of his
2 characterization on what I did, but I disagree with others
3 of it, absolutely.
4 Q In terms of what you did?
5 A Yeah.
6 Q Yes. And what do you disagree with in terms of
7 his criticisms of your work?
8 A Well, I think, you know, doing a risk assessment
9 is the right thing to do, but I would, I would apply the
10 same standard that I talked about the modeling as well.
11 Doing a risk assessment, coming up with a single number
12 based on a single kind of exposure scenario, I think,
13 creates an overly simplistic estimate of kind of what the
14 cancer risk is.
15 I would like to have seen a more comprehensive
16 risk assessment that looked at a more detailed exposure
17 estimate, and I would have applied perhaps an uncertainty
18 factor for the fact that the cancer rates that we use for
19 risk assessments applies to adult cancer; in many cases, we
20 have children here, and leukemia is a common childhood
21 cancer. And so I think there's a lot -- more rigor, I
22 think, could have applied to the risk assessment; although I
23 agree that given that the screening concern that the CARB
24 recommended suggested there may be a problem, taking it to
25 the next level was the appropriate way to do, but similarly,

Page 311

1 I think there's room for improvement in that risk
2 assessment.
3 Q In whose risk assessment?
4 A In the Sullivan risk assessment.
5 Q Okay. And when you say that the risk assessment
6 is the right thing to do, what do you mean?
7 A So provide a more quantitative kind of cancer
8 risk. So the setback that the CARB came up with was based
9 on kind of an estimate of what the cancer risk was. I don't
10 think we could, we could, it's fair to just kind of use,
11 extrapolate that directly and assume you're going to get the
12 same cancer risk.
13 So I think looking at kind of what the benzene
14 exposure might be to kids going to school, to kids swimming
15 in the swimming pool and assessing their early-life
16 exposures and coming up with a cancer risk is probably -- an
17 individual cancer risk for this scenario is probably the
18 appropriate approach to take.
19 Q Okay. And when you say it's not appropriate to
20 extrapolate from, extrapolate from what?
21 A Well, I think, I think the approach of the CARB
22 was kind of -- I think it suggested that there was a
23 problem, and beyond that, doing an individual risk
24 assessment is probably a more defensible way to go.
25 Q And so do I understand you correctly that it's not

Page 312

1 appropriate to extrapolate from the CARB guidelines?
2 A I think it, I think it places you in a -- it
3 places you in a ballpark. It suggests that there is a
4 concern. It suggests that it's something you have to look
5 at more closely.
6 Q Yes. What's your recollection of what the CARB
7 guidelines advised in terms of siting schools near gas
8 stations?
9 A You know, it's been a while since I looked at
10 them. I'm not really prepared to kind of go into a lot of
11 detail about that. I do know there's a whole new office at
12 EPA now, looking at EPA school siting and the proximity of
13 schools to industrial sources of pollution, including gas
14 stations. So there's a lot of attention being given to this
15 question at a national level as well as the state level in
16 California.
17 Q Did you review any of Mr. Sullivan's environmental
18 reports in this case?
19 A You know, I looked at them. I wouldn't say I
20 reviewed them to the -- scrutinized them to the level that
21 I'd call it like a comprehensive review.
22 Q So you reviewed them, but you did not scrutinize
23 them?
24 A Correct.
25 Q Which ones did you review?

Page 313

1 A I reviewed lots of stuff. I'm not prepared to
2 kind of enumerate them right now. I have e-mails full of
3 things.
4 Q Who e-mailed the reports to you?
5 A From a variety of people, but probably more
6 recently from Ms. Cordry.
7 Q Did Ms. Cordry provide you with summaries of
8 Mr. Sullivan's testimony?
9 A We've talked about it. I don't know if I've
10 gotten the summaries of it.
11 Q She's provided you with oral summaries of his
12 testimony?
13 A We've reviewed kind of what his reports are, what
14 his conclusions were, similar to what we kind of, how we
15 walked through it today, yes.
16 Q Yes. And so did you rely on her, the information
17 she provided you to form your opinions in this case?
18 A No, you know, and hopefully I was clear that --
19 you know, I don't question the modeling. Right? I question
20 the assumptions that go into the models and, as a result,
21 kind of the answer that kind of comes out the other side,
22 you know.
23 So the modeling approach is kind of one thing, and
24 I believe the Kensington Association has somebody else who's
25 kind of critiquing that more specifically, but from my

1 perspective, you know, I'm more of an applications kind of
 2 guy, and I use outputs from models to help inform my
 3 exposure studies, help inform decisions and stuff, and I
 4 like to see, I like to not get into where we are today,
 5 where, you know, one report changes one assumption, you get
 6 a different answer, change another assumption, because we
 7 can go through that forever because -- and then, you know, I
 8 could run those models, or I could get one of my students to
 9 run those models, and I could, I could change all the
 10 assumptions and come up with a different answer, and I don't
 11 think that gets us any closer to the truth, and I think
 12 that's, that's the problem I have with that approach, but
 13 it's not wrong per se.

14 Q That was going to be my next question. Can you
 15 cite to any EPA guideline that says that anything that
 16 Mr. Sullivan did was improper or that violated any
 17 guideline?

18 A So I think, I think if you look at the National
 19 Academy of Sciences report on risk assessment that has
 20 discussions about the role of models and stuff, they say
 21 very clearly in there that uncertainty, estimating what the
 22 uncertainty of any model output, any risk assessment output
 23 is a crucial part of a risk assessment. So it doesn't say
 24 that the model is wrong, but there are modeling approaches
 25 that allow you to estimate the uncertainty.

1 So when you say it's, I think it's 160 right here,
 2 it's 160 but, you know, with what kind of boundary, how --
 3 so, obviously, if it's 160 and my model predicts that it's
 4 going to be a very narrow band, so it's going to be like 140
 5 to 170, I'm more confident in that 160 than if the model
 6 predicts, well, it's 160 but it could have been anywhere
 7 from, you know, 100 to 250. I'm less confident in that.

8 So without that uncertainty estimate, it's hard to
 9 kind of place the confidence in that number -- although that
 10 central tendency of that number might be right, but how
 11 confident I am that that number is the right answer is
 12 harder, harder to kind of put my thumb on.

13 Q So are you saying that Mr. Sullivan should have
 14 identified the range in which the numbers could have come
 15 out?

16 A Yes.

17 Q Okay. And so that's your primary criticism of his
 18 reports?

19 A Yes.

20 Q Of his modeling, I should say.

21 A Yeah. Yeah.

22 Q Okay. Any other major criticisms?

23 A Well, I think you have to be careful
 24 cherry-picking assumptions, and I think that's part of that
 25 whole question. I think you can cherry-pick assumptions to

1 kind of get an answer, and you know, you never know whether
 2 that's somebody's approach or not, but you know, you have
 3 to, you're open for that criticism if you do it that way,
 4 and then you're open to somebody else cherry-picking another
 5 set of assumptions that kind of give you different kind of
 6 answers.

7 So I'd think you want to protect yourself from
 8 that, and how you protect yourself from that is by saying,
 9 well, I'm not cherry-picking, I have a range of assumptions
 10 here that I'm using and I have a range of outputs and I
 11 think the truth is somewhere in the middle.

12 Q Yes. Were you aware that Mr. Sullivan met with
 13 Dr. Cole ahead of time to talk about the protocols, what the
 14 modeling was going to involve?

15 A No.

16 Q If that in fact took place, would that address
 17 some of your concerns about not talking about the range of
 18 the expected results?

19 A I don't, I don't know if it would or wouldn't.
 20 Right? My bias is not to, not to do, for example, the
 21 worst-case kind of modeling as a starting point, for
 22 example, and if that's what they agreed upon, then I think
 23 that might have been maybe not a good decision early on.
 24 But I wasn't at those meetings, and I'm not prepared to
 25 comment on what the appropriateness of those discussions

1 were.

2 Q Yes.

3 MR. GROSSMAN: Let me stop for a second and ask
 4 you this question about that. So let's say somebody does a
 5 model and, instead of doing the kind of range of
 6 possibilities that you say, they assume the worst-case
 7 scenario. Is that, is that an incorrect way to approach it
 8 for something like this?

9 THE WITNESS: I guess -- I'm hesitating to
 10 characterize it as incorrect, right, but what it is, it's
 11 open to this -- the scrutiny that we have right now is that
 12 how do you know they're worst-case and what's your judgment
 13 they're worst-case, are you prepared to defend all those
 14 inputs that are worst-case, and if so, part of that scrutiny
 15 is, somebody says, well, I did it myself and I decided
 16 what's worst-case and I got a number that's different than
 17 yours because I have a different sense of what's worst-case.
 18 And now you have a question of saying, well, which expert
 19 has the best judgment of what's worse. I don't know the
 20 answer to that.

21 MR. GROSSMAN: Well, if I understood what you
 22 testified earlier, you said you would have had a range of
 23 assumptions and all of those model assumptions would have
 24 been run through the computer and so your results would have
 25 given you a range of possibilities.

Page 318

1 THE WITNESS: Yes.
2 MR. GROSSMAN: But I guess, at some point, you
3 have to choose the outside of that range of assumptions,
4 right?
5 THE WITNESS: Yeah.
6 MR. GROSSMAN: So if you start out with that
7 outside range of assumptions -- that is, the
8 worst-case-scenario set of assumptions -- don't you satisfy
9 the possibilities in a situation like this where you're
10 trying to predict what is the --
11 THE WITNESS: So how do you know they're
12 worst-case?
13 MR. GROSSMAN: In your best-case scenario, don't
14 you pick out a worst-case --
15 THE WITNESS: Right. So, so --
16 MR. GROSSMAN: -- an end assumption, the
17 bottom-line assumption? You told me you're going to use a
18 lot of different assumptions to run your computer models and
19 then put them all in there and then you're going to get an
20 error bar of some kind --
21 THE WITNESS: Right.
22 MR. GROSSMAN: -- and it's going to have a top and
23 a bottom. Well, the bottom, let's say, or the top, let's
24 say, in terms of the amount of pollutants, is going to come
25 from a worst-case assumption. So, at some point, you're

Page 319

1 going to have to choose the worst-case assumption that
2 you're going to use that will generate that top line.
3 THE WITNESS: But you don't always know what those
4 combination of things produces that, that worst-case
5 scenario in this case. But what's most important is not
6 necessarily that you get the lowest number but you get an
7 estimate of confidence in that number, right? And so --
8 MR. GROSSMAN: Right.
9 THE WITNESS: -- if I'm a policymaker now and I'm
10 asked to make a decision about something I think is
11 worst-case and I have a number that I'm pretty confident in
12 versus a number that I'm very uncertain about, I'm going to
13 think about that number and the safety factor or the
14 protection factor that I might want to apply based on my
15 understanding of just how, how certain I am of that number
16 being kind of good or bad, and you can't do that uncertainty
17 analysis as long as you just pick one set of parameters, you
18 call them worst-case, you come up with one kind of estimate
19 of what the concentration is going to be. I think you'd
20 want to know how confident I am in that number. If I think
21 it's 160 parts per billion but it really could be, I'm 95
22 percent confident it's somewhere between 100 and 300 parts
23 per billion, right?
24 MR. GROSSMAN: Right.
25 THE WITNESS: I think you'd want to know that.

Page 320

1 MR. GROSSMAN: I understand. I understand your
2 point there. I'm just wondering, if you did do this range
3 of studies, you take a range of assumptions and then you
4 generate the kind of projection you're talking about, with a
5 range of possibilities, and you throw out all the ones that
6 are the best ones and you just leave the worst-case
7 possibility and then you present that, wouldn't that -- and
8 if that worst-case possibility would satisfy all the
9 necessary conditions, doesn't that handle the situation?
10 THE WITNESS: I don't, I don't think it works that
11 way because what you get now is you get a, you get a, you
12 get a distribution of outputs --
13 MR. GROSSMAN: Right.
14 THE WITNESS: -- right, that's either going to be
15 narrow or it's going to be broad and you might want to say I
16 want to know what the -- to be protective, I'm going to say
17 I don't want to know what the average output is going to be,
18 I want to know what -- you know, 75 percent of the time I'm
19 below some number. I'm going to want to pick some extreme
20 value, just something towards the high end maybe to be kind
21 of overprotective, and I can't go back once I say what
22 combination of things gave me this 75th percentile value. I
23 mean, I might be able to, but maybe you want to pick the
24 80th percentile; maybe you want to pick the 50th percentile
25 value.

Page 321

1 Up at that point, you have, as a decision maker, a
2 series of values that you can look at and you can decide,
3 you know, what's the closest to truth and how protective do
4 I want to be in terms of how far out on the higher end or
5 the lower end of that distribution I want to be. You can't
6 do it otherwise.
7 MR. GROSSMAN: All right. Mr. Goecke.
8 BY MR. GOECKE:
9 Q But what's the difference between doing it
10 sequentially and all up front?
11 A I guess, at the end of the day, if you do it
12 sequentially enough, we're doing the same thing. The nice
13 thing about this computer algorithm is you can set it to run
14 -- it does it sequentially because it iterates it like
15 hundreds of thousands of times to give you kind of this
16 distribution. So by doing it iteratively by hand, that's,
17 you know, you're approaching that method but it's not, you
18 know, at the end of the day, it's not a very efficient way
19 to do it.
20 Q Yes. And the analysis you're talking about, is
21 that called the Monte Carlo analysis?
22 A Yes. That's a --
23 Q Okay.
24 A -- that's a program you can use to do that kind of
25 distributional sampling.

Page 322

1 Q Yes. And can you just explain for us -- actually,
2 never mind. In the context of running one of these Monte
3 Carlo-type analyses, is it fair to say that you're talking
4 in the context of academic papers for the most part?
5 A I don't think so. You know, I think -- for
6 decision making in general, I think it's considered, it's
7 becoming considered the standard of practice, as far as I
8 know.
9 Q Have you ever used that approach on behalf of any
10 commercial client?
11 A You know, I don't do this kind of modeling on a
12 consulting basis.
13 Q Yes. Are you aware of anyone who has ever done
14 that approach on behalf of a commercial client?
15 A You know, that's not the circle I run. So I
16 don't, I don't know that kind of work.
17 Q Does the EPA or MDE require that type of analysis?
18 A I think they're getting to expect it.
19 MR. GROSSMAN: Well, I guess that's not the
20 question. Does it require it?
21 THE WITNESS: No, I don't think, I don't think
22 there's anything written in a law that says it's required.
23 BY MR. GOECKE:
24 Q Yes. And it's not part of any permitting process,
25 for example, that you're aware of?

Page 323

1 A No.
2 Q You spoke before about, or Ms. Cordry asked you
3 about, I should say, the correction in Mr. Sullivan's report
4 about the background levels for one-hour NO2 levels. Do you
5 remember when she asked you about that?
6 A Yes.
7 Q And are you aware that Mr. Sullivan prepared a
8 revised report in August 2013 that used the
9 98-micrograms-per-cubic-meter background levels for the
10 one-hour NO2 analysis?
11 A Can you show me that report? I want to --
12 MR. GROSSMAN: Yes. That was presented --
13 MS. CORDRY: Yes. That's --
14 MR. GROSSMAN: -- portions of it were presented to
15 him in the course of direct.
16 MR. GOECKE: Right.
17 THE WITNESS: I want to make sure we're talking
18 about the -- I'm not sure what I'm --
19 MR. GROSSMAN: Here's what was presented.
20 THE WITNESS: -- I'm not sure what I'm aware of.
21 I'm aware of what we talked about today. Is it --
22 MR. GROSSMAN: Yes.
23 THE WITNESS: -- is it something different that
24 you're talking about, or --
25 MS. CORDRY: No.

Page 324

1 THE WITNESS: -- is this what we're aware of?
2 MS. CORDRY: What we're doing today.
3 MR. GROSSMAN: Here it is. It was Exhibit 255,
4 because that's what you're talking about, right?
5 MR. GOECKE: That is correct.
6 MR. GROSSMAN: And these are the portions of it
7 that were presented to you. This is the August 2013 report.
8 Whoops, I'm sorry.
9 THE WITNESS: Yeah, I have that. Yeah, I have
10 these, just --
11 MR. GROSSMAN: Okay.
12 THE WITNESS: -- I just wanted to make sure there
13 wasn't something else I was -- another report you were
14 referring to.
15 BY MR. GOECKE:
16 Q Well, no. This is, this is, these are portions of
17 the report that I'm referring to, and I guess my question to
18 you is, did you review, when did you first -- did you ever
19 review this full report?
20 A You know, I looked at the reports --
21 Q Yes.
22 A -- as I said before.
23 Q All of them?
24 A Yeah.
25 Q Yes. And so is it fair to say, as with the other

Page 325

1 reports, this is something that you reviewed but didn't give
2 a lot of scrutiny to?
3 A You know, I looked at it from a, from a
4 10,000-foot level, like I said before. You know, if
5 somebody asked me could you redo this analysis and could I
6 repeat it, could I take it apart and redo it, I'd probably
7 say I could probably put together a team of people, we could
8 do that, but do I have the time to do that, do they have the
9 resources for me to do that, the answer is no. So short of
10 being asked to kind of take it apart in that level of
11 detail, I didn't digest it, but to say I didn't review it is
12 probably not fair.
13 Q Okay. What else did you do to prepare for your
14 testimony in this case?
15 A Not a lot more.
16 Q You said earlier that a good modeler can come up
17 with any number that you want him to come up with or want
18 her to come up with. Are you implying that that's what
19 happened in this situation?
20 A No, I'm not, but that's the criticism you leave
21 yourself open to when you do it this way. That's the
22 criticism you protect yourself against by doing it the other
23 way. So my wife was a consultant for a long time, and she
24 used to complain all the time that some clients would say,
25 you know, we want to show this is safe, we want to show this

Page 326

1 is bad, and then they spend all their time figuring out how
2 do they get the numbers to say it's whatever they think
3 their client wants to say, and that's not, that's not a good
4 position to be in where you think you're open to that kind
5 of criticism. And I think that's, that's the risk you have
6 when you do it this way, but I'm not implying that that's
7 Mr. Sullivan -- I have no, no knowledge of his intent in
8 that regard.

9 Q You testified before that you agree with
10 Mr. Bianca from MDE that the effect on gas stations -- the
11 effect that gas stations have on nearby populations is not
12 well studied or well understood?

13 A Correct.

14 Q Okay. And would you also agree that this is an
15 evolving area of science?

16 A I think they're part of the two sides of the same
17 coin.

18 Q Yes.

19 A Unfortunately, it's not evolving fast enough. You
20 know, the literature review, I'm quite surprised as sparse
21 as it is about this. You know, there's people investigating
22 lots of things, but gas stations seem to have kind of gotten
23 below people's radar, environmental health scientists like
24 myself.

25 Q Why do you think that is?

Page 327

1 A I don't know.

2 Q What do you define as an adverse health effect?

3 A That's a good question. So that can mean lots of
4 things to different people --

5 MR. GROSSMAN: Right.

6 THE WITNESS: -- and so an adverse health effect,
7 you know, there's, in the context of asthma, there's an
8 increase in asthma symptoms. It could be cancer if you're
9 kind of worried about cancer exposure. So it could be a
10 range of things. I think the context is kind of what's
11 crucial to kind of, I think, put more flesh on the
12 backbones.

13 BY MR. GOECKE:

14 Q Yes. But the EPA standards aren't guaranteed to
15 protect from all adverse health effects?

16 A No. There's no guarantees in anybody's world for
17 that.

18 Q There's no way to establish that?

19 A Right, yeah.

20 Q Isn't it true that the EPA guidelines are supposed
21 to include a margin of safety to protect sensitive
22 populations?

23 A They try to, yes.

24 Q Yes. In fact, they're required to by law, aren't
25 they?

Page 328

1 A Yeah. Yeah.

2 Q Okay.

3 A Well, they're trying -- they're required to take
4 sensitive populations into, into consideration when they do
5 it. How they incorporate that margin of safety probably is
6 up to the administrator in the exact way to kind of
7 implement that. But they don't take, you know -- when the
8 CASAC says it should be between 13 and 15, the CASAC has
9 kind of incorporated kind of a sense of safety for sensitive
10 populations, that the EPA doesn't, at that point, say, well,
11 I'm going to take 13 and divide it by 10 as another margin
12 of safety. So they incorporate that in different ways in
13 their guidelines, but they are supposed to kind of make sure
14 that there is -- comfortably safe as possible.

15 Q Yes. And the 13 to 15 standard, you just, those
16 numbers are just hypotheticals, right?

17 A Yeah. Yeah. Yeah.

18 Q And the sensitive populations that the EPA is
19 supposed to protect, that would include asthmatics?

20 A Yes.

21 Q And that would include people with COPD?

22 A When there's data, right? And so, you know,
23 there's not a lot of air pollution data on people with COPD.
24 So it's hard for the EPA to say I have a standard that's
25 protective for people with COPD if there's no data that

Page 329

1 really, no strong data that suggests kind of how do people
2 with COPD react to air pollution. That's probably an area
3 where they don't probably say a lot about COPD and air
4 pollution because that, those data are emerging now.

5 Q Okay. So is it your contention that the EPA NAAQS
6 for the one-hour NO2 standard does not protect people with
7 COPD?

8 A I don't think it's protective, no.

9 Q Yes. And that's because there's not data out
10 there to allow the EPA to establish a standard that would
11 protect them?

12 A Back when they published their previous standard,
13 but they're certainly looking at it now.

14 MR. GOECKE: I apologize.

15 BY MR. GOECKE:

16 Q Turning to the EPA's focus on monitoring locations
17 in the roadways, what type of roadways are they talking
18 about? Are these side streets? Are these highways?

19 A No, I think they're looking for the big roads.

20 Right?

21 Q And when you say big roads, you mean, for
22 example --

23 A Major, major arterials.

24 Q -- I-95?

25 A Yeah, freeways.

Page 330

1 Q Yes. Yes. So wouldn't you expect the levels of
2 emissions of NO2 and PM2.5 to be much higher at those types
3 of arteries than --
4 A Right. In fact, the EPA estimates it's, you know,
5 two to, you know, 70 percent times higher, 1.3 to two times
6 higher at those locations than they think in the general
7 area.
8 Q Yes. So if levels along major arteries are less
9 than 100, for one-hour NO2, are less than 100 parts per
10 billion, wouldn't you expect the levels at the proposed
11 Costco gas station site to be below that?
12 A Unless there was something there that was adding
13 to it, right, but normally -- you know, I don't, I don't --
14 you know, this is a complex kind of juxtaposition of
15 intersections. So I guess I want to be careful. I don't
16 know what to expect without the Costco service station there
17 unless there's some modeling numbers, like we've talked
18 about before, that shows kind of what the NO2 is going to be
19 at that site.
20 Q Well, are you aware of anything that would
21 increase the level of NO2 at this site to be comparable to a
22 busy artery?
23 A Traffic, right? Cars and traffic and --
24 Q Okay. And what level of traffic would it have to
25 be at this site to be, to produce a comparable level of NO2

Page 331

1 to a freeway?
2 A Oh, I don't think, I don't think I, I don't think
3 I know the answer to that question. I don't think I can say
4 X number of vehicle miles. I don't think I know the answer
5 to that question.
6 Q Yes. Earlier Ms. Cordry walked you through a
7 series of excerpts from Mr. Sullivan's report showing
8 isopleths with NO2 levels. Were you aware that those, that
9 the NO2 shown on those figures and tables was actually NOx
10 and not NO2?
11 A Yeah, I guess I hadn't thought of it that --
12 MS. CORDRY: Excuse me.
13 MR. GROSSMAN: Well, which, first of all, which
14 tables --
15 MS. CORDRY: I don't think that is a fair
16 characterization of --
17 MR. GROSSMAN: Well, hold on a second. We're
18 going to find out.
19 MS. CORDRY: -- what these charts are saying.
20 MR. GROSSMAN: Which tables are you talking about?
21 MR. GOECKE: All of them.
22 MR. GROSSMAN: Well, they're labeled NO2.
23 MS. ADELMAN: Yes.
24 MR. GOECKE: Right.
25 MS. CORDRY: Right.

Page 332

1 MR. GOECKE: They're labeled NO2, but Mr. Sullivan
2 assumed for purposes of his modeling that all the NOx would
3 be treated as NO2.
4 BY MR. GOECKE:
5 Q So I guess, I guess, so that's my question to you,
6 Dr. Breyse. Did you know that that was one of the
7 conservative assumptions that Mr. Sullivan applied in his
8 modeling?
9 A I didn't pay that attention to that level of
10 detail in the modeling, no.
11 Q So you did not know about that?
12 A Right.
13 Q And would you agree that if you did not assume
14 that all the NOx -- if you did not treat all the NOx as NO2,
15 that the levels would actually be lower?
16 MS. CORDRY: I think that's a hypothetical he's
17 not in a position to answer.
18 MR. GROSSMAN: Well, hold on. He can say if he's
19 not in a position to answer it. He'll answer that way if
20 he's not.
21 MS. CORDRY: Well, I don't think he's been
22 qualified as an expert on the chemical reactions of NO2 and
23 NOx.
24 MR. GROSSMAN: But this is cross-examination and
25 you asked him a lot about NO2. So he can certainly say if

Page 333

1 he's not qualified.
2 THE WITNESS: Can you ask the question again?
3 BY MR. GOECKE:
4 Q Sure, if I can remember it. Would it be fair to
5 say that if the, if we treated all the NOx as NO2, that that
6 would actually be a higher level than the actual NO2 that
7 would exist at the site?
8 A It's likely you're going to overestimate, yeah.
9 Q And do you know what percentage of overestimation
10 that might be?
11 A No, I don't. I'm not ready to answer that.
12 MR. GROSSMAN: Mr. Goecke, I can't recall; so
13 refresh my recollection. Did Mr. Sullivan assume NOx, all
14 -- that all NOx was NO2 for all other reports, including the
15 August 2013 report?
16 MR. GOECKE: I believe that's true, but
17 Mr. Sullivan is here. If it would be permissible for him to
18 respond?
19 MR. GROSSMAN: All right, Mr. Sullivan, go ahead.
20 MR. SULLIVAN: Yeah, Mr. Grossman, I did --
21 MR. GROSSMAN: You're still under oath, by the
22 way.
23 MR. SULLIVAN: -- I did make that assumption, and
24 when I testified on September 20th, I made the point that
25 those numbers were high on that basis and, if we had

Page 334

1 accounted for the percent out of the tailpipe, the numbers
2 would have been four times lower.
3 MR. GROSSMAN: Okay.
4 MS. CORDRY: And can we also then put in
5 Dr. Cole's testimony that he said, no, it would probably
6 still be 100 percent and you can't make those assumptions?
7 I mean --
8 MR. GROSSMAN: Well, his testimony is in. It's
9 not that we're adding --
10 MS. CORDRY: Right, but --
11 MR. GROSSMAN: -- new testimony. I'm just asking
12 somebody to refresh my recollection.
13 MS. CORDRY: Right, but I guess I'm just saying,
14 if that is going to be put in as a hypothetical, the
15 opposite hypothetical should also be in the record, as well,
16 so that the witness is not confused about what the state of
17 the evidence is.
18 MR. GOECKE: I think you get a chance to ask more
19 questions.
20 MR. GROSSMAN: Well, you get a redirect --
21 THE WITNESS: I'm not, I'm not prepared to talk
22 about the conversion between NOx and NO2 and what that may
23 or may not mean in this, in this scenario.
24 MR. GROSSMAN: Okay.
25 BY MR. GOECKE:

Page 335

1 Q Did you review any of Dr. Cole's testimony from
2 these hearings?
3 A I skimmed through them, probably not the same
4 detail, but I looked at them, yes.
5 Q Yes. Were you aware that Dr. Cole testified that
6 the PM2.5 outside of the ring road area was not a
7 significant level?
8 A Can you say that again? Was?
9 Q That was not of a significant level for exposure
10 to the residential properties, the school, and the pool.
11 A I don't recall the exact details of Mr. Cole's --
12 MS. CORDRY: Could you show what -- could you tell
13 us what page that is?
14 THE WITNESS: -- Dr. Cole's testimony. If you can
15 show it to me, I'd be prepared to comment on it.
16 MR. GOECKE: I don't have a page cite.
17 MS. CORDRY: Well --
18 MR. GROSSMAN: You can, if you dispute it, you can
19 certainly get that on redirect.
20 MS. CORDRY: Well, I've been asked to give page
21 testimonies when I did it. I --
22 MR. GROSSMAN: I understand, and --
23 MS. CORDRY: Okay. So it's --
24 MR. GROSSMAN: -- but it is, it's
25 cross-examination --

Page 336

1 MS. CORDRY: I understand it's cross-examination,
2 but --
3 MR. GROSSMAN: -- and if he's incorrect, you can
4 certainly point it out. Even if you can't do it by the time
5 of redirect today, you can put it in the record at the next
6 hearing that, that he assumed something incorrectly. Okay.
7 BY MR. GOECKE:
8 Q Dr. Breyse, to your knowledge, does the EPA or
9 MDE have any standards for evaluating the synergistic effect
10 of NO2 and PM2.5 and other contaminants?
11 A No. As I've said today, they do not.
12 Q Yes. And so how would you propose that the
13 Hearing Examiner take that into effect in this process?
14 A So I would look at studies that have combined
15 levels of pollutants that are similar to the expected
16 combined levels of pollutants here, and if I see a health
17 effect from that combination, I would expect to see it here
18 as well --
19 Q Yes.
20 A -- regardless of a standard that says this is the
21 level or not. I think there's a weight-of-evidence approach
22 you could take that's based on the published literature,
23 independent of the presence or absence of an EPA standard.
24 Q Yes.
25 A Obviously, it's not my job. So that was -- that's

Page 337

1 merely my suggestion.
2 Q I understand, but to your knowledge, the EPA or
3 MDE have not undertaken that task to date?
4 A No.
5 Q Has any regulatory agency in the United States --
6 A They have not.
7 Q -- done something like that?
8 A They have not.
9 Q They have not?
10 A Yeah.
11 Q And that includes California?
12 A They're working on it. If it's going to be done
13 first, it'll be done first in California.
14 Q Yes. Are you familiar at all with the permitting
15 process, with MDE to build a facility that generates what's
16 considered a major polluter or --
17 A No. I have to confess, I'm not familiar with that
18 process.
19 Q Yes. You said earlier today that 850 feet from a
20 source, the levels of NO2 would be 50 to 70 percent of what
21 they were at the highest location, is that correct?
22 A I don't think we know exactly. I think, just
23 based on kind of what the EPA administrator said she expects
24 the spatial distribution to be, that seems like a reasonable
25 range.

Page 338

1 Q Yes. And so your basis is the EPA administrator's
2 comment on that?

3 A Yeah, where she gave kind of ballpark estimates of
4 kind of what the spatial relationship between a near-roadway
5 exposure and exposures you might expect kind of in the
6 average, kind of, typical area away from the roadway air --

7 Q Yes.

8 A -- obviously it's going to be site-specific.

9 Q Yes. Based on your understanding of the proposed
10 Costco gas station, what do you think will be the most
11 significant contributor of NO2 to the residential community?

12 A So it's going to be a combination of things. I
13 don't think I know exactly kind of what the relative
14 combination is going to be, but certainly the background is
15 going to be a big part of it. The traffic in the, from the
16 center itself is going to be a part of it. The service --

17 Q When you say the center itself, you mean the mall?

18 A Yeah. Yeah, the loading dock, all these things
19 are going to be part of it. The queuing of the traffic at
20 the service station is going to be part of it. I don't know
21 if I can parse kind of exact source attributions to the
22 different bits, however.

23 Q Yes. For example, you don't know what range of
24 NO2 emissions might come from the ring road traffic to
25 students at the Stephen Knolls School?

Page 339

1 A Correct.

2 Q And so then it goes that you would not, also not
3 be able to say how much the gas station traffic itself, as
4 opposed to the general mall traffic, would contribute
5 towards the Stephen Knolls School?

6 A Well, I guess we -- I go by the model data that,
7 the Sullivan reports, that kind of attempt to estimate that
8 for us. There's no other information I have available to
9 me --

10 Q Yes.

11 A -- right? And this, this suggests that there's a,
12 that there's a decreasing concentration and then there's
13 this hot spot, is what they call it, and there's a ring of
14 kind of an elevated concentration around this hot spot,
15 suggesting that there is an elevated contribution due to
16 that that's independent of the stuff that's around it. Now,
17 whether that independent contribution adds, you know,
18 significantly way above or way below, you know, the health
19 threshold or not is probably part of the discussion. And
20 the numbers, we can talk about the absolute value of the
21 numbers, but it appears from these, these models that
22 there's this hot spot there. So you can't deny that the
23 service station is going to contribute something.

24 Q Yes. And what's a hot spot?

25 A A hot spot is a localized source of high air

Page 340

1 pollution.

2 Q Is there a certain level that must be attained to
3 qualify as a hot spot?

4 A No. No. It's a generic term that's used.

5 Q I'm not sure. Do you have a copy of Exhibit
6 255(a)? This is the one where --

7 A I have -- this one?

8 Q Yes.

9 A This is --

10 Q You just have a partial copy of that, right, not
11 the full thing? Do you have page 8?

12 A No.

13 MR. GOECKE: Sorry. Indulgence.

14 MR. GROSSMAN: Sure.

15 MR. GOECKE: If I may approach and just show
16 Dr. Breyse what I'm referring to?

17 MR. GROSSMAN: Absolutely.

18 MR. GOECKE: I apologize. I don't have extra
19 copies.

20 BY MR. GOECKE:

21 Q But, Dr. Breyse, I'd like to show you
22 Mr. Sullivan's report that's been marked as Exhibit
23 255(a) --

24 A Okay.

25 Q -- and this is the one that's dated August 16th,

Page 341

1 2013. And on page 8 of that report, Table 2, he breaks down
2 the different categories of contributions for exposure, and
3 if we focus on the Stephen Knolls School, for example, the
4 gas queue will contribute .21 micrograms per cubic meter.
5 Do you consider that to be a significant emission?

6 A You know, I guess I don't know how to answer that
7 question because, again, I'm not quite sure what these
8 numbers mean and, you know, I haven't looked at detail about
9 how they were developed and stuff. So I, I didn't, I didn't
10 want to comment on specific modeling outputs and whether
11 they were appropriate or not as much as I want to talk about
12 the kind of general approach. So I'm going to refrain from
13 commenting about specific modeling outputs other than that I
14 know they're sensitive to all sorts of inputs.

15 Q Well, let me try it this way: At what level would
16 the contribution from the gas station, in your view, be
17 significant?

18 A That's a good question. I don't know the answer
19 to that question. I think that's a question that has to be
20 made kind of as a policy expert, but certainly, if it
21 contributes to the background levels in a significant way,
22 then it's probably something that needs to be considered.

23 Q Right, but if it, so --

24 A Yeah, I'm not going to give you a number and say
25 if it's 50 percent or if it's 30 percent or it's 25 percent.

Page 342

1 I don't know the answer to that question.
2 Q Fifty percent of background levels or 30
3 percent --
4 A Yeah, you know, if it's half or, you know, what's
5 being -- I don't think we know the answer to kind of what's
6 significant. I think that's part of what the Hearing
7 Examiner needs to decide.
8 Q Okay. Because no one else has been able to
9 determine it?
10 A Well, there's no magic number that says, you know,
11 this amount is significant, this amount is not significant.
12 Q Yes. So the EPA has not set a significant impact
13 level for NO2?
14 A I'm not sure what you mean by that.
15 Q In terms of evaluating a potential permit
16 application, for example.
17 A Not that I know of.
18 Q What about for PM2.5?
19 A I'm not aware EPA sets levels for permitting for
20 PM2.5 or NOx.
21 Q Yes. So you're not aware that the EPA has
22 determined that anything below .3 micrograms per cubic meter
23 for PM2.5 is considered insignificant?
24 MR. SILVERMAN: Objection.
25 THE WITNESS: I'd have to see the citation for

Page 343

1 that.
2 MR. GROSSMAN: Mr. Silverman.
3 MR. SILVERMAN: I thought we had gotten rid of the
4 SILs because they deal with major sources and --
5 MS. CORDRY: Exactly. I was going to raise the
6 same objection that --
7 MR. SILVERMAN: -- and I mean, we use it when it's
8 -- I mean, they introduced it, and then we sort of debunked
9 it, and then you said, no, we're not going to use it.
10 MS. CORDRY: Now it's back again. So --
11 MR. SILVERMAN: Now it's back again, and
12 Dr. Breyse did not testify about the standards that are
13 used to determine whether there's a significant impact level
14 for issuing a permit to a major source. He didn't -- that
15 was not a part of his direct testimony. He was --
16 MR. GROSSMAN: Okay. So, first of all, let me
17 take the last point first and that is the question of
18 whether or not he testified about it. It's certainly within
19 the ambit of his testimony to be cross-examined on the
20 point.
21 As to the more particular question as to whether
22 or not you can use SILs in this, I'm going to let him ask it
23 as a cross-examination question, but I think it's
24 appropriate to have the caveat added to it that it's been
25 applied only to significant sources; in fact, that EPA, the

Page 344

1 Sierra Club case said it, not very clearly, but that's what
2 was in the -- that's the part of the statute they were
3 referring to. So if you can rephrase your question to
4 include that caveat, you may ask the question.
5 MR. GOECKE: I don't know if I can improve on the
6 way, Mr. Grossman.
7 BY MR. GOECKE:
8 Q But in the context of major sources then --
9 A Do I?
10 Q Are you aware of the EPA establishing or what the
11 significant impact level is in that context?
12 A I do not.
13 MS. CORDRY: And actually, I would object again
14 because there is no current significant impact level. That
15 was what was rejected by --
16 MR. GROSSMAN: That was what was stricken --
17 MR. SILVERMAN: That was stricken.
18 MS. CORDRY: Was stricken.
19 MR. SILVERMAN: That's what was stricken by the --
20 MR. GROSSMAN: -- by the U.S. Court of Appeals in
21 D.C. Circuit.
22 MS. CORDRY: So I think it would be unfair to
23 postulate a question that does not actually exist.
24 MR. GROSSMAN: I hear Mr. Sullivan shaking his
25 head in the background, but we'll move along anyway.

Page 345

1 MR. GOECKE: We will.
2 BY MR. GOECKE:
3 Q Turning back to Mr. Sullivan's reports, I believe
4 you said earlier that Mr. Sullivan should have done modeling
5 using both a rural and urban analysis, is that right?
6 A No, I don't think I said that.
7 Q Okay. Are you aware that he did do a rural and
8 urban analysis?
9 A Yeah. I saw that in the reports, yeah.
10 Q Okay. So it's fair to say then that you haven't
11 worked with anyone, or you haven't done any dispersion
12 modeling before to show attainment with EPA National Ambient
13 Air Quality Standards for an air quality permit?
14 A No.
15 Q Okay. In terms of background levels, you said
16 earlier that it's been a huge success for EPA in terms of
17 the decrease in ambient air levels for both NO2 and PM2.5,
18 is that correct?
19 A Uh-huh.
20 Q What is the current background level in the
21 Washington, D.C., area for PM2.5?
22 A I don't think I know the answer off my, top of my
23 head.
24 Q Could you offer a range?
25 A No, I'd rather not.

Page 346

1 Q If I said it was around 10.7 or 10.8, would you
2 have any objection to that?
3 A I don't know what it is, but I certainly, you
4 know, would hesitate to put, like, a decimal point on it
5 regardless. I think that's implying probably a precision
6 that doesn't exist.
7 Q Okay.
8 MR. GOECKE: Can we take a short break,
9 Mr. Grossman?
10 MR. GROSSMAN: Yes. Let's take five minutes.
11 MR. GOECKE: Thank you.
12 (Whereupon, a brief recess was taken.)
13 MR. GROSSMAN: Okay. Back on the record.
14 MR. GOECKE: Back on.
15 MR. GROSSMAN: Mr. Goecke.
16 MR. GOECKE: We have no further questions, Your
17 Honor, or Mr. Grossman.
18 MR. GROSSMAN: Okay. Any redirect?
19 MS. CORDRY: Maybe just a couple very quickly.
20 REDIRECT EXAMINATION
21 BY MS. CORDRY:
22 Q Is there a difference between picking conservative
23 assumptions and picking the worst-case scenario?
24 A Well, I -- yes, they're different.
25 Q Right. So if someone picks conservative

Page 347

1 assumptions, are those necessarily the worst case?
2 A Correct.
3 Q Okay. Well, correct or --
4 A They may or may not be the worst case.
5 Q Okay. If someone is doing a number of runs, would
6 you expect he'd have fully comparable sets of data coming
7 out of them that you could compare from one model to the
8 next model?
9 A It'd make it easier to follow if that were the
10 case.
11 Q Okay. So if you're only getting parts of data at
12 different times in these different runs, does that raise a
13 problem for you --
14 A I think it adds --
15 Q -- in terms of analyzing them, changes?
16 A It adds the complexity of kind of evaluating what
17 it all means.
18 Q Okay. And I can see you're answering quickly
19 because you want to get out of here. I know that and I'm
20 working on that.
21 A Am I the only one?
22 Q No.
23 MR. SILVERMAN: No.
24 BY MS. CORDRY:
25 Q We're all getting there.

Page 348

1 MR. GROSSMAN: Wait a minute. I thought you all
2 liked it here. I came out from a visit with my
3 grandchildren to be here with you all today.
4 MS. CORDRY: We are going very fast.
5 MR. BRANN: And we appreciate that very much.
6 MR. GROSSMAN: Thank you.
7 BY MS. CORDRY:
8 Q I think you had indicated you believed that the
9 EPA, under its statute, was expected to set, tried to set
10 standards with a margin of safety, correct?
11 A Yeah.
12 Q Is it also required not to overregulate, not to
13 set them too strictly?
14 A I don't know how to answer that. Is it not --
15 Q In other --
16 A -- it's a double negative.
17 Q Is it required not to set the standards more
18 strictly than necessary? Is that also part of the statutory
19 mandate?
20 A I don't, I don't know exactly the answer to that
21 question --
22 Q Okay.
23 A -- I don't think so, but I don't know.
24 Q Okay. I can point him to where in the rules it
25 says that. So we'll deal with that. You were said -- you

Page 349

1 were asked about that the EPA was looking at sort of big
2 roads, and you mentioned arterials. Would you consider that
3 Georgia Avenue, would you consider --
4 A Yeah.
5 Q That qualifies as one of the big roads you were
6 talking about?
7 A Yeah.
8 Q So not just something the size of I-95?
9 A Right.
10 Q Okay. I think in the interest of letting you go,
11 I have no further questions.
12 MR. GROSSMAN: Any recross?
13 MR. GOECKE: No.
14 MR. GROSSMAN: All right. Thank you very much,
15 Dr. Breysse. I appreciate your coming down here and sharing
16 your time with us. Have a great time in Nepal. You're not
17 planning to climb Mount Everest or anything like that?
18 THE WITNESS: No. Unfortunately, this is in the
19 low-land area; so we're miles, we're miles from the
20 mountains.
21 MR. GROSSMAN: Okay. Well, have a safe trip.
22 Thank you.
23 MS. CORDRY: We actually got you out in time for
24 -- you can still do 5:30, sort of.
25 MR. GROSSMAN: Not at a terminal, though. All

1 right. Anything else that we need to --
 2 MR. SILVERMAN: Mr. Grossman, yes. Yes.
 3 MR. GROSSMAN: Mr. Silverman.
 4 MR. SILVERMAN: Could we set a time to either
 5 brief or talk about this question of whether you can find,
 6 whether you can find a health effect risk absent a finding
 7 of a NAAQS violation? It seems to me it's a very basic
 8 question. I didn't want to take up the witness's time.
 9 MR. GROSSMAN: I'm sorry. Say that again. I
 10 wasn't --
 11 MR. SILVERMAN: Could we set a time or tell us how
 12 we could discuss the question of whether, assuming you don't
 13 find a NAAQS violation but you have credible evidence that
 14 there's a health issue anyway, how the Hearing Examiner
 15 ought to handle such a --
 16 MR. GROSSMAN: Well, I think that's, that is part
 17 of the argument. I mean, the argument that Ms. Cordry has
 18 been making -- and it's been talked about off and on, one
 19 day or another here -- was whether or not I should impose
 20 some kind of, I don't want to say a standard, maybe it is a
 21 standard that is different from the EPA guidelines, and you
 22 can certainly, as part of the brief, argue that point --
 23 MR. SILVERMAN: Well, I --
 24 MR. GROSSMAN: -- and in your closing argument, if
 25 your side wants to make an oral closing argument, you can

1 make that pitch. It is an argumentative issue.
 2 MR. SILVERMAN: Yes, I -- just the way you framed
 3 the issue, we don't want you to set a standard. That's not
 4 your job. We just want you to find facts about health.
 5 MR. GROSSMAN: Okay. Well, however you want to
 6 phrase it. You can --
 7 MR. SILVERMAN: Right.
 8 MR. GROSSMAN: -- you can, the point is that you
 9 can say in the argument what you think my task is. If you
 10 think my task is to make a decision based on some amorphous
 11 health issue based on the zoning ordinance language and not
 12 apply a standard such as the EPA standard, you can make that
 13 argument. You're free to make the argument.
 14 MS. CORDRY: And we will, Your Honor.
 15 MR. GROSSMAN: Am I not addressing what your
 16 concern is?
 17 MR. SILVERMAN: No, I --
 18 MS. CORDRY: And we will.
 19 MR. GROSSMAN: Right.
 20 MS. CORDRY: Not phrased in perhaps exactly that
 21 way, but we will.
 22 MR. SILVERMAN: Yes. Yes, I -- well, I hope in
 23 addition to making the argument, I hope we can have a
 24 discussion about this at some point. I don't just want to
 25 talk to you. I would like to --

1 MR. GROSSMAN: You want to beat me over the head
 2 with a stick.
 3 MR. SILVERMAN: No, no. I'd like to have an
 4 exchange because I'm really trying to understand the zoning
 5 process and what you have to do, but --
 6 MR. GROSSMAN: Well, this is an usual case. I'm
 7 not sure that this is, that a discussion with me over the
 8 zoning process is going to answer this question, but once
 9 again, when you raise it, if it's raised in oral argument --
 10 I have had this discussion back and forth. I mean, I had it
 11 with Ms. Cordry. I've had it earlier in the case, probably
 12 with you.
 13 MR. SILVERMAN: Yes.
 14 MR. GROSSMAN: So we've had the discussion.
 15 MR. SILVERMAN: Well, can I just ask one question?
 16 I really don't want to keep anybody.
 17 MR. GROSSMAN: Sure.
 18 MR. SILVERMAN: Okay.
 19 MR. GROSSMAN: Everybody's anxious to stay anyway.
 20 MR. SILVERMAN: Right. Yes. Well, you know,
 21 if --
 22 MS. CORDRY: Well, I actually am staying. So --
 23 MR. SILVERMAN: -- if we win on the health
 24 grounds, the newspapers will say Costco gas shown to be a
 25 health hazard, and if they win to accepting the report on

1 the health issue, it will say Costco gas shown not to be a
 2 health hazard or found not to be a health hazard. Would
 3 those be accurate?
 4 MR. GROSSMAN: I am definitely not going to answer
 5 that.
 6 MS. CORDRY: Even I don't like that question.
 7 MR. SILVERMAN: Okay.
 8 MR. GROSSMAN: I'm not going to concern myself at
 9 all with what the press coverage will be.
 10 MR. SILVERMAN: Well, it's not just, it's not the
 11 press coverage; it's what the people understand.
 12 MR. GROSSMAN: I can't approach my job that way.
 13 What I can do is try to carry out what I think is the intent
 14 of the zoning ordinance based on all of the evidence that I
 15 receive here after giving what I hope is a very fair hearing
 16 to everybody. So that's my job. I'm not going to try to
 17 cogitate what all the possibilities are of how people will
 18 receive whatever I conclude. I'm going to try to carry out
 19 the intent of the zoning ordinance. That's all I can do.
 20 MR. SILVERMAN: Well, to be brief on that, thank
 21 you so much.
 22 MR. GROSSMAN: All right. Thank you. Sure.
 23 MS. HARRIS: Mr. Grossman, just one question.
 24 MR. GROSSMAN: Yes.
 25 MS. HARRIS: Are we, on the 13th or the 14th,

Page 354

1 whatever the date may be, are we going to start with Donna
2 Savage? Is that --
3 MS. CORDRY: I believe so, yes.
4 MR. GROSSMAN: Ah, that's a good question.
5 MS. CORDRY: Yes, I think --
6 MR. GROSSMAN: Okay.
7 MS. ADELMAN: Well, we might have at least two
8 individual witnesses.
9 MR. GROSSMAN: Right, and --
10 MS. CORDRY: How long do you expect either one of
11 them to be?
12 MS. ADELMAN: Oh, five, 10 minutes.
13 MR. GROSSMAN: So I'm glad you raised that. So
14 let's talk for a second about who we have as --
15 MS. SAVAGE: Yeah, get them out of the way.
16 MS. CORDRY: Yes, it might be simpler, yes, to
17 get --
18 MR. GROSSMAN: Get them out of the way?
19 MS. CORDRY: -- so that those people don't keep
20 asking and asking and asking about coming back.
21 MR. GROSSMAN: All right. So let's see who we
22 have.
23 MS. ADELMAN: Well, I don't know about Mr. Sims
24 now because he was scheduled for today and I'll have to talk
25 with him, but right now I have Ms. Houseworth and

Page 355

1 Ms. Statland.
2 MR. GROSSMAN: Well, I did let him or you know, as
3 to any of these witnesses, that they wouldn't necessarily
4 get on today or when they wanted to be on because we --
5 MS. ADELMAN: Oh, indeed, yes --
6 MR. GROSSMAN: Okay.
7 MS. ADELMAN: -- but I rang him to say --
8 MR. GROSSMAN: Okay.
9 MS. ADELMAN: -- it wouldn't happened today,
10 and --
11 MR. GROSSMAN: Okay.
12 MS. ADELMAN: -- he had indicated that today was
13 the best day for him. So --
14 MR. GROSSMAN: Okay.
15 MS. ADELMAN: -- I don't know where he stands
16 for --
17 MR. GROSSMAN: All right. So Ms. Houseworth, you
18 said, and Ms. Sims --
19 MS. ADELMAN: No.
20 MR. GROSSMAN: -- maybe?
21 MS. ADELMAN: Ms. Houseworth and Ms. Statland will
22 be --
23 MS. CORDRY: Mr. Sims.
24 MS. ADELMAN: Mr. Sims is a question.
25 MR. GROSSMAN: Right.

Page 356

1 MS. CORDRY: Right. But, yes, I think it probably
2 makes sense to bring those two, if they're both available
3 then --
4 MS. ADELMAN: Yes, they are.
5 MS. CORDRY: -- in and out quickly so we don't
6 keep worrying about them.
7 MR. GROSSMAN: And then Ms. Savage?
8 MS. CORDRY: And Ms. Savage. I think Ms. Holland
9 would be, is expected to be on the 13th and -- my third-hand
10 hearsayer. So I believe that she is nothing like the length
11 of Dr. Breyse, but I think she is a, not a five- or
12 10-minute witness. I think she's a -- she's got a fair
13 amount to say, I gather. So --
14 MS. HARRIS: What's a fair amount? I mean, is she
15 an hour? Is she two hours?
16 MS. ADELMAN: I mean, she could be an hour.
17 MS. CORDRY: I'm thinking an hour-ish probably.
18 MS. HARRIS: If we could have a reminder that she
19 needs to be submitting something in writing.
20 MS. CORDRY: Yes. I will check with Michele
21 tonight and make sure --
22 MR. GROSSMAN: Well, I told you I can't require
23 that, but I'm saying I asked her to do -- I asked
24 Ms. Rosenfeld to tell her that, to ask her to do that
25 because I think it would be fair, it would be help to

Page 357

1 fairness aspect of it --
2 MS. HARRIS: Right.
3 MR. GROSSMAN: -- but I have to follow the code.
4 MS. CORDRY: And besides, I think it's helpful to
5 make anybody have to do an outline of what they're going to
6 say before they get on there.
7 MR. GROSSMAN: Good point. All right. So that's,
8 that's our agenda for the 13th if we don't have, if we're
9 not snowed out --
10 MS. CORDRY: Right.
11 MR. GROSSMAN: -- Donna Savage, Ms. Houseworth,
12 Statland, possibly Mr. Sims, and Ms. Holland.
13 MS. CORDRY: Yes.
14 MR. GROSSMAN: Anybody else on the agenda?
15 MS. ADELMAN: Right. So we'll start with my two
16 witnesses, who will be short --
17 MR. GROSSMAN: That's fine.
18 MS. ADELMAN: -- at 9:30 or 10 o'clock or
19 something like that.
20 MS. CORDRY: 9:30, yes.
21 MR. GROSSMAN: Well, whenever, assuming, if we're
22 not postponed, whatever --
23 MS. ADELMAN: Right. I mean, I'm going to ask
24 them to be here the first thing in the morning.
25 MR. GROSSMAN: -- but let them know about, to

Page 358

1 check Montgomery County Schools, because that's --
2 MS. ADELMAN: Oh, I will do that.
3 MS. CORDRY: Yes.
4 MR. GROSSMAN: -- we don't want them to show up
5 here.
6 MS. ADELMAN: No, no.
7 MS. CORDRY: I'm so ready for a snow day myself.
8 MS. SAVAGE: For the two-hour --
9 MS. ADELMAN: Is that for Thursday, the snow, or
10 is it Friday?
11 MR. GROSSMAN: Well, the snow is expected to begin
12 Wednesday evening, I believe --
13 MS. ADELMAN: Oh, is it really?
14 MR. GROSSMAN: -- and, well, the last one I saw
15 said heavy snow, but I don't know what they consider heavy.
16 MR. GOECKE: What's big?
17 MR. BRANN: All day Thursday is what I've heard.
18 MS. CORDRY: Ooh, yea, I can stay home, sleep in
19 late.
20 MR. GROSSMAN: My wife will not be enthused about
21 this, even though she'll get off from school.
22 MS. HARRIS: My children will be.
23 MR. SULLIVAN: We're sometimes wrong, but the
24 forecast --
25 MS. CORDRY: That includes me.

Page 359

1 MS ADELMAN: You're sometimes wrong?
2 MS. SAVAGE: Sometimes wrong?
3 MS. ADELMAN: Sometimes wrong?
4 MR. GROSSMAN: They've been remarkable -- I got to
5 give credit to you meteorologists. I think that the weather
6 people have been remarkably good in the last couple years.
7 MR. SULLIVAN: Yeah, we are. We're getting
8 better.
9 MS. CORDRY: So you're taking full responsibility
10 for all accurate weather forecasts?
11 MR. SULLIVAN: No, I'm not.
12 MR. GROSSMAN: Ms. Savage.
13 MS. CORDRY: And the bad is not your fault?
14 MR. SULLIVAN: It's not my fault either way.
15 MS. SAVAGE: So if the schools are on a two-hour
16 delay, that means we start at 11:30?
17 MR. GROSSMAN: Yes. We'll be on --
18 MS. SAVAGE: Okay.
19 MR. GROSSMAN: -- we're going to follow the
20 schools exactly --
21 MS. SAVAGE: Right.
22 MR. GROSSMAN: -- in this type of case. That's --
23 MS. SAVAGE: Okay. Okay, even though we start
24 later than the schools anyway, but okay, I just want to make
25 sure.

Page 360

1 MS. CORDRY: Yes, I think that was actually the
2 question. They would usually start at what, 8:00 or 8:30?
3 MR. GROSSMAN: Oh, that's a good point.
4 MS. CORDRY: So a two-hour delay would put them at
5 what?
6 MR. SILVERMAN: 10:00, 10:30.
7 MS. CORDRY: Anybody got any kids in school?
8 MR. GROSSMAN: Oh, yes, that's a good point. I
9 hadn't thought about that.
10 MR. SILVERMAN: They start at 10 o'clock if it's a
11 two-hour delay.
12 MS. SAVAGE: What time should we show up if it's a
13 two-hour delay?
14 MR. GROSSMAN: All right. I hadn't even thought
15 about it that way.
16 MS. SAVAGE: Okay. It doesn't say on your
17 website. It just says, you know, it says --
18 MR. GROSSMAN: We follow the schools, right.
19 MS. SAVAGE: We follow the schools or --
20 MR. GROSSMAN: Okay. We need to --
21 MS. SAVAGE: -- a two-hour delay is a two-hour
22 delay.
23 MR. GROSSMAN: That's a good point. Yes.
24 MS. HARRIS: And given that we're crunched for
25 time, why don't we say 10:00, because schools would start by

Page 361

1 10:00, right?
2 MR. SILVERMAN: Yes, that's right.
3 MS. HARRIS: Is that acceptable?
4 MR. GROSSMAN: So do we want to say that?
5 MS. ADELMAN: So it'll be if there's a two-hour
6 delay, we'll meet at 10:00.
7 MR. GROSSMAN: Of course, the other aspect of this
8 is, well, regardless of what the schools do, if there really
9 is a heavy snow, I may not be able to get out of my
10 neighborhood. So you may have to start without me.
11 MS. SAVAGE: Oh, yes, neither would we.
12 MR. GROSSMAN: So --
13 MS. ADELMAN: Well, I can take your place.
14 MR. GROSSMAN: I'm sure you could. Ellen has
15 already volunteered to --
16 MR. GOECKE: No. We'll come get you.
17 MR. GROSSMAN: -- Ellen, in my office, has offered
18 to take my place and whip you all into shape.
19 MS. SAVAGE: Okay. That's cool.
20 MS. CORDRY: All right. So we will say that a
21 two-hour delay means that we are operating on a school
22 schedule of 8:00, 10:00.
23 MR. GROSSMAN: Why don't we do this. Let's do
24 this: If they say a two-hour delay, let's make it 10:30.
25 MS. CORDRY: Okay.

1 MR. GROSSMAN: Okay?
2 MS. ADELMAN: 10:30? Okay.
3 MS. CORDRY: All right.
4 MS. SAVAGE: Yes, good idea, compromise.
5 MR. GROSSMAN: So a two-hour delay is 10:30 --
6 MS. SAVAGE: Okay.
7 MR. GROSSMAN: -- and we'll go from there,
8 anything that -- any variation. Usually they don't do a
9 variation on that. I mean, if it's -- either it's a
10 two-hour delay or no school.
11 MS. CORDRY: Right, I think that's pretty much it.
12 If it's not going to be two hours, forget it.
13 MR. SILVERMAN: Or they don't do it, yes.
14 MS. CORDRY: They don't get any work out of kids
15 on a two-hour-delay day anyway. My recollection of my
16 childhood was we didn't do anything on those days anyway.
17 MR. GROSSMAN: The other thing I would try to do
18 is, you know, if you need to, I mean, if you have a central
19 point that we can contact, I'll give you a call. So maybe
20 if you want to give me a telephone number that I can reach
21 you all on that morning, I'll call you and, at least the
22 main characters, and you can spread the word. So,
23 Ms. Harris, do you have a telephone number I can --
24 (Whereupon, at 5:37 p.m., the hearing was
25 adjourned.)

C E R T I F I C A T E

DEPOSITION SERVICES, INC., hereby certifies that the attached pages represent an accurate transcript of the electronic sound recording of the proceedings before the Office of Zoning and Administrative Hearings for Montgomery County in the matter of:

Petition of Costco Wholesale Corporation
Special Exception No. S-2863
OZAH No. 13-12

By:

Wendy Campos, Transcriber

A	<p>accommodate (1) 11:10</p> <p>accommodation (1) 11:12</p> <p>abbreviate (1) 231:21</p> <p>Abigail (3) 6:14;174:2;235:16</p> <p>ability (2) 82:22;109:16</p> <p>able (23) 25:6;38:7,17;40:6; 65:15;142:10;162:7; 163:15;179:21,23; 180:2,5;215:1;225:3, 20,22;270:7;305:13; 307:4;320:23;339:3; 342:8;361:9</p> <p>abnormal (4) 207:2;208:4,11,17</p> <p>above (19) 144:6,15;150:4; 158:22;209:20,22,23; 211:2;220:8;222:21; 234:5;243:2;260:4; 271:24;274:15;275:3; 288:13;292:22;339:18</p> <p>absence (3) 161:14;289:23; 336:23</p> <p>absent (5) 11:25;166:22;169:2; 290:11;350:6</p> <p>absolute (3) 218:10;258:1;339:20</p> <p>absolutely (5) 24:15;86:18;246:24; 310:3;340:17</p> <p>abstract (3) 99:4;226:24;270:3</p> <p>academic (4) 53:22;58:21;282:9; 322:4</p> <p>Academy (6) 56:17;57:19,20; 66:23;94:5;314:19</p> <p>accept (5) 76:8;96:7;101:5; 137:12;216:12</p> <p>acceptability (1) 121:11</p> <p>acceptable (10) 45:24;92:17;98:23; 115:16;149:6;197:1; 283:8;285:6;287:18; 361:3</p> <p>accepted (7) 62:17;78:19;91:25; 94:24;112:24;125:20; 190:11</p> <p>accepting (1) 352:25</p> <p>access (2) 79:14,15</p>	<p>acute (3) 141:3,10,11</p> <p>acutely (1) 141:2</p> <p>ad (2) 57:24;65:20</p> <p>add (14) 21:25;32:18;76:24; 97:6,18;164:13,18; 169:13;170:11;173:2, 18;174:16;181:3; 273:11</p> <p>added (7) 164:14;165:3; 174:15;187:3;271:24; 274:10;343:24</p> <p>addict (1) 302:2</p> <p>adding (10) 21:1;165:8;272:4,4, 7,11,14;275:11; 330:12;334:9</p> <p>addition (11) 56:4;64:14;125:22; 165:21;166:1;167:4; 168:2,9;237:17; 271:20;351:23</p> <p>additional (18) 7:6,11;16:20;29:9; 34:17,18;40:12;92:4,6; 169:6,14;192:7; 235:19;270:4;272:7, 14;273:11;275:11</p> <p>additive (1) 97:2</p> <p>address (11) 8:23;32:14,18;36:2, 16;49:9,24;185:15; 200:3;234:15;316:16</p> <p>addressed (1) 284:25</p> <p>addressing (1) 351:15</p> <p>adds (3) 339:17;347:14,16</p> <p>ADELMAN (85) 6:14,15;7:22;10:3; 11:4,6;16:24;21:8,23; 25:14,16;26:2;27:3,6; 28:14,17;34:1;41:19; 47:21,23;48:6,9,13,16; 78:13;109:13;114:14; 119:12;152:19;153:11; 154:22;159:7,9,11,13; 160:21;174:3,5,7; 198:4;228:23;231:2; 233:16;235:21;258:11, 24;267:12;268:13; 293:13,16,25;294:2,25; 298:6,10,15;305:22,25; 306:4;331:23;354:7, 12,23;355:5,7,9,12,15, 19,21,24;356:4,16;</p>	<p>357:15,18,23;358:2,6, 9,13;359:1,3;361:5,13; 362:2</p> <p>adequately (2) 137:23;285:7</p> <p>adjourned (1) 362:25</p> <p>adjust (1) 251:11</p> <p>adjustment (1) 275:17</p> <p>Administration (1) 107:13</p> <p>administrative (1) 53:5</p> <p>administrator (31) 106:4,10,25;107:5; 108:5,13;134:12,14,20, 22;142:24;143:16; 144:5,7;146:17;147:2, 19;148:22;149:5,12; 150:21;173:5,24; 189:17;199:15,22; 212:9;247:13;248:8; 328:6;337:23</p> <p>administrators (1) 107:12</p> <p>administrator's (2) 167:23;338:1</p> <p>admission (2) 33:2;42:25</p> <p>admissions (1) 262:11</p> <p>admit (1) 42:25</p> <p>admitted (5) 33:5,5,7;62:17;153:9</p> <p>adopted (1) 284:15</p> <p>adopts (1) 68:12</p> <p>adult (1) 310:19</p> <p>adults (8) 54:16;55:11;176:8,8; 235:10,11,13;239:24</p> <p>advance (10) 14:23;33:21,23; 39:17,20;43:5,19;44:3; 45:22;46:19</p> <p>advanced (1) 33:13</p> <p>advantage (4) 223:21;225:3;269:5; 289:25</p> <p>advantageous (1) 39:19</p> <p>adverse (9) 216:20,23,24; 282:13;283:21;292:5; 327:2,6,15</p> <p>advice (4) 59:2,18;298:3;</p>	<p>300:23</p> <p>advise (2) 286:19;287:9</p> <p>advised (1) 312:7</p> <p>advisory (6) 57:16,18;58:2;66:22; 68:9;128:8</p> <p>affect (9) 55:14;72:6,7;79:3; 101:20;123:22;126:13; 131:19;274:4</p> <p>affected (1) 133:4</p> <p>affects (2) 126:1;131:16</p> <p>affidavit (3) 193:17,18;195:7</p> <p>afraid (2) 32:7;34:12</p> <p>African (1) 176:2</p> <p>African-American (1) 176:3</p> <p>afternoon (2) 45:18;297:22</p> <p>afterwards (1) 242:2</p> <p>again (75) 5:14;7:12;21:20; 22:6;61:3;72:9;73:2; 109:21,21;114:16; 129:2;147:16;148:2; 149:8;153:4,9;154:24; 157:19;159:2;168:14; 172:10,14;173:11,20; 174:24;175:11;182:23; 183:20;186:14;188:3; 190:5;191:21;192:24; 194:4,6,11,16;195:5; 198:22;208:9;211:20; 212:3,21;218:4;220:6; 226:3;227:15;228:13; 230:13,23;232:1; 242:17;243:13;245:9; 246:17;262:10,11; 265:17,18,20;270:13; 271:11;273:15,22; 275:24;286:23;299:1; 333:2;335:8;341:7; 343:10,11;344:13; 350:9;352:9</p> <p>against (3) 146:22;214:18; 325:22</p> <p>age (3) 207:21;227:13; 228:15</p> <p>agencies (4) 57:17;58:15;94:7; 190:7</p> <p>agency (4) 11:22;60:5;68:14;</p>
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<p>337:5 Agency's (1) 267:25 agenda (2) 357:8,14 agent (7) 65:3;83:12,12,13,13, 14,14 agents (2) 67:25;84:10 aggressively (1) 83:10 ago (12) 42:17;63:24;80:9; 91:18;94:7;110:13; 136:10;269:2;297:24; 308:21,21,22 agree (25) 12:18;17:22,23;26:9, 9;28:22;33:19;34:11; 38:5,15;56:11;88:24; 133:12;157:16;195:23; 196:8;230:11,19; 247:9;253:12;310:1, 23;326:9,14;332:13 agreeable (1) 17:19 agreed (7) 8:25;10:9;14:6; 88:17,21,24;316:22 Ah (2) 295:7;354:4 Aha (1) 295:16 ahead (9) 190:13;193:25; 200:18;280:12;289:17; 293:2;304:12;316:13; 333:19 aim (1) 148:2 air (105) 8:20;19:18;21:14,15; 51:1,19,24,25;52:2,17, 23;54:15,20;55:12,14, 15;59:5;60:25;61:4,15; 62:4,6;63:1,10,12,15; 64:1,4,15,16,19;65:10, 11,13,15,18;66:2,6,8, 20,24;67:3;68:18; 69:14;70:25;73:2,4,6, 16;76:12;78:6,17; 94:25;101:19;109:15, 23;110:6;116:24; 124:2;127:9,16,23; 128:8;130:21;133:1; 141:14;144:9,13; 149:22;176:24;204:6, 8;205:5;207:2;214:7; 218:24;225:12;226:4; 232:5,6;236:6;237:17; 244:22,24;245:4; 263:25;265:3;267:25;</p>	<p>268:24;269:3;271:9; 293:1,5;299:9;304:8; 306:20;308:15;328:23; 329:2,3;338:6;339:25; 345:13,13,17 airways (1) 72:25 al (5) 71:15;206:8,13; 258:16;259:5 alerts (1) 294:20 algorithm (1) 321:13 all-cause (1) 270:21 allow (7) 5:6;36:1;62:12; 130:5;133:17;314:25; 329:10 allowable (1) 147:21 allowed (3) 11:25;248:3;279:8 allows (1) 92:18 almost (4) 80:10;256:19; 269:18;275:15 alone (2) 31:13;85:2 along (10) 16:10;55:6;86:13; 139:24;154:4;156:5; 240:13;304:10;330:8; 344:25 alongside (1) 59:2 alternative (2) 20:6;273:17 although (6) 39:7;89:23;91:8; 241:19;310:22;315:9 always (14) 16:11;65:25;87:14; 92:7;98:9;99:20,21; 129:10;138:18,19; 289:24;290:3;293:3; 319:3 Ambient (18) 61:4;68:18;69:14; 73:8;109:23;110:6; 122:23;127:23;144:9; 149:21;237:17;263:24; 267:23,25;269:3; 270:5;345:12,17 ambit (1) 343:19 American (8) 57:3,4,5,13;60:4; 67:8;69:18;137:20 Americans (1) 176:2</p>	<p>among (5) 22:14;127:13;160:4; 184:5;225:11 amongst (1) 55:13 amorphous (1) 351:10 amount (8) 126:17;257:21; 273:12;318:24;342:11, 11;356:13,14 analyses (2) 38:6;322:3 analysis (32) 36:22;37:14;38:10, 15;39:4,25;43:13; 71:13;92:14;98:6; 104:15;106:4;177:1, 11,16;178:22;179:11, 21,25;180:14;182:2; 188:9;218:13;277:1; 319:17;321:20,21; 322:17;323:10;325:5; 345:5,8 analyze (1) 248:14 analyzing (3) 289:7,11;347:15 anchor (1) 121:9 Angelo (1) 229:8 animal (13) 71:18;72:10,12,14, 16,21;79:24;80:2;82:6; 83:1,3;85:22;138:13 animals (7) 72:19,21;79:8,8,10, 11,17 Ann (1) 8:17 Annapolis (2) 14:9,10 annexed (1) 7:15 announce (5) 15:17,22,25;16:17; 295:22 announced (1) 198:21 annual (13) 137:22;140:2,4,11, 23;219:22;221:24; 235:5;245:11,14,14,17; 270:16 answered (11) 71:6;167:20;183:13; 184:24;187:5;288:3; 289:6;290:21;291:2,4, 6 antecedent (1) 274:18 anticipate (2)</p>	<p>255:18,21 anticipating (2) 34:7;49:3 anxious (1) 352:19 anymore (13) 63:16,19,21;77:19; 80:7;160:10,17,19; 161:2,5,6,9;188:16 apart (2) 325:6,10 apologies (1) 24:4 apologize (3) 280:19;329:14; 340:18 Appalachia (1) 54:22 apparent (1) 167:21 apparently (2) 8:7;225:22 appeal (1) 39:11 Appeals (9) 5:4,18,20;17:13; 19:20;26:11;135:15, 21;344:20 appear (10) 16:15;27:16;58:4; 110:17;159:21,22,25; 160:2;203:9;210:6 appearing (1) 44:4 appears (8) 16:2;37:13,18; 141:14;203:10;247:5; 262:15;339:21 appendices (1) 32:19 appendix (1) 17:16 appetizing (1) 152:16 apples (2) 251:7,7 Applicant (23) 13:14;17:21,23; 23:10,19,22;25:5; 26:19;27:24;28:25; 29:2,4,5,5;30:2;33:9; 36:20;39:19;41:17; 42:8;44:25;45:22; 214:18 applicant's (1) 293:20 application (1) 342:16 applications (1) 314:1 applied (6) 98:7;140:9;310:17, 22;332:7;343:25</p>	<p>applies (5) 73:11;78:6,7,8; 310:19 apply (14) 26:12;37:12;38:10; 46:3;68:14;92:25; 200:9;303:1,5,7; 304:24;310:9;319:14; 351:12 aplying (2) 52:1;153:20 Appointment (4) 53:9,24,24;54:9 appointments (2) 54:7,8 appreciate (3) 268:12;348:5;349:15 approach (40) 79:7;83:11;94:2; 95:16,24;96:1,6;98:4; 142:5,6,22;143:13,15; 144:17;147:10;149:4; 178:1;179:2;183:14; 184:21;192:20;194:17, 21;229:12;230:16,22; 276:6;287:11;311:18, 21;313:23;314:12; 316:2;317:7;322:9,14; 336:21;340:15;341:12; 353:12 approaches (3) 79:4;283:7;314:24 approaching (3) 103:4;289:21;321:17 appropriate (21) 23:16;33:18;34:10, 12;36:16;120:3; 179:15;194:5,12; 215:4;275:22;276:8; 278:24;286:5,12; 310:25;311:18,19; 312:1;341:11;343:24 appropriately (1) 245:16 appropriateness (1) 316:25 approve (1) 288:23 approximate (1) 284:7 approximately (4) 148:10,15;162:21; 192:23 April (4) 5:12;224:2,3,19 arbitrarily (1) 31:18 Area (60) 7:18;37:17;44:15; 61:14;62:16,20;64:1; 74:18,24;76:19;81:11; 87:23;95:6;103:5; 116:15,17;117:10;</p>
---	---	--	---	--

<p>124:15;141:21;142:11; 143:23;147:22;149:5; 158:2;162:6,7;168:1, 16,22;170:22;171:11; 173:23;176:9;177:5; 178:16;186:19;188:13, 13;193:8;194:23; 205:23,24;219:25; 240:17;241:6,12,14; 242:25;265:21;272:2, 3,3;275:15;326:15; 329:2;330:7;335:6; 338:6;345:21;349:19</p> <p>areas (8) 36:14;39:8;54:12; 60:12;61:14;76:4; 150:6;225:21</p> <p>area-wide (9) 147:7,23;148:3,10, 15,20;149:22;150:6; 167:24</p> <p>arena (1) 132:6</p> <p>argue (6) 29:3;35:21;37:19; 80:24;217:18;350:22</p> <p>argued (1) 68:11</p> <p>argument (41) 23:13;25:5,13,15,21, 22;26:15,23;27:10,17, 19;32:21;36:13;38:15; 39:4,15,18,20,22,25; 40:5,19;42:1;68:15; 73:11;169:12;170:10, 11;215:6,24;217:17; 288:24;350:17,17,24, 25;351:9,13,13,23; 352:9</p> <p>argumentative (1) 351:1</p> <p>arguments (10) 8:4;17:9;23:10; 25:20;26:3;27:20;28:6, 9;30:11;41:20</p> <p>Arm (2) 49:11,17</p> <p>around (36) 54:18,23,23,23; 55:21;63:2;74:23; 96:13;118:25;124:6; 142:13;167:5;171:9, 11,16,23;225:5;232:4; 234:23;242:4,10; 247:23;248:1;255:1; 280:25;281:2;282:19, 19,22;283:13;292:8; 293:7;308:24;339:14, 16;346:1</p> <p>arrange (1) 66:19</p> <p>arrived (1) 140:8</p>	<p>arterials (2) 329:23;349:2</p> <p>arteries (2) 330:3,8</p> <p>artery (1) 330:22</p> <p>article (13) 70:5;74:8;202:17,20; 203:4,5,10,15,19,20; 218:21;230:25;232:2</p> <p>articles (5) 55:20;56:12;71:4; 74:5;92:13</p> <p>articulate (2) 101:22;117:19</p> <p>articulated (1) 101:7</p> <p>artificial (1) 301:11</p> <p>asbestos (2) 85:9,12</p> <p>aside (1) 13:11</p> <p>aspect (4) 32:7;43:11;357:1; 361:7</p> <p>aspects (3) 116:11,23;141:13</p> <p>assess (5) 66:11;89:3;94:12; 102:22;190:11</p> <p>assessing (8) 31:17;52:2;58:2; 66:16;100:1;102:25; 199:2;311:15</p> <p>assessment (43) 55:7;56:15;64:8; 71:10;77:23;78:1,2; 89:4;93:3;94:6,9,10; 102:18;146:18;201:14; 202:2,3;204:16; 232:14;255:14;277:3, 7;279:24;304:8;306:9, 21;307:3,8,9;308:3,15; 310:8,11,16,22;311:2, 3,4,5,24;314:19,22,23</p> <p>assessments (1) 310:19</p> <p>assign (1) 278:8</p> <p>assigned (1) 95:4</p> <p>assigning (1) 54:6</p> <p>assignments (1) 53:2</p> <p>assistant (2) 51:5,7</p> <p>associate (3) 51:7;81:14;265:3</p> <p>associated (23) 64:20,20;65:7;66:17; 73:20;74:16;75:21;</p>	<p>82:1,7;94:4;97:17,25; 102:2;132:18;229:10; 230:15;231:7;235:12; 242:24,25;252:15; 265:22;308:16</p> <p>Association (10) 6:6;41:25;43:18; 57:5;226:10;241:20; 256:11;300:6;302:10; 313:24</p> <p>Associations (2) 263:24;267:22</p> <p>assume (14) 17:7;18:6;27:9; 46:13;127:21;130:15; 169:15;276:14;288:12; 307:5;311:11;317:6; 332:13;333:13</p> <p>assumed (3) 275:18;332:2;336:6</p> <p>assumes (1) 165:17</p> <p>assuming (13) 16:15;25:11;45:13; 113:8;118:1,7;123:20; 180:2;189:10;279:24; 287:20;350:12;357:21</p> <p>assumption (18) 27:1,3;108:25; 113:16;166:1;167:4; 168:11;169:20;184:13; 273:23;275:20;314:5, 6;318:16,17,25;319:1; 333:23</p> <p>assumptions (59) 66:9;95:13,20;96:4, 16,24;97:20;98:6,10, 10,12,24,25;99:5,18, 18;100:1,9;160:7,8,18; 178:24;179:1;180:19; 181:7;182:13,17,18,21, 22;183:6,9,15,23; 184:18,21;185:1; 187:19;193:14;246:21; 271:13;273:21;313:20; 314:10;315:24,25; 316:5,9;317:23,23; 318:3,7,8,18;320:3; 332:7;334:6;346:23; 347:1</p> <p>assure (1) 150:6</p> <p>Asthma (42) 53:12;55:10;59:7; 69:5;73:1,10;75:5; 82:10;88:16,19,19; 90:6;101:15,16,16,20, 23;102:2,4,22;103:1; 131:5;175:24,25; 176:3,19;197:2;204:5, 7;205:5;218:22;235:8; 236:6;238:3,8;239:23; 240:8;256:10;263:25;</p>	<p>264:25;327:7,8</p> <p>asthmatic (6) 55:15;82:11;175:25; 176:18;197:2;265:14</p> <p>asthmatics (2) 55:13;328:19</p> <p>Atlanta (1) 265:1</p> <p>at-risk (1) 138:1</p> <p>attach (2) 17:12,16</p> <p>attached (1) 42:18</p> <p>attained (1) 340:2</p> <p>attainment (1) 345:12</p> <p>attempt (5) 181:23;213:6;262:6; 303:7;339:7</p> <p>attempted (2) 303:5;304:24</p> <p>attend (1) 176:9</p> <p>attention (4) 208:7;266:24; 312:14;332:9</p> <p>attenuated (1) 168:9</p> <p>attorney (2) 300:23,25</p> <p>attractive (1) 79:10</p> <p>attributions (1) 338:21</p> <p>audible (2) 76:7;115:23</p> <p>audience (1) 298:13</p> <p>auditorium (2) 19:19,22</p> <p>August (12) 174:10;181:25; 187:14;219:20;221:1, 5,7,8;323:8;324:7; 333:15;340:25</p> <p>author (4) 8:5;55:20;70:9; 267:9</p> <p>authored (1) 71:4</p> <p>authority (1) 62:18</p> <p>authors (4) 212:11,11;267:6; 270:4</p> <p>automobile (1) 5:7</p> <p>availability (4) 13:19,22;20:24; 22:23</p> <p>available (20)</p>	<p>10:14,24;11:4,5; 13:21,24;19:5,6,23; 20:7,15;21:19;35:23; 86:4;263:16;285:9; 293:23;294:4;339:8; 356:2</p> <p>Avenue (5) 158:6,7;160:21; 220:7;349:3</p> <p>average (23) 96:19;132:24;141:8, 25;147:10;148:20; 192:21;193:3;194:6; 221:25;222:20;235:5; 240:16,24;245:11,17, 19;251:9;261:20,20, 21;320:17;338:6</p> <p>averaged (1) 193:10</p> <p>averages (1) 149:15</p> <p>averaging (1) 141:4</p> <p>avoid (4) 99:25;111:25;112:2, 6</p> <p>avoided (1) 111:25</p> <p>awakening (1) 238:6</p> <p>aware (35) 42:19;125:12; 127:19;129:5;131:20; 139:19;163:21;176:22; 181:17,19;182:16; 183:5;184:17;185:4; 186:4;192:2,5;198:22; 271:15;299:21;309:9; 316:12;322:13,25; 323:7,20,21;324:1; 330:20;331:8;335:5; 342:19,21;344:10; 345:7</p> <p>away (16) 15:8,8;102:14;144:3; 147:11;148:8,13,18; 150:22;151:6,11; 166:9,19,22;171:17; 338:6</p> <p>awful (1) 32:3</p> <p>awfully (1) 287:2</p> <p>axis (4) 207:6;208:9;209:6; 257:7</p>
B				
			<p>baby (1) 29:22</p> <p>back (57) 6:16;8:20;13:17;</p>	

21:25;23:18;27:22; 31:10;36:6;37:24; 52:14;86:12;90:22; 91:6;92:9;98:23;111:4; 120:13,23;123:14; 127:18;135:3;137:14; 149:8;158:10;162:6; 166:7;169:3;171:15; 185:10;187:10;194:16, 23;198:2;206:4,11; 220:13;241:7;243:14; 245:9;253:2;256:22; 269:15;274:7;294:6, 11,14;295:25;306:19; 320:21;329:12;343:10, 11;345:3;346:13,14; 352:10;354:20 backbones (1) 327:12 Background (59) 7:17;37:11;38:5; 44:21;63:11;103:13; 153:23,24;154:13; 156:2;158:16,19,21; 163:21,22;164:1; 174:14,15;179:12,23; 181:18;185:4;186:18, 25;187:1,2,20;192:11, 12,15;219:21;220:3; 231:10;237:18;271:14, 16,23;272:3,15,22,23; 273:15,17,23,24;274:2, 4,9;275:8,20;280:16; 323:4,9;338:14; 341:21;342:2;344:25; 345:15,20 background-level (1) 192:10 backgrounds (5) 38:1,8;186:17,19; 273:16 backup (3) 10:22;11:2;15:5 backyards (1) 247:3 bad (17) 9:8;14:25;59:6;85:3; 86:24;87:5;101:18; 144:6,15;171:24; 209:15;226:4;269:9; 301:17;319:16;326:1; 359:13 bags (1) 301:24 ball (1) 198:16 ballpark (2) 312:3;338:3 Baltimore (13) 50:1,20;54:21;58:25; 71:20;73:23,24;74:2,6, 13;82:11;240:8;245:3 band (1)	315:4 bank (1) 190:3 bar (1) 318:20 barrier (3) 85:24,25;86:2 base (11) 69:19;84:20;129:18, 20,21;133:17;149:13, 14;255:5,6;274:17 based (44) 13:17;36:22;56:15; 74:10;97:16;111:3; 118:7;126:16;129:21; 132:23;133:13,24; 140:23;150:21;152:2; 153:22;156:1;165:8; 166:25;171:21;172:2; 173:5;175:11,23; 188:14;190:11;191:19; 194:24;240:4;255:17; 257:21;277:7;284:17; 287:18;292:17;310:12; 311:8;319:14;336:22; 337:23;338:9;351:10, 11;353:14 bases (2) 140:6;234:20 basic (3) 71:25;72:8;350:7 basically (6) 36:11;44:19;195:11, 14,21;239:14 basis (17) 31:21;32:1;38:7,13; 64:22,24,24;98:22; 99:3;140:23;186:4,5; 213:24;257:1;322:12; 333:25;338:1 bear (3) 32:5;56:14;237:25 beat (1) 352:1 beating (1) 182:24 became (1) 138:6 become (2) 91:2;181:23 becomes (6) 55:14;99:16;124:7; 143:6;164:15;212:8 becoming (2) 86:3;322:7 bedroom (9) 240:17;241:5,12,14, 21,25;242:8,9,24 began (3) 51:22,25;244:21 begin (8) 9:24;84:3,18;245:7; 283:8;290:25;297:15;	358:11 beginning (2) 138:7;255:3 begun (1) 5:12 behalf (8) 5:17,24;41:24;43:3; 59:20;300:15;322:9,14 behavioral (2) 126:9;127:8 behind (9) 138:19;139:6,9; 247:16;251:15;252:2; 262:12;292:24;293:4 beholder (3) 95:18;96:12;182:25 belaboring (1) 291:20 believes (1) 144:9 belong (1) 279:1 below (47) 106:7;112:4;141:8, 25;142:17;144:2,3,6, 16;147:7,12,23;148:3, 20;150:10;162:16; 166:24;182:5;191:4, 11,14;199:14,19,23; 200:5;207:11;218:14; 222:21;246:6;247:18; 252:24;260:17;270:16; 272:8;273:10,13; 286:21;287:20;288:13; 289:2;292:22,23; 320:19;326:23;330:11; 339:18;342:22 benefits (5) 64:11,12;115:19,21; 271:10 benign (1) 292:7 benzene (1) 311:13 Berman (4) 70:9,11;71:7,8 besides (5) 53:3,3;66:7;300:9; 357:4 best (9) 16:4;61:18;77:7; 115:20;149:16;283:23; 317:19;320:6;355:13 best-case (1) 318:13 bet (1) 175:3 better (11) 49:7;82:22;95:24; 101:18;144:14;210:25; 211:13;242:15;245:8; 290:13;359:8 beyond (8)	66:9;177:4;191:22; 297:3;307:10,11; 309:22;311:23 Bianca (2) 229:8;326:10 bias (8) 86:20;88:14,25;89:1, 2,3;282:15;316:20 biases (1) 82:1 big (21) 53:9;64:12;74:20; 82:14;115:7,9,11; 118:25;119:5;121:6; 176:21;200:1;223:15; 239:7;245:1;329:19, 21;338:15;349:1,5; 358:16 bigger (8) 116:9,13;121:7; 192:17;226:3;261:25; 306:8,10 billion (65) 82:12;140:2,3; 142:13,16,17,21,25; 143:3,5,11;146:20; 147:7,20,24;148:9,11, 14,16;149:15,24,24; 150:7,10,15;155:1,3; 156:13;157:7,10,21; 162:15,16,21,23; 164:19,21;167:25; 189:14;191:10;197:4; 210:14,16;220:16; 221:12,13,23;222:20; 236:24;240:16,17; 242:18;246:9;257:23; 260:23;261:2,7,8,16, 21;266:8;306:8; 319:21,23;330:10 biological (3) 71:18;79:22;80:3 biology (2) 72:1,8 biomass (1) 65:1 biomolecular (1) 53:18 birth (4) 225:9,10,13,24 bit (30) 9:23;26:1;51:12; 63:15;75:12;82:18; 86:23;111:5;138:19; 142:20;158:13;175:16, 17;176:14;178:22; 187:24;190:10;230:24; 231:10;232:23;239:19; 242:13;245:7;264:23; 266:10;273:7;282:3; 290:13;303:4;309:13 bite (1) 197:25	bits (2) 309:21;338:22 black (8) 65:2,6;75:2,3; 165:13;173:8,8;220:3 Blanchet (1) 50:18 blanking (1) 298:5 Bless (1) 263:2 Bloomberg (4) 6:20;50:1,22;52:21 blow (1) 207:19 blown (1) 264:11 blowup (1) 162:5 Board (11) 5:3,17,20;17:4,13; 19:20;57:12,14;67:22; 168:19;306:1 bodies (1) 56:18 body (3) 55:1;75:13;132:11 borderline (1) 92:8 born (1) 126:17 both (32) 24:7;28:22;29:8; 34:20;52:23,25;53:10; 54:15;58:14;83:25; 85:13;86:8;95:23; 98:18;104:1;109:4; 124:16;137:24;155:19, 20;193:19;199:14; 200:9;206:22;213:15; 219:22;245:1;271:14; 282:8;345:5,17;356:2 bothered (1) 282:16 bottom (19) 14:4;172:20;203:11; 206:10;208:13;209:5; 212:18;220:17,18,23; 222:14,15;252:2; 256:22;260:5,14; 263:7;318:23,23 bottom-line (1) 318:17 boundaries (1) 60:6 boundary (1) 315:2 box (2) 172:22;173:8 boy (1) 32:24 BRANN (6) 5:22,22,23;294:1;
--	---	---	---	--

<p>348:5;358:17 breach (1) 65:4 breadth (4) 39:8;82:3;138:13; 285:9 break (12) 28:10,11;123:3,10, 11;197:7,21;198:5,12; 293:12,19;346:8 breaks (2) 86:2;341:1 breath (1) 238:7 breathe (2) 80:14,25 Breathing (1) 301:17 BREYSSE (40) 6:19,19,21;7:14; 8:14;22:19;36:19;40:6; 45:14;48:4,23,25;49:2, 6,10,10,18;60:11; 61:22;63:9;71:15;76:8; 78:15;119:12;153:11; 167:19;169:20;202:25; 259:12;297:22;304:7; 306:21;307:2;332:6; 336:8;340:16,21; 343:12;349:15;356:11 Breysse's (4) 48:12;50:9;94:15; 297:3 Bridge (1) 224:10 brief (14) 23:20,21,25;29:1,16; 30:12,18;123:15; 204:20;293:21;346:12; 350:5,22;353:20 briefing (1) 23:10 briefly (4) 54:11;125:11; 224:24;232:3 briefs (5) 17:9;24:2;31:25; 32:21;42:5 bring (4) 22:9;144:13;230:3; 356:2 bringing (1) 169:6 brings (1) 45:8 British (1) 51:3 broad (5) 82:3;149:5;287:3; 299:8;320:15 broader (3) 243:7;247:1;308:15 broadly (1)</p>	<p>65:6 brought (2) 135:10;270:11 brown (2) 172:11,12 brown-roofed (1) 172:20 BS (1) 50:19 buffer (3) 169:1,3;230:21 buffers (2) 229:12;230:17 build (6) 65:5;112:11;113:11; 114:6,24;337:15 building (2) 172:20;227:23 bullet (2) 147:17;148:5 bunch (1) 91:6 burden (1) 237:23 Bureau (1) 137:20 burn (1) 65:1 business (1) 49:24 busy (2) 58:9;330:22 butter (2) 301:1,11 button (1) 66:12 buy (2) 83:23;239:9 buzz (2) 77:15,17</p>	<p>California (13) 74:11;126:15;127:1; 200:12;204:19,25; 205:25;206:2;260:8; 302:19;312:16;337:11, 13 call (24) 42:9;65:25;74:18; 75:22;78:1;81:15; 85:11,13;91:10; 103:23;115:22;155:10, 13;249:22,23;274:3,4; 298:2,13;312:21; 319:18;339:13;362:19, 21 called (16) 8:16;42:24;52:15; 56:10;67:9;75:2; 103:21;202:1;207:24; 282:15;286:19;287:3, 9;298:24;301:10; 321:21 calls (2) 298:2;299:8 came (14) 38:22;91:5;94:8; 105:12;135:6;137:15; 138:6,25;140:10; 192:23;193:10;250:5; 311:8;348:2 campaign (1) 239:7 Campbell (1) 7:23 Campbell's (1) 7:22 can (267) 10:18;11:24;14:22; 15:4;16:4;18:13;19:17; 22:3,5;23:6;26:16,24; 27:2,5;28:2,3,15;30:4, 5,34:21;38:3;42:4; 43:22;44:8;46:7,8,13; 48:25;49:24;51:11; 52:4;54:11;55:19,23; 56:14;61:17,19;65:21; 66:1;74:18;75:9;76:9, 24;77:21;79:3,7,8,11, 12,13;80:14,15,15,15, 16,23,23;81:19;83:4, 22;84:8;85:8;88:13; 89:6,23;90:4,4,8,15,16, 23;93:1,2,8,14,24,24; 96:5,19;97:22;99:18, 22,23;100:8,11,21; 101:17;102:9,14; 104:2,7,18;107:12; 111:25;112:5,11; 114:6,11,23;115:17; 117:19,20;118:7; 120:1,13;121:23; 122:17;125:11,23; 126:13;127:4,19;</p>	<p>130:21;131:3,16; 139:4;140:6,6,13; 141:6,9,9,9,19,23,23, 23;145:4;146:1,24,25; 147:16;148:5;152:10; 153:2;157:25;158:3,7; 161:25;162:24,24,25; 165:24;168:20;170:3, 7,9;172:8;174:2,17,25; 184:1;187:24;188:15; 193:22;194:6,8,12,13; 195:16;197:11;200:18, 21;204:19;215:15; 218:15;222:18;223:20; 224:24;225:6;227:6; 228:17;230:1;231:11, 18;234:8;235:2,14,14; 239:19;245:5;249:12; 250:10;251:7,12; 252:18,18;255:8; 256:7;260:7;262:4; 264:23;268:20;276:14, 14;277:7,23;278:18; 280:11;281:11,20; 283:10;288:8,8,13; 289:23;290:13,14; 291:6;294:2;296:13; 297:15,22;301:6; 304:9,12;305:3;314:7, 14;315:25;321:2,2,13, 24;322:1;323:11; 325:16;327:3;331:3; 332:18,25;333:2,4; 334:4;335:8,14,18,18; 336:3,5;338:21; 339:20;343:22;344:3, 5;346:8;347:18; 348:24;349:24;350:5, 6,22,25;351:6,8,9,12, 23;352:15;353:13,19; 358:18;361:13;362:19, 20,22,23 cancel (5) 10:16,20;14:22; 15:14,16 canceled (3) 19:3,12;295:23 canceling (3) 15:23;16:10;20:20 cancellation (2) 15:25;19:11 cancer (14) 85:11,12,14;310:14, 18,19,21;311:7,9,12, 16,17;327:8,9 candidly (1) 13:12 capacity (4) 126:17,19,21;207:20 car (3) 237:9;281:5,7 CARB (18) 302:24;303:1,4,5,8;</p>	<p>304:24;306:9,12; 307:3,7,9,16;308:10; 310:23;311:8,21; 312:1,6 carbon (6) 65:2,6;75:2,3;84:6; 210:5 carcinogen (2) 80:22,24 cardiovascular (7) 71:23,24;72:5;85:20; 86:5;125:20;270:21 Care (2) 54:5;284:1 career (3) 51:22,25;58:24 careful (5) 123:24;130:5; 154:18;315:23;330:15 Caribbean (1) 54:21 Carlo (1) 321:21 Carlo-type (1) 322:3 carried (1) 209:20 carry (3) 16:8;353:13,18 cars (4) 118:17;119:3;225:6; 330:23 CASAC (18) 128:14,16;133:22, 22,25;134:8,10,23,25; 135:4,7,10,11;137:12, 13;143:13;328:8,8 case (87) 5:20;9:23;12:12; 13:8,16,23;14:16; 16:10;17:8;18:3;20:4, 23;24:11;26:8;29:15; 31:12,15;32:2,7,17,20; 33:4,9;35:22,23;36:3; 42:13,14;49:18;54:4; 64:25;71:22;93:7;96:9, 10,11;112:3;115:4,12; 118:14;124:10;134:24; 135:23;136:4,12,15,16, 20,21;137:6,7,17; 139:6;140:23;141:5; 176:23;177:8;179:10; 180:23;182:16;194:9; 221:10;232:15,22; 234:1;271:16;276:17; 294:15;296:17;297:23; 298:1;299:12;301:24; 302:16,17;308:11; 312:18;313:17;319:5; 325:14;344:1;347:1,4, 10;352:6,11;359:22 case-in-chief (1) 296:15</p>
	C			
	<p>C-2 (1) 5:10 cafeteria (1) 197:10 calculate (2) 96:19;307:8 calculated (4) 186:18;238:18; 259:9;307:20 calculating (1) 275:23 calculation (3) 159:22;193:9;307:14 calculations (4) 92:15;163:22; 181:18;277:3 calendar (7) 8:25;16:15;19:1; 23:6;46:9;294:18; 296:13</p>			

<p>cases (11) 9:20,22,23;10:24; 26:12;60:2;93:8; 134:22;136:3;237:6; 310:19</p> <p>catch (6) 19:9;41:10;65:20; 84:20;140:17;293:3</p> <p>catches (1) 110:8</p> <p>categories (1) 341:2</p> <p>caught (1) 110:4</p> <p>cause (12) 71:24;79:24;80:4; 83:17;87:24;117:20; 118:18;170:14;195:10; 215:15;244:24;282:13</p> <p>cause-and-effect (1) 226:7</p> <p>caused (2) 87:16;168:11</p> <p>cause-effect (1) 210:7</p> <p>causes (3) 101:3;140:18;301:8</p> <p>causing (3) 102:4;125:4;195:11</p> <p>caveat (3) 294:12;343:24;344:4</p> <p>CBS (2) 203:17,19</p> <p>Cbsnewscom (1) 203:18</p> <p>cc (1) 45:5</p> <p>cell (1) 71:18</p> <p>cells (3) 71:21;85:22,25</p> <p>Center (13) 53:12,12,14;102:6; 158:13;174:25;175:1; 188:4;205:2,4;232:7; 338:16,17</p> <p>centers (6) 53:11;71:16;231:6, 21;232:4,11</p> <p>central (6) 32:6,17,18;222:13; 315:10;362:18</p> <p>certain (11) 43:19;117:10; 126:17;134:17;140:20; 143:7,7;210:1;259:19; 319:15;340:2</p> <p>certainly (57) 26:24;29:7;36:4; 38:1;44:21;45:8;46:18; 56:8;65:19,24;69:4,5; 71:8;73:6;74:1;87:20; 95:5;120:13;122:7;</p>	<p>132:8;133:16;139:10; 144:14;152:11;158:10; 162:19;171:22;182:11; 188:11;192:15;193:21; 213:21;215:10,20; 230:22;235:7,9; 237:20;240:1;248:3; 255:11,14;265:8,20; 286:16;292:13,22; 294:16;329:13;332:25; 335:19;336:4;338:14; 341:20;343:18;346:3; 350:22</p> <p>certified (1) 62:21</p> <p>CFR (1) 145:21</p> <p>chair (6) 52:10;57:14;134:25; 242:5,5,6</p> <p>chaired (3) 67:19,20;128:14</p> <p>chairman (2) 60:4;213:14</p> <p>challenge (10) 83:8;98:9;130:24; 131:1;141:15;199:17, 21;200:1;213:13,13</p> <p>challenged (1) 137:14</p> <p>challenges (3) 132:13,14;141:16</p> <p>challenging (1) 75:12</p> <p>chamber (1) 80:17</p> <p>chambers (1) 80:14</p> <p>chance (19) 27:21;90:2,9,11,18, 20,20,24;91:13,15,16; 92:11;244:9;250:24; 256:15;291:9,12,14; 334:18</p> <p>change (32) 62:24;64:16,21;65:3, 7;80:16;81:22;98:24; 100:8;101:13;102:1,2; 121:13;122:2;129:18, 23,24;130:14;160:7,8; 178:23;182:22;184:12; 192:11;194:14;227:15; 242:18;257:21;271:1; 273:23;314:6,9</p> <p>changed (10) 67:21;129:6,7; 160:17,24;161:14; 182:21;187:19;284:20, 21</p> <p>changes (19) 63:5;64:17,20;65:8; 101:12,14,19,20; 129:22,23;160:6;</p>	<p>183:22;184:2,25; 186:1,3;192:2;314:5; 347:15</p> <p>changing (9) 81:22,23;100:1; 101:14;178:23;179:7; 182:12;183:14;184:20</p> <p>characteristics (1) 152:3</p> <p>characterization (3) 134:8;310:2;331:16</p> <p>characterize (2) 77:8;317:10</p> <p>characters (2) 6:22;362:22</p> <p>chart (32) 121:20;122:10; 154:1,12;157:20; 158:2;159:2;161:6,7, 25,25;162:1,4,24, 163:14;164:12,13; 169:24;206:5,16; 210:8;212:3;219:24; 220:2;243:13;245:10; 255:23,23;262:4; 263:12;266:7,14</p> <p>charting (1) 160:2</p> <p>charts (13) 153:1,2;156:4; 157:11;186:17,21; 187:21;206:19;219:14; 222:3;275:25;276:2; 331:19</p> <p>Chase (6) 133:8,20;195:3,8; 247:7;282:4</p> <p>Chase's (2) 297:8,9</p> <p>cheat (6) 8:6;154:23;162:13, 22;191:9;220:14</p> <p>check (8) 10:4;20:1;21:19; 26:24;27:2,7;356:20; 358:1</p> <p>checked (2) 19:17;152:18</p> <p>checking (2) 20:24;304:12</p> <p>chemical (4) 53:17;100:25; 301:10;332:22</p> <p>chemicals (6) 84:10;86:1;104:2; 108:4;199:6;275:23</p> <p>cherry-pick (1) 315:25</p> <p>cherry-picking (3) 315:24;316:4,9</p> <p>chest (1) 238:5</p> <p>Chicken (1)</p>	<p>152:21</p> <p>child (1) 132:24</p> <p>Childhood (10) 53:12;55:10,13;69:5; 126:1,13;204:4; 218:21;310:20;362:16</p> <p>children (16) 54:15;73:10;132:19; 133:10;138:1;175:18, 21,22;176:12;205:6; 206:21;212:25;236:5, 13;310:20;358:22</p> <p>children's (5) 73:5;102:5;205:1,2; 236:17</p> <p>China (2) 54:20,20</p> <p>Choices (1) 7:19</p> <p>chose (5) 186:25;274:1;302:4; 318:3;319:1</p> <p>chose (2) 151:9;238:20</p> <p>chronic (7) 55:11;127:13; 140:22;176:1;235:7; 268:14;270:20</p> <p>chronically (1) 141:3</p> <p>cigarettes (2) 85:10,10</p> <p>Cindy (2) 7:25;42:16</p> <p>circle (2) 170:22;322:15</p> <p>Circuit (3) 32:10;137:21;344:21</p> <p>circumstances (2) 46:21;237:10</p> <p>citation (1) 342:25</p> <p>citations (1) 233:6</p> <p>cite (9) 68:19;137:16;145:8, 18;195:14;248:9; 262:25;314:15;335:16</p> <p>cited (2) 68:22;188:14</p> <p>cites (3) 69:8;104:3;173:5</p> <p>Cities (4) 268:21,25;269:11,18</p> <p>City (6) 54:21;71:21;73:22, 24;74:12;240:8</p> <p>Civic (3) 6:6;41:25;300:6</p> <p>clarify (4) 46:23;47:9;170:13; 304:15</p>	<p>classic (1) 85:9</p> <p>Clean (1) 128:8</p> <p>cleaner (1) 73:6</p> <p>cleaners (2) 73:5;245:4</p> <p>clear (14) 43:21;44:8;88:3; 120:6;137:7;142:23; 143:9;149:13;170:3; 176:17;182:9;235:4; 280:14;313:18</p> <p>clearly (27) 76:17;101:7;115:1; 118:21;119:2;124:7; 127:15;131:17;134:18; 138:24;142:25;144:7; 149:12;169:5;172:3; 182:22;195:1;199:19; 216:13;239:5;245:1; 247:13;254:3;270:10; 289:19;314:21;344:1</p> <p>client (3) 322:10,14;326:3</p> <p>clients (1) 325:24</p> <p>climate (4) 64:16,21;65:2,7</p> <p>climb (1) 349:17</p> <p>clinical (2) 81:8,20</p> <p>clinical-type (1) 80:6</p> <p>close (16) 23:20;34:10,12; 74:22;75:14,16;115:3, 4;128:7,12,15;141:23; 165:7;194:11;226:5; 272:5</p> <p>closely (1) 312:5</p> <p>closer (11) 75:4,6;100:15; 170:23;179:4;182:14; 192:4,17;235:6; 245:14;314:11</p> <p>closes (1) 9:6</p> <p>closest (1) 321:3</p> <p>closing (22) 8:3;17:9;23:10,13, 15,18,19;24:1,8;25:5, 13,14,17;27:10,17; 29:7;30:20;41:20;42:1, 5;350:24,25</p> <p>closings (1) 27:23</p> <p>Club (3) 135:23;136:4;344:1</p>
---	---	---	---	---

<p>cluster (2) 146:10;147:24</p> <p>Coalition (4) 6:15;42:24;293:13, 14</p> <p>co-authored (1) 71:4</p> <p>COB (1) 5:16</p> <p>code (1) 357:3</p> <p>co-director (1) 53:13</p> <p>cogitate (1) 353:17</p> <p>cohort (4) 205:3;240:8;284:12, 13</p> <p>coin (1) 326:17</p> <p>coincide (1) 124:25</p> <p>cold (1) 238:6</p> <p>Cole (16) 39:12;183:6,24; 184:3,6,17;185:14; 186:1;192:18;193:2,4, 9,17;195:5;316:13; 335:5</p> <p>Cole's (7) 36:17;183:22; 194:25;334:5;335:1, 11,14</p> <p>collaborate (1) 53:20</p> <p>collaborated (1) 72:1</p> <p>colleague (2) 128:12,15</p> <p>colleagues (1) 128:7</p> <p>collect (1) 66:11</p> <p>collected (2) 71:12,20</p> <p>color (2) 172:19;174:5</p> <p>column (3) 146:4,24;222:18</p> <p>combination (7) 84:24;85:3;319:4; 320:22;336:17;338:12, 14</p> <p>combine (3) 97:1;193:23;257:1</p> <p>combined (8) 86:7;199:13,20; 213:11;223:14;257:3; 336:14,16</p> <p>co-mentor (1) 54:1</p> <p>comfortably (1)</p>	<p>328:14</p> <p>coming (24) 11:23;32:25;38:11; 44:12;62:25;75:3; 80:19;94:3;103:13; 110:7;143:19;168:18; 171:12;175:8;213:18; 223:13;236:1,2; 243:13;310:11;311:16; 347:6;349:15;354:20</p> <p>commences (1) 30:6</p> <p>comment (12) 56:20;106:11;120:2; 194:7,8;248:11; 249:18;250:10;316:25; 335:15;338:2;341:10</p> <p>commented (1) 273:18</p> <p>commenting (1) 341:13</p> <p>commercial (4) 5:11;300:16;322:10, 14</p> <p>Committee (7) 53:9;58:2;67:19; 68:9;94:6;128:8; 134:25</p> <p>committees (2) 53:15;57:21</p> <p>common (6) 80:7,12;176:1,3,7; 310:20</p> <p>commonly (1) 120:14</p> <p>communicating (1) 44:5</p> <p>communication (1) 45:2</p> <p>communications (1) 45:6</p> <p>communities (2) 57:24;206:1</p> <p>community (10) 12:14;74:1,2;131:2; 298:4;299:6,14; 300:15;302:10;338:11</p> <p>Community/Environmental (3) 298:24;299:2,3</p> <p>company (4) 298:24;299:5,13; 300:25</p> <p>comparable (7) 119:25;180:14; 221:21;222:12;330:21, 25;347:6</p> <p>compare (9) 116:7;181:6;220:15; 221:20;251:7;282:24; 283:1;285:2;347:7</p> <p>compared (5) 116:22;126:25; 183:18;245:17;288:9</p>	<p>comparison (1) 245:21</p> <p>compel (1) 44:1</p> <p>compelling (3) 75:15;82:2,16</p> <p>competing (1) 95:20</p> <p>compilation (4) 156:23;253:4,16; 254:21</p> <p>compile (2) 138:23;253:19</p> <p>Compiling (2) 156:19;250:12</p> <p>complain (1) 325:24</p> <p>complaining (1) 283:25</p> <p>complaints (3) 283:9;287:14;288:10</p> <p>complete (2) 48:3;295:20</p> <p>completed (5) 13:23;42:13;50:24; 294:14;295:20</p> <p>completely (1) 229:19</p> <p>completing (1) 51:2</p> <p>completion (1) 42:14</p> <p>complex (2) 126:6;330:14</p> <p>complexity (3) 23:16;75:18;347:16</p> <p>compliance (5) 144:11;166:25; 175:13,15;296:9</p> <p>compliant (1) 283:4</p> <p>complicate (1) 22:16</p> <p>complicated (5) 94:20;97:4;158:9; 244:18;276:10</p> <p>comply (1) 51:21</p> <p>component (4) 13:8;71:13;94:9,10</p> <p>components (3) 84:9;125:25;234:12</p> <p>composite (1) 199:3</p> <p>composition (2) 71:11;227:14</p> <p>comprehensive (2) 310:15;312:21</p> <p>comprehensively (1) 268:23</p> <p>comprised (1) 168:17</p> <p>comprises (1)</p>	<p>13:7</p> <p>compromise (2) 44:13;362:4</p> <p>computer (5) 97:14,21;317:24; 318:18;321:13</p> <p>concentration (35) 79:12;124:2;146:19; 147:21;150:15;151:15; 166:10;170:23;209:9; 13,14;225:19;236:24; 255:4;269:24;274:15; 276:7,18,19;277:23; 278:2,4,5,6,14,17; 279:3,6,13,17;280:23; 281:9;319:19;339:12, 14</p> <p>Concentration-Response (1) 263:6</p> <p>concentrations (34) 79:18,20;109:17; 110:10;124:21;147:7, 23;148:7,8,10,12,13, 15;149:23;150:16; 168:5;171:11,24; 173:25;188:5,11; 210:11;235:3;240:15; 241:20;265:5,6; 267:23;269:11;270:6; 275:23;276:9;277:11; 279:7</p> <p>concentration-time (1) 278:8</p> <p>concepts (3) 92:23,25;278:25</p> <p>concern (19) 75:16;79:21;115:9; 117:20;118:18,21; 121:4;124:1,12;170:6; 234:21;272:7;275:4; 283:15;287:15;310:23; 312:4;351:16;353:8</p> <p>concerned (3) 117:9;124:2;188:10</p> <p>concerns (12) 36:10,10;59:3; 116:24;130:4;183:5; 194:7;195:10;292:14; 299:7;300:21;316:17</p> <p>concise (1) 250:15</p> <p>conclude (3) 13:16;270:4;353:18</p> <p>concluded (6) 126:25;146:17; 182:3;212:11;226:6; 248:7</p> <p>concludes (1) 269:22</p> <p>concluding (1) 227:1</p> <p>conclusion (9) 95:17;105:17;133:5;</p>	<p>144:20;195:23;228:19, 20;267:14;270:14</p> <p>conclusions (5) 82:4;233:16;267:5,7; 313:14</p> <p>condition (1) 291:10</p> <p>conditions (20) 9:8,25;17:10,12,14, 19,21,21;18:1,8,17; 33:21;34:24;35:25; 286:19;287:10;290:14, 18;291:18;320:9</p> <p>conduct (2) 9:6,21</p> <p>conducted (3) 5:17;78:25;92:10</p> <p>conducting (1) 79:2</p> <p>Conference (4) 57:5,13;60:4;67:8</p> <p>confess (1) 337:17</p> <p>confidence (11) 89:13,16;90:14,14; 96:15;98:2;259:13,25; 260:2;315:9;319:7</p> <p>confident (10) 91:3;93:25;96:21; 274:12;315:5,7,11; 319:11,20,22</p> <p>conflict (1) 7:2</p> <p>confounded (1) 242:13</p> <p>confuse (1) 259:2</p> <p>confused (1) 334:16</p> <p>confusing (1) 233:3</p> <p>congestion (4) 184:7;224:1,4,17</p> <p>Congress (1) 60:9</p> <p>congressional (1) 129:14</p> <p>conjure (1) 103:7</p> <p>connection (3) 46:13;60:1;103:8</p> <p>consensus (1) 127:15</p> <p>consequence (2) 54:5;82:18</p> <p>consequences (1) 121:11</p> <p>conservatism (4) 182:1,24;183:3,4</p> <p>conservative (12) 95:12,13,18,20; 100:2,2,3;182:18,20; 332:7;346:22,25</p>
--	--	--	---	--

conservative-assumption (1) 98:4	271:9	25;20:2;22:18,22;23:6; 26:24;27:1,4,7,13,18; 28:5,7;31:10;36:14; 37:1,3,4,5;39:1,5,16, 24;40:1,10,11,20;41:1, 12;47:8,16;48:23; 49:16,21,23;50:5,8,10, 12,16;51:9;59:12; 60:11,16,18,20,22; 61:4,8,11,25;62:5,8; 72:14,20,22;75:24; 76:14,16,77:5,7,10; 78:22;85:7;86:11; 89:10;95:9;99:8;100:7, 18;103:3,9,12,15,17, 19;104:7,11,18,21,24; 105:1,6,8,11,13,16,21, 23;106:1,13,16,18,20; 107:2,5,10,14,16,19,22, 25;108:3,10,14,17,19, 23;109:1,2;110:23; 112:8,16,20;113:1,4,6, 7,18,20,22,25;114:2,9, 13,17;115:24;116:4,18, 21;117:12,14,17,24; 118:2,4,9,12,13; 119:13,15;120:25; 121:18,19;123:4,6,9, 16,17,18,19;127:17; 128:18,21,24;129:3,4; 130:2,8,11,14,17,20; 132:1,3,7,10;133:7; 134:2,5,6;135:16,18, 20,22,24;136:2,4,7,13, 17,20;137:2,5,9,18; 138:3,5,9,10;143:17; 145:3,5,9,11,18,22,24, 25;146:12,15,23;150:1, 3,9,12,13,24;152:9,15, 17,24;153:4,8,13,16; 154:20,23;155:4,7,11, 14,15,17,19,21,25; 156:8,9,12,17,19,22,23, 25;157:5,9,13,17,19, 24;158:18,21,24,25; 159:8,10,12,16,18; 160:15,22;161:1,12,16, 18,21,24;162:3;163:3; 164:8,9;165:15,20; 166:15;167:13,15,17; 168:6,13,25;169:8,11, 18,22;172:6,24;174:2, 4,6,8;177:13,14,21,23; 178:5,9,13,17;179:9, 16,18,20;180:4,7; 181:10,13,15,16; 183:17,21;184:5,10,15, 23,25;185:11,19,22,25; 186:9,13,15;187:6,9, 13,16,17;189:1;190:14, 17,19,21,24;191:7,16, 19,22,24;193:4,18,21; 194:3;195:16,20;	196:3,5,6,13,16,18,21, 23;197:6,9,13,16,18; 198:1,6,9,11,16,18,19; 200:17,21,24;201:3,7, 11,13,18,21,24;202:1, 5,10,15,20,23;203:1,3, 7,10,13,15,18,22; 204:1,5,11,13,15,18, 23;205:8,12,16,20,22; 208:8;209:18,25; 210:10,13,18;211:15, 17;212:2,17;213:23; 214:5,9;215:3,6,9,20, 25;216:8,19,23;217:2, 4,6,8,19,22,25;218:3, 20,23;219:4,5,13,19; 220:13,20,22,25;221:3, 7,10,15,18;222:10,17; 223:3,16,19,25;224:3, 6,11,14,18,23;226:13, 17;227:3,6,11,14,20, 23;228:2,7,10,13,16, 24;229:3,5,7,17,21; 230:7;231:3,4,13,15, 19,25;233:8,11,19,21, 24;234:1,4,7;235:16, 18,23;236:2,11,21; 237:1,16;239:12; 242:16;246:2,4; 248:17,19;249:2,5,10, 14,16,20,23,25;250:5, 8;251:20,25;252:12; 253:5,8,11,18,21,23; 254:2,7,12,15,17; 256:3;257:17,20,24; 258:7,10,13,15,18,22; 259:1,4,8,11,22;260:3, 7,16,19,24;261:17,24; 262:3,8,17,23,25; 263:3,9,12,15,20,23; 264:5,8,15,17,19,22; 266:15,17,19,21,25; 267:2,13,16,18,20; 268:5,7,10,18,19; 272:10,13,19,24;273:1, 3,5,6;275:6;276:3,5,23, 25;277:16,18,24; 278:23;279:5,10,15,21, 22;280:4,6,9,13,19; 281:16,19,23,25;282:1; 285:20,22,25;286:2; 287:2,7,8;288:15,22; 289:9,11,16;290:17,23; 291:8,16,19,21,24; 293:10;297:1,8,10; 298:8,14;304:6,9; 305:4,5,8;309:6,7; 313:6,7;323:2,13,25; 324:2;331:6,12,15,19, 25;332:16,21;334:4,10, 13;335:12,17,20,23; 336:1;343:5,10; 344:13,18,22;346:19,	21;347:24;348:4,7; 349:23;350:17;351:14, 18,20;352:11,22; 353:6;354:3,5,10,16, 19;355:23;356:1,5,8, 17,20;357:4,10,13,20; 358:3,7,18,25;359:9, 13;360:1,4,7;361:20, 25;362:3,11,14 Cordry's (3) 32:23;36:6;47:4 corner (3) 162:5;172:21;173:8 Corporation (1) 5:3 corrected (6) 174:15;179:12,23; 181:18;219:21,23 correction (3) 158:17;165:9;323:3 correctly (3) 210:9;306:10;311:25 correlated (4) 210:22;212:7,13; 225:24 correlation (2) 210:4;226:11 correspondence (1) 8:14 cost (1) 82:12 Costco (18) 5:3;22,25;6:3,12; 11:5;13:12;113:21; 119:20,22;171:12; 266:16;306:20;330:11, 16;338:10;352:24; 353:1 Costco's (1) 304:8 cough (2) 238:5,6 coughing (1) 238:5 Council (2) 25:21;300:21 Council's (1) 19:17 counsel (1) 11:19 counties (1) 71:12 country (4) 54:23;64:5,9;232:4 County (10) 9:4,5,9;10:5;59:21; 62:15;295:5,9;299:12; 358:1 couple (20) 14:22;37:5;41:2; 42:7;59:18,25;81:18; 90:4;97:23;98:24,24; 100:8;115:1;136:5,8;
-------------------------------------	-------	--	---	--

240:5;282:14;301:20; 346:19;359:6	critiquing (1) 313:25	cycle (1) 139:10	344:21;345:21	339:12
course (11) 8:19;65:18;79:16; 80:21;81:10;94:10; 120:7;237:8;239:4; 323:15;361:7	Cronyn (1) 44:20	D	de (1) 68:9	defend (1) 317:13
Court (8) 26:11;32:10;135:15, 21;137:21;198:17; 296:15;344:20	cross (3) 46:3,13;257:5	daily (5) 101:19,20;126:22; 147:6,6	deal (14) 52:13,23,24;54:24; 55:23;92:3;111:7; 116:19;130:22,23; 193:7;289:4;343:4; 348:25	Defense (3) 298:25;299:2,3
courts (1) 31:22	crosses (1) 256:22	Damages (2) 202:21;203:6	dealing (8) 37:6;61:14;100:20; 106:3;143:14;224:25; 230:22;232:22	defensible (2) 285:14;311:24
cover (1) 230:1	cross-examination (9) 36:17;195:3;293:20; 297:16,20;332:24; 335:25;336:1;343:23	dangerous (3) 141:2,3;292:12	deals (2) 26:12;214:10	deficit (2) 58:10;126:25
coverage (2) 353:9,11	cross-examined (1) 343:19	data (30) 64:4,6;66:1,11,15; 82:18;131:18;150:19; 155:22;156:19,23; 166:4;167:16;170:16; 176:14;180:14;183:15; 227:12;235:1;244:25; 251:6;328:22,23,25; 329:1,4,9;339:6;347:6, 11	dealt (2) 52:16;218:11	deficits (2) 126:8;213:1
covered (1) 220:1	crucial (3) 79:24;314:23;327:11	database (1) 286:9	dean (1) 53:8	define (3) 77:21;278:13;327:2
covers (2) 30:25;95:2	crunched (1) 360:24	date (41) 10:24;11:3;13:5; 14:1,10;15:5;16:10; 17:18;20:5,9,18;24:4,9, 15;27:9,10,15,16,17; 28:20;30:8,9,14,15; 33:22;35:1,23;106:22; 110:16;138:2,16,22,23; 139:14;202:6;203:20; 232:13,24;283:3; 337:3;354:1	debatably (3) 195:24;196:10,18	defined (1) 131:17
crank (1) 237:8	cubed (24) 140:4;153:23; 154:13;157:6,11; 162:14,23;163:7,18; 164:8,11;174:14; 175:4;186:21;187:4; 195:4,9;196:10,13; 240:20;247:9;271:14; 272:17;280:16	Dated (4) 202:4;204:2;236:8; 340:25	Debra (1) 8:16	definitely (3) 25:16;248:20;353:4
create (12) 88:13;97:8,13; 141:10;142:7;165:22; 214:2,7,21,25;217:11; 237:10	cubic (16) 110:12;154:17; 156:14;164:7;188:6; 189:13;191:1;241:5; 269:17,25;270:9,17,20; 275:2;341:4;342:22	dates (7) 7:6;9:1;10:7;18:18; 35:11;306:19;308:14	decay (1) 166:25	definition (2) 240:1,2
created (8) 36:19;65:18;94:6; 153:2;165:18;167:21; 168:1;170:2	cumulative (2) 229:10;230:14	day (41) 5:2;10:22;11:2; 14:18;18:1,2,7;19:1,6, 18;22:18,25;33:18,20; 34:13,14,15;35:16,21; 80:25;93:17;97:24; 101:17,18,23,25; 118:15;197:22;242:5, 10;276:15;281:12; 283:1;301:25;321:11, 18;350:19;355:13; 358:7,17;362:15	December (10) 153:3,18;155:25; 158:15;159:14,20; 160:15;162:1;166:14; 198:21	definitively (1) 248:5
creates (18) 81:3;98:16;124:11; 130:24;131:1,12; 134:23;141:1;165:11, 16;180:18,22;199:9,9; 215:15;237:9;255:8; 310:13	curious (1) 72:5	days (21) 11:8;14:23;24:8,13, 14;28:19;30:1,2,3,5,12, 23;38:18,20;42:17; 46:5,7,22;97:23; 300:11;362:16	decide (13) 17:19;38:4,5;78:3; 98:19;111:23;214:15; 230:21;248:24;249:12; 250:10;321:2;342:7	degree (4) 44:22;50:17,21; 51:10
creating (6) 60:7;66:16;100:13; 169:6,16;171:19	current (17) 69:23;70:3;93:4; 94:4;110:2,9;129:20; 138:19;139:12,19; 145:10;173:6;247:12; 270:9;271:24;344:14; 345:20	DC (4) 135:21;137:21;	decided (3) 120:11;135:17; 317:15	dejected (1) 87:15
credence (1) 80:3	currently (8) 52:11;55:21;57:3; 112:5;200:5;247:14; 249:17;254:19		decides (1) 17:13	delay (11) 359:16;360:4,11,13, 21,22;361:6,21,24; 362:5,10
credible (1) 350:13	curriculum (2) 42:18;50:11		deciding (1) 283:4	delayed (1) 295:15
credit (1) 359:5	curve (3) 110:22;264:7;265:4		decimal (1) 346:4	demonstrated (1) 39:7
criteria (2) 65:24;144:24	curves (3) 103:22,23;111:1		decision (10) 5:20;68:11;69:22; 121:10;138:2;316:23; 319:10;321:1;322:6; 351:10	deny (2) 24:22;339:22
critérias (1) 68:25	customarily (1) 13:15		decision-making (1) 69:23	denial (8) 52:5,6,10;54:10; 57:25;229:9;263:25; 265:1
Critical (1) 54:5	cut (3) 25:19;138:23;139:2		decisions (2) 55:8;314:3	depend (2) 195:12;273:24
criticism (5) 315:17;316:3; 325:20,22;326:5	cutoff (3) 139:14;232:13,23		decline (4) 121:16;166:9,19; 225:16	dependent (1) 10:12
criticisms (3) 36:15;310:7;315:22	CV (9) 55:17,20;56:24;58:5, 13,22;70:7,14;304:2		declines (1) 126:19	depending (13) 8:18;11:14;42:13; 82:8;93:2,9;101:8,10; 152:11;176:18;179:1; 195:22;273:23
critique (1) 96:3			decrease (1) 345:17	depends (4) 87:20;115:1;117:25; 118:6
critiqued (1) 309:21			decreasing (1)	deposed (3) 59:24,25;60:8

157:25;187:24;222:18; 223:20 describes (2) 94:20;203:3 description (3) 11:15;136:23;300:19 descriptions (1) 33:14 design (7) 84:8;101:3,4,10; 102:25;133:18;239:22 designation (1) 70:19 designed (3) 78:25;133:10;243:17 desire (2) 8:1;24:11 desk (1) 139:22 destroys (1) 301:14 detail (7) 68:3;309:21;312:11; 325:11;332:10;335:4; 341:8 detailed (2) 273:19;310:16 details (6) 111:4;252:1,3;300:4; 302:14;335:11 determination (8) 38:14;54:24;87:22; 107:7;108:20;220:11; 278:2,4 determine (15) 88:6,11;130:7; 143:24;190:7;213:22; 252:16;276:18,19; 279:12,16,23;286:5; 342:9;343:13 determined (7) 8:18;10:15;66:24; 114:22;163:22;214:11; 342:22 determining (12) 89:11;94:18;100:24; 141:12;143:18,21; 194:4;276:6,8;280:18; 285:18;286:20 developed (2) 284:17;341:9 development (9) 92:23;126:1,14; 127:7;202:22;203:8; 206:21;208:3;299:17 development/lung (1) 208:4 developmental (1) 126:8 developments (1) 127:8 devoted (1) 35:2	diacetyl (1) 301:10 diagram (2) 163:23;173:9 die (3) 87:17;125:17,18 died (2) 80:10;302:1 diesel (4) 80:20,21,25;81:4 difference (11) 50:16;160:4;164:11; 216:10;223:9;229:1; 272:20,22;303:11; 321:9;346:22 differences (2) 107:15;242:12 different (78) 9:15;12:11;38:11,13, 18;64:9,10;66:17; 74:15;79:9;81:2;84:12; 88:21;93:16;95:19; 97:1,15,25;116:12,16; 119:1;124:9;125:1,2; 136:16,20;160:3; 175:21;176:16;177:25; 178:1;179:8,19; 180:13;181:14;184:21; 186:16;187:8;190:10; 196:7;205:9;206:1; 210:6;217:5;228:11; 229:19;232:4;235:2; 240:12;246:16;257:12, 13,16;258:19;271:19; 273:8;274:10;275:14; 278:21;280:6,9;291:4; 296:14;314:6,10; 316:5;317:16,17; 318:18;323:23;327:4; 328:12;338:22;341:2; 346:24;347:12,12; 350:21 differently (4) 37:20;196:9;243:18; 251:6 differing (1) 177:11 difficult (7) 31:19;169:5;174:24; 180:24;234:25;292:12; 305:1 difficulty (2) 134:24;180:18 digest (1) 325:11 digress (1) 141:20 dilemma (1) 80:23 dioxide (1) 265:12 dire (1) 42:22	direct (5) 39:11;49:22;171:13; 323:15;343:15 direction (3) 129:6;234:16,17 directions (4) 158:10;233:9,17; 234:8 directive (1) 33:11 directly (8) 32:5;55:4;63:20; 69:9;103:6;181:5; 285:2;311:11 director (2) 53:6,7 directors (3) 57:12,14;67:22 disabilities (1) 126:8 disability (1) 133:19 disagree (8) 120:16;133:12; 230:11;247:10,11; 309:25;310:2,6 disagreement (1) 140:5 discipline (1) 52:15 discuss (18) 7:19;18:1,22;22:5, 11;33:2,4,19,20;34:21; 92:14;161:7;200:18; 202:17;205:16;224:25; 288:17;350:12 discussed (6) 34:4;42:4;154:10; 176:25;249:4;273:16 discusses (2) 202:18;288:21 discussing (5) 23:9;104:13;139:15; 224:6;253:4 discussion (11) 7:20;35:24;108:22; 153:20;206:15;254:8; 339:19;351:24;352:7, 10,14 discussions (4) 109:3;309:6;314:20; 316:25 disease (18) 55:12,16;72:5;81:13; 83:17;85:20;101:13, 14,16;127:12,14;176:1, 4,7,20;188:14;189:18; 301:6 diseases (2) 125:21;140:20 dispersed (1) 124:6 dispersion (5)	176:23;187:22,23; 188:22;345:11 disposal (1) 52:18 dispute (1) 335:18 disputed (1) 216:15 dissimilar (1) 306:3 distance (10) 132:4;151:7,12; 158:8;167:10;168:8; 306:13;307:6,11,17 distill (1) 31:16 distinction (2) 177:20;190:13 distinguished (1) 212:12 distribution (15) 93:17,23;95:22; 97:10,13,15;142:8; 147:5;150:22;222:25; 246:14;320:12;321:5, 16;337:24 distributional (5) 96:16;97:20,25; 179:2;321:25 divide (1) 328:11 dividing (1) 279:12 division (9) 52:8,11,13,14,18; 53:4,6,8;54:4 divisions (1) 53:21 dock (2) 283:14;338:18 docks (1) 171:12 doctoral (1) 50:24 doctors (1) 36:24 document (14) 36:11,24;109:25; 187:11,12;199:3; 202:11;247:23;248:7, 9;249:3;253:19,25; 265:15 documented (2) 80:1;270:23 documenting (1) 164:22 documents (4) 7:10,17,24;68:25 dollars (1) 82:12 done (61) 10:17;12:10;43:4; 45:13;58:16,23,23;	59:22;68:24;69:5,6,16; 70:25;79:14;81:18; 94:17;102:6;124:15; 152:6;153:1,22; 156:22;157:10;174:14; 180:25;183:15;185:20; 186:17;187:22;202:5; 204:16,21;205:9,14,23; 219:20,23;224:3; 232:15,18;239:13,18; 247:20;255:4,17; 260:7,8;262:19;277:4; 286:17;287:21;291:6; 296:19;300:19;309:4; 322:13;337:7,12,13; 345:4,11 Donna (3) 295:2;354:1;357:11 door (1) 237:7 dose-effect (1) 210:7 dose-response (1) 103:21 doses (1) 286:9 dot (1) 259:9 dots (5) 255:25;256:11,12, 19;268:15 double (1) 348:16 doubling (1) 240:20 Doug (1) 8:15 down (72) 25:20,25;33:16;53:7, 10;57:23;60:15;81:2; 86:2;98:23;103:5; 109:18,23;110:4,7,7,7, 8,21,25;120:10;122:17, 24;129:10;134:17; 135:3;139:18;143:2,4, 7;144:8,14;146:4,19; 147:12;149:14;150:7; 158:12,13;166:24; 168:3;191:6;207:8; 208:19;209:20;210:9; 213:19;220:5;225:7; 239:3;244:4;246:6; 247:14;255:6,11; 260:3;261:4,18;263:3, 17;266:5;269:5,12,24; 270:11,19;272:19; 290:12;291:23;293:3; 341:1;349:15 downside (1) 81:25 dozens (1) 67:21 Dr (84)
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6:21;7:8,14,15;8:14, 20;10:13,17;11:13,19; 12:10;13:7,10,17;19:4; 22:2,3,19;36:17,18,19; 39:12;45:14;48:4,12, 23;49:18;50:9;60:11; 61:22;63:9;76:8;78:15; 94:15;119:12;128:10; 133:8,20;153:11; 167:19;169:20;183:6, 22,24;184:3,6,17; 185:14;186:1;192:18; 193:2,4,9,17;194:25; 195:3,5,8;202:25; 247:7;259:12;282:4; 296:7;297:3,8,9,22; 304:7;306:21;307:2; 309:6,19;316:13; 332:6;334:5;335:1,5, 14;336:8;340:16,21; 343:12;349:15;356:11	46:15;102:23,24; 239:4;265:12,13,14 dust (1) 285:3	21,24;258:18;261:19; 274:12;282:16;288:14; 326:10,11;327:2,6; 336:9,13,17;350:6	Ellen (2) 361:14,17 elliptically (1) 103:4 else (24) 6:17;12:19;32:22; 37:23;38:17;66:6;76:5; 78:10;79:24;97:19; 194:25;227:7;231:18; 279:20;281:15,24; 300:13;313:24;316:4; 324:13;325:13;342:8; 350:1;357:14 else's (1) 94:19 elsewhere (4) 126:11;148:24; 175:22;276:8 e-mail (15) 7:21,23,25;8:2,7,9; 11:9;17:10;22:3;36:9; 42:17;44:24,25;45:4, 18 e-mailed (2) 45:1;313:4 e-mails (5) 7:7,13,21;8:4;313:2 Emergency (2) 263:25;264:25 emerging (2) 140:24;329:4 emission (3) 122:13,18;341:5 emissions (19) 54:24;55:25;60:23; 61:15,24;65:1,6;71:5; 73:15,16,18,20;76:11; 78:16;120:11;121:13, 16;330:2;338:24 emitted (2) 65:2;124:17 emitting (1) 121:8 employed (1) 52:5 employers (1) 51:20 enabled (1) 65:14 encompasses (1) 95:22 encounter (1) 240:4 encourage (1) 87:14 end (23) 16:8;20:6;21:1;33:3, 8;93:17;97:23;101:25; 138:7;139:10;151:18; 197:22;232:7;239:5; 250:5;270:13;275:15; 318:16;320:20;321:4, 5,11,18	endanger (1) 9:25 endothelial (2) 71:21;72:15 Energy (1) 57:25 enforce (1) 141:18 engineering (9) 50:25;52:12,16,19, 21;53:4,18,25;54:2 engineering-related (1) 54:1 engineers (2) 52:16,19 enough (11) 43:5;87:21,21;88:5, 5,10;126:20;242:1; 244:23;321:12;326:19 ensure (4) 45:3;149:5;182:2; 268:1 ensures (1) 95:13 enthused (1) 358:20 entire (4) 14:2;55:17;272:3; 284:7 entirely (2) 159:17;184:22 entitled (4) 7:16;99:10;304:7,7 entry (1) 105:14 enumerate (1) 313:2 enunciated (1) 185:17 Environment (2) 53:13;229:9 environmental (19) 50:19,25;52:6,11,20; 53:4;54:10;57:7,8; 64:3;80:13;107:13; 203:11;205:2;267:25; 298:3;299:7;312:17; 326:23 environments (2) 78:7,8 EPA (164) 56:16;60:25;61:4; 64:9;65:24;68:18;69:8, 13,21;71:16;80:19,20; 83:22,22;84:9,18;93:4; 94:7;98:14;103:25; 104:12,16,22,25;105:2, 7,15,15,16,19,22,23; 106:11,21,24,25;107:3, 6,9;108:5,6,7;109:3,20; 110:2,5;111:14; 124:23,24;128:9; 129:8,16,19;130:23;
draft (12) 69:7;247:23;248:4, 15,17;249:17,22,22,23, 25;250:2,9 dramatic (1) 229:1 draw (2) 105:3;255:9 draws (1) 105:17 driven (1) 239:5 driving (3) 212:8;281:8,9 Drop (5) 119:19;158:4; 168:25;225:19,23 drop-offs (3) 121:21;122:6;158:1 dropped (1) 225:22 Drs (1) 40:6 drug (1) 81:21 drugs (1) 80:12 dry (1) 74:24 Duckett (10) 6:24;26:21;41:19,21, 23,24;42:2;48:17,19; 293:15 due (9) 30:18;90:8,20;91:15, 16;199:25;212:16; 238:4;339:15 dueling (1) 98:17 duration (1) 78:5 during (7)	E earlier (13) 124:14;136:8; 167:20;171:10;178:25; 271:15;317:22;325:16; 331:6;337:19;345:4, 16;352:11 early (9) 15:6;16:8;22:24; 33:9;58:24;88:3;95:17; 141:21;316:23 early-life (1) 311:15 Earth (1) 156:3 easier (2) 157:13;347:9 easily (2) 112:5;281:21 East (1) 82:11 easy (7) 38:17;96:25;141:19, 19;185:18;220:15; 234:1 eat (1) 301:12 eating (1) 301:17 ED (3) 265:2,3,19 edge (2) 132:4;189:19 edges (1) 74:18 Edinburgh (1) 51:4 editor (1) 91:9 educate (1) 239:7 education (2) 50:4;292:1 effect (62) 33:6;64:15;77:2; 78:3;79:1;80:1;83:13; 86:4;87:5,7,12,13,22; 88:4,6,11;89:8,9; 100:24;112:12,23; 118:24;125:4;140:21; 141:9;144:4;176:13; 183:23;186:21;188:21; 192:9;194:7;199:5; 200:5;210:3,15; 213:25;214:11;217:23; 229:3,5;238:1;242:21; 252:15;256:8,9;257:8,	effective (1) 32:13 effects (86) 55:24;59:9;71:5; 73:15,17;75:15;82:24; 84:25;85:2;86:7; 100:20;106:7;109:16, 19;124:21,21,25; 125:12,15,23;126:12; 129:18,25;134:16,18; 141:11;144:8;146:9, 18;149:11,14;150:10; 164:16;169:25;173:4, 6,22;194:23;195:11; 196:19;199:12;212:11, 12;213:1,25;216:14,16, 17,20;218:17;234:13; 235:7;243:20;244:3, 22;246:22;247:2,8,14; 251:2,24;252:23; 254:21;255:6;256:9; 258:19;262:20;269:7, 21,23,24;270:5,25; 274:20;275:8;282:6, 13;283:22;289:10,12, 21;290:8;292:5,23; 293:8;327:15 efficient (1) 321:18 efforts (2) 127:20;271:8 eight (6) 71:12;110:12; 228:23;269:25;270:19; 301:24 eight-hour (2) 261:21;282:25 either (18) 15:3;24:13;25:1; 36:17;50:12;98:5; 109:6;165:2;175:2; 185:23;245:21,22; 284:24;320:14;350:4; 354:10;359:14;362:9 elderly (1) 240:11 electric (2) 239:9,10 electrical (1) 237:12 electronic (3) 70:17,19;233:14 elemental (1) 210:5 elevated (4) 91:20;182:3;339:14, 15 eliminate (2) 290:25;291:9		

<p>131:2,5;133:16,17,24; 134:20,22;135:1; 136:8;137:20,22,22; 138:12;140:16;141:4, 7,15;142:1,3,6,23; 143:14;144:18;149:11, 15,15,21;150:21; 153:21;154:14;157:22; 158:22;164:17,24; 165:6;173:5,24;176:6; 188:1,14;189:17; 190:12;192:16;195:23; 199:15;201:15,22,25; 204:15;205:1;213:17, 24;214:9,14;215:1,9, 11;216:24;231:2,5,10, 20;232:3;234:16; 235:1;247:13;248:7; 252:20;253:7;254:23; 255:8,13;256:23; 262:18;265:11,15; 273:14;286:9;288:6; 292:16;293:2,2; 312:12,12;314:15; 322:17;327:14,20; 328:10,18,24;329:5,10; 330:4;336:8,23;337:2, 23;338:1;342:12,19, 21;343:25;344:10; 345:12,16;348:9; 349:1;350:21;351:12</p> <p>EPA's (6) 69:16;84:1;198:20; 235:2;248:21;329:16</p> <p>EPID (1) 138:14</p> <p>epidemiologic (2) 147:3,19</p> <p>epidemiological (1) 146:11</p> <p>Epidemiology (17) 57:7,8;60:12,18,21; 61:23;62:3;76:10,16, 19;78:15;81:10,15,18, 24;82:5,21</p> <p>equal (2) 26:19;29:8</p> <p>equals (3) 175:4;210:19,20</p> <p>equates (1) 157:20</p> <p>equipment (1) 142:15</p> <p>equivalent (1) 132:19</p> <p>Erich (1) 5:22</p> <p>eroded (1) 169:3</p> <p>error (3) 92:15;182:7;318:20</p> <p>errors (1) 40:22</p>	<p>especially (2) 85:17;124:3</p> <p>essentially (9) 9:6;26:15;27:20; 33:13;46:9;73:25; 193:10;219:7;243:13</p> <p>establish (8) 67:17;68:8;111:5; 123:21;229:12;230:16; 327:18;329:10</p> <p>established (3) 67:24;205:3;277:11</p> <p>establishing (1) 344:10</p> <p>establishment (4) 76:11;78:17;94:25; 190:12</p> <p>estate (2) 44:16,17</p> <p>estimate (25) 55:5,23;64:18;65:2, 5;92:18,21;96:8,22; 150:14;179:6;209:13; 213:7;257:4;277:8; 292:21;307:4;310:13, 17;311:9;314:25; 315:8;319:7,18;339:7</p> <p>estimated (3) 195:5,7;270:25</p> <p>estimates (11) 65:4;93:5;99:20; 100:14;182:12;225:17; 251:2;261:19;271:13; 330:4;338:3</p> <p>estimating (3) 151:15;306:9;314:21</p> <p>estimation (1) 94:8</p> <p>et (5) 71:15;206:8,13; 258:16;259:5</p> <p>ethical (2) 80:22;81:3</p> <p>European (1) 285:11</p> <p>evaluate (14) 51:15;63:11;86:14, 16;89:6;180:20,23,24; 181:2;205:5;214:25; 215:10,12;225:22</p> <p>evaluated (1) 131:17</p> <p>evaluates (1) 62:10</p> <p>evaluating (4) 62:11;336:9;342:15; 347:16</p> <p>evaluation (8) 60:24;62:1;76:12; 78:18;89:12;95:1; 173:6;267:24</p> <p>evaluators (1) 92:5</p>	<p>even (46) 13:24;14:1;17:15; 23:6;34:6,9;39:2; 49:19;68:12;70:19; 80:24;88:10;111:19; 113:15;120:18;131:2; 139:8;142:2;143:1; 144:5;158:19;170:14; 210:12;211:12,12; 215:1;233:25;244:13; 245:20;246:21;247:14; 272:4,8;275:8;279:24; 283:17;286:8;289:23; 290:10,10;297:9; 336:4;353:6;358:21; 359:23;360:14</p> <p>evening (1) 358:12</p> <p>event (3) 46:22;77:20;296:16</p> <p>eventually (4) 135:3;137:14;138:6; 273:14</p> <p>Everest (1) 349:17</p> <p>everybody (7) 9:14;42:19;95:19; 149:7;190:2;297:10; 353:16</p> <p>everybody's (3) 17:4;232:10;352:19</p> <p>everywhere (3) 74:13;142:1;143:11</p> <p>evidence (68) 5:19;30:9;31:17; 32:3,4,20,20;33:14; 34:10,12,35;10;37:12, 15;46:12;69:19;84:9; 104:2,9,14;106:7,22, 22,23;109:6,8;110:20, 24;111:18;118:1,6,8, 14,18;123:20;125:22; 129:18,20,21;133:17; 138:12,13;142:12,23; 143:2,6;147:3,19; 149:13,13;153:4; 182:16;191:19;212:25; 214:16,17;218:1; 224:1,17;244:2; 254:20;255:5,6,9; 270:5;282:12;334:17; 350:13;353:14</p> <p>evidenced (1) 169:17</p> <p>evidentiary (1) 39:11</p> <p>evolved (1) 52:20</p> <p>evolving (2) 326:15,19</p> <p>exacerbated (1) 140:20</p> <p>exacerbation (3)</p>	<p>240:1,2;244:24</p> <p>exacerbations (8) 127:14;235:13; 239:25;242:20,24; 243:1,12;244:8</p> <p>exact (17) 56:1;57:9;93:6; 151:7;157:21;161:3; 181:24;195:16;202:6; 265:7;307:13,14; 308:13,14;328:6; 335:11;338:21</p> <p>exactly (29) 29:13;48:6;75:17,20; 93:19;96:11;102:5; 107:8;114:14;169:4; 199:25;209:1;232:12; 235:1;242:14;255:2; 261:4;268:18;280:21; 285:1;307:19;308:20; 309:16;337:22;338:13; 343:5;348:20;351:20; 359:20</p> <p>EXAMINATION (4) 49:22;197:17; 254:20;346:20</p> <p>examinations (1) 185:21</p> <p>Examiner (8) 7:22;31:17;76:22; 214:7;259:3;336:13; 342:7;350:14</p> <p>examining (1) 252:20</p> <p>example (45) 9:11;57:24;58:23; 59:6;64:2,12;71:19; 72:24;73:23;75:20; 81:6,8,19;82:10,12; 83:15;84:5;85:8,9,16, 19,19,21;88:15; 101:14;140:16;160:5, 6;164:14,18;175:24; 200:15;206:23;234:11; 265:16;299:11;300:20; 302:4;316:20,22; 322:25;329:22;338:23; 341:3;342:16</p> <p>examples (1) 262:9</p> <p>exceedance (4) 167:21,21;168:21,22</p> <p>exceeded (2) 154:16;167:25</p> <p>Excel (1) 155:17</p> <p>except (3) 10:17;213:23;297:12</p> <p>exception (5) 5:5;17:14;214:1; 215:13,18</p> <p>exceptions (1) 9:20</p>	<p>excerpts (5) 145:1;187:13; 249:16,21;331:7</p> <p>excess (5) 90:2;188:13;196:25; 199:25;307:4</p> <p>excessive (1) 173:25</p> <p>exchange (2) 8:9;352:4</p> <p>exchanges (2) 7:21;11:10</p> <p>excited (3) 75:19;87:13;88:7</p> <p>exciting (2) 48:5;51:22</p> <p>excludes (1) 90:15</p> <p>exclusively (1) 213:16</p> <p>excuse (5) 12:2;23:24;51:11; 195:6;331:12</p> <p>exercise (1) 176:16</p> <p>exercising (3) 176:12,15,18</p> <p>exhaust (4) 80:20,21,25;81:4</p> <p>Exhibit (85) 8:5,11;32:24,25; 34:24;41:3;47:6,15,17; 50:7;105:2;106:3; 119:10;122:5;131:25; 139:13;145:3,14; 153:5,14;154:24; 155:6,10;156:15; 157:3;159:7,8;166:14; 174:4,9;187:13;189:3; 201:16;202:13,24; 203:23,24;204:9,22; 205:7;218:4;219:14; 222:7;224:19,21; 229:8,20,23,24;231:1, 12,16,18,23;236:3,6,9, 20;249:19,21;250:3; 255:24;256:4;262:13; 264:3,17,20;267:12,13; 268:7,13,16;271:11; 274:7;303:14;304:4,5, 6,15;305:13,14; 306:20;324:3;340:5,22</p> <p>exhibits (21) 7:4,5;33:2,3,4,6,10, 17,19;34:8,17,18;36:2; 38:20;119:14;156:25; 169:17;200:21,25; 201:9;263:17</p> <p>exist (7) 64:11;97:11;110:14; 270:8;333:7;344:23; 346:6</p> <p>existed (1)</p>
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<p>165:25 existence (2) 131:20;132:25 Existing (3) 7:17;120:14;284:14 exists (2) 88:2;168:4 expand (1) 62:23 expanded (1) 246:25 expansion (1) 62:24 expect (39) 16:12;38:1;42:9; 43:15;45:10,10;101:3; 121:12,16;150:4; 166:21;173:4;175:23; 176:2,6,8;177:10,17; 178:1,6,22;182:10; 192:10,12;208:16; 243:11;255:17;256:11; 261:11;282:5;293:4; 322:18;330:1,10,16; 336:17;338:5;347:6; 354:10 expected (8) 33:14;147:22; 207:21;316:18;336:15; 348:9;356:9;358:11 expecting (2) 143:23;294:23 expects (1) 337:23 expensive (1) 81:25 experience (5) 41:8;50:4;63:13; 116:19;292:1 experiment (3) 64:13;101:4;223:22 expert (51) 8:19;11:11,12;12:11, 12;36:13;37:15,17,24; 39:9,13;40:14;42:20, 25;43:3,24,25;44:4,15; 47:9,10,11,12;48:3; 59:16,23;60:2,12; 61:22;62:15,17,18; 76:3,9;77:4,10,11; 78:19;99:11;116:16; 117:4,10;118:11; 128:22;177:20;178:15; 185:20;304:8;317:18; 332:22;341:20 expertise (17) 12:14;55:2;58:7; 61:6,8;62:10,13,16,20; 78:15;94:22,24,25; 95:6;116:15,17;177:5 experts (7) 36:21;37:25;40:13; 44:12;49:4;98:17;</p>	<p>217:11 expiratory (3) 207:14;211:21;212:1 explain (4) 130:21;137:23; 255:23;322:1 explaining (2) 213:4;266:25 explanation (1) 275:21 explore (2) 85:19;234:17 exploring (1) 126:12 expose (5) 79:9,11,12,18;80:23 exposed (22) 55:3,6,9;71:21;73:1; 75:11;78:4,6;83:6,25; 84:6,6,7;85:12,13; 86:8;171:10;175:21; 237:19;282:6;290:8,12 exposing (4) 80:20;81:1,3;83:3 exposure (100) 55:5,24;57:7;71:5; 75:17;76:25;77:1,12, 21,23;78:1,1,11,19; 80:11,16,17;81:1,14, 19;89:3,4;100:25; 101:9,12,13;110:22; 111:1,25;125:12; 127:20;141:3,7,25; 147:11;149:10;182:4; 189:4;197:1;206:23; 207:3;208:18;213:7, 12;223:14;235:7; 239:6;240:8;252:14; 261:10;265:9;268:14; 269:11;270:20;271:2; 276:11,13,16;277:2,3, 7,8,20;278:11,16; 279:4,24,25;280:1,18; 281:1,3,5,6,11;282:11, 25;283:2,7,10,11; 284:8;285:9;286:8; 287:16;290:3,10,19,24, 25;291:5,9;310:12,16; 311:14;314:3;327:9; 335:9;338:5;341:2 exposure-response (7) 79:21;103:23; 206:22;238:11;264:7; 265:4,17 exposures (81) 54:25;57:25;59:1; 60:14,23;64:5;75:21; 79:2;80:6;83:7;84:11, 17;94:12;100:20; 106:5;109:18;110:4, 13;111:15;124:25; 127:16;137:25;140:11; 141:1,10;148:25;</p>	<p>149:2,6;154:10; 164:22,24;171:22; 173:3;176:11;182:4; 197:3;208:22;221:22, 24;235:8,10,11,12; 238:12;240:4,12,14; 241:3;243:19,20; 246:13,14,22;251:23; 255:7,11,16,20;258:2; 261:1;265:20,20; 266:3,12;269:5,16; 270:8,15;274:14; 282:12;283:16,17; 287:12;289:19,22,24; 290:1;292:10;300:21; 311:16;338:5 expressed (2) 238:10,18 expressing (1) 261:9 expression (1) 72:25 extend (2) 269:24;307:10 extends (1) 188:7 extension (2) 215:23;216:5 extensive (1) 309:6 extent (13) 36:4,14;40:18;45:21; 46:1;47:13;73:15; 193:13;253:10;296:6, 18;297:1;309:24 extra (3) 211:17;305:15; 340:18 extrapolate (6) 306:10;307:10; 311:11,20,20;312:1 extrapolation (2) 216:6;307:12 extreme (2) 237:10;320:19 eye (3) 95:18;96:11;182:24 eyeball (1) 266:7 E-ZPass (10) 224:1,7,15,17;225:4, 6;226:9,20;227:24; 228:25</p>	<p>301:6 facility (14) 59:9;112:9,12,18; 286:20;287:10;288:18, 23;306:7,8,14,15; 307:5;337:15 fact (33) 14:24;34:6;46:6; 69:6,15;75:8;84:1; 92:8;104:13;114:21; 121:7;125:1;134:21; 141:5;142:11;154:9; 168:3;199:5;212:9; 214:1,10,14;256:19; 260:14;267:9;269:5, 15;300:17;310:18; 316:16;327:24;330:4; 343:25 facto (1) 68:9 factor (7) 155:1;165:9;238:17; 261:6;310:18;319:13, 14 factors (11) 51:15,23;64:7;119:1; 176:23;179:12,22; 184:8;227:5;228:6,17 factory (1) 286:5 facts (2) 292:1;351:4 faculty (5) 51:6;53:21;54:2,3,6 failed (1) 137:23 fair (27) 40:18;43:25;44:2; 60:8;93:21;118:17; 122:23;169:15;195:25; 196:1;243:22;248:25; 252:7;275:8;297:15; 300:14;311:10;322:3; 324:25;325:12;331:15; 333:4;345:10;353:15; 356:12,14,25 fairly (1) 242:21 fairness (2) 45:4;357:1 faith (2) 12:9;286:16 fall (2) 102:23;158:7 familiar (6) 6:22;127:24;128:18; 130:15;337:14,17 familiarity (3) 128:2;130:12;177:3 famous (1) 268:22 Fann (1) 70:11</p>	<p>far (19) 8:16;15:8,8,8;33:6; 43:5;75:14;110:25; 139:22;142:18;163:1; 167:8;182:5;187:25; 215:21;217:3;262:14; 321:4;322:7 far-from-roadway (1) 149:2 Farm (1) 137:20 farms (2) 58:1;300:22 farther (3) 75:4,6;141:23 fashion (3) 130:12;265:7,8 fast (4) 197:19;296:13; 326:19;348:4 fault (2) 359:13,14 fear (2) 214:20;216:4 February (39) 5:15;7:25;8:2,4,22; 10:14,20,21;13:4; 14:13;15:11,22,24,24; 16:19,19;18:12,14; 20:7,16;21:4,12,22,23; 33:24;34:3,20,23; 35:16;145:15,19; 293:23;303:9,12,13,17; 304:16;305:10,11 federal (11) 11:20;13:2;68:9,12; 105:14;106:2;137:10; 145:7,12,18;232:14 Federation (1) 137:20 feel (3) 27:24;31:8;53:10 feeling (2) 31:4;86:21 feet (9) 132:5,8;150:16; 151:6,11;168:5; 171:16;307:23;337:19 fell (2) 225:18;286:21 fellow (2) 51:3;298:2 felt (2) 38:19;244:23 FEV (2) 207:4;211:20 FEV1 (3) 207:11,13,24 few (10) 7:3;46:22;80:9;94:7; 142:3;228:17;247:16; 248:23;263:4;282:3 fiddle (1)</p>
		F		
		<p>F3d (1) 137:20 FACA (2) 68:9,14 face (1) 230:20 facilities (1)</p>		

<p>13:1 field (3) 95:3;128:4;289:1 Fifteen (2) 265:25;266:1 fifth (3) 197:5;266:6,22 Fifty (1) 342:2 figure (35) 22:10;26:17;30:13; 141:17,18;151:10; 153:15,17;159:2; 172:14,16;174:11; 181:19;187:24;188:15, 22;189:7,8;190:23; 191:6;192:22,23; 219:16,18;221:1; 242:23;245:25;246:1, 2;262:10;269:8; 272:19;274:19;296:5; 304:10 figures (12) 155:22;156:22; 188:24;220:18;245:10; 250:11,12;274:24; 275:16,21;276:3;331:9 figuring (1) 326:1 file (2) 43:19;305:21 filed (2) 30:2,12 files (1) 305:24 fill (2) 41:3;42:4 filling (1) 5:7 final (6) 17:18;24:14;26:17; 27:16;40:24;274:5 finalized (1) 139:1 finally (1) 271:7 find (26) 38:18;102:24;106:1; 110:18;120:13;146:1; 186:19;193:22;195:16; 202:6;225:20;227:6; 233:11;234:2,5;238:1; 241:20;242:22;243:22; 252:18;259:9;331:18; 350:5,6,13;351:4 finding (5) 91:1;92:11;126:11; 127:11;350:6 findings (4) 127:9;212:23; 232:10;269:2 fine (18) 37:20;71:11;78:9;</p>	<p>83:21;123:1,11; 137:25;144:5,11,12; 155:8;234:4;253:22; 268:14;271:8;288:7; 301:17;357:17 finger (1) 166:24 finish (2) 195:18;282:2 finished (1) 14:15 finishes (1) 294:13 fire (1) 80:19 firms (2) 58:15,16 First (51) 7:4;8:21;10:8;48:22; 70:9;88:17,20;101:1; 153:3;156:6;174:10; 182:19,19;183:12; 187:23;194:9;196:11; 201:11,12;206:11; 207:6;223:24;226:23; 235:20;244:19,21; 249:8;255:24;256:4,5; 258:8,8,20,23,24; 259:1,5;268:20,23; 271:19;280:10;286:4; 297:23;305:10;324:18; 331:13;337:13,13; 343:16,17;357:24 fit (4) 14:1;46:8;92:24; 300:19 fitter (1) 284:10 five (37) 38:19;53:7;56:2,12; 82:12;90:5,6,7,19,24, 24;91:1,5,5;110:11; 123:13;129:9;139:4, 11;146:10;147:24; 149:13,17,18;183:13; 210:12;239:16;243:9; 261:8;266:8;269:19; 288:5;292:24;293:2,4; 346:10;354:12 five- (1) 356:11 five-and-a-half (1) 139:17 five-lane (1) 74:20 five-minute (1) 293:19 five-year (1) 232:8 fix (1) 99:19 fixed (3) 207:14;278:6,6</p>	<p>flame (3) 237:8,9,14 flavoring (2) 301:1,11 flesh (1) 327:11 flexibility (1) 34:15 flexible (1) 35:9 floating (2) 247:23;248:1 floats (1) 247:24 floor (1) 5:15 flow (1) 13:20 flu (1) 265:13 focus (13) 50:25;73:14;103:18; 107:25;124:20;234:12; 246:25;299:9;308:16, 18;309:20;329:16; 341:3 focused (4) 72:9;73:17;74:5; 309:21 focuses (2) 52:22;75:20 focusing (4) 50:21;51:24;73:19; 103:13 folder (1) 231:17 follow (20) 9:3,4,15;10:2,5; 101:10,11;102:15; 114:1;166:11;239:2, 24;273:14;295:5,8; 347:9;357:3;359:19; 360:18,19 followed (2) 29:4,5 following (7) 9:9;27:19;75:19; 106:4;239:23;280:7,21 follows (1) 122:19 forced (2) 211:21,22 forecast (1) 358:24 forecasts (1) 359:10 forever (2) 58:22;314:7 forget (1) 362:12 forgot (1) 263:10 form (5)</p>	<p>25:9;85:23;277:1,17; 313:17 formal (6) 12:25;15:18,21; 65:16;94:16;309:9 formally (2) 33:5;294:8 format (3) 25:10;28:25;29:4 Former (1) 236:7 forms (1) 291:4 formulate (1) 133:23 Fort (3) 224:11,11,13 forth (12) 27:22;38:1;124:11; 159:23;206:13;216:9; 228:16;239:20;247:4; 273:9;276:19;352:10 forward (1) 14:13 found (9) 74:16;98:4;109:12; 110:17;182:7;218:17; 225:1;270:22;353:2 Foundation (2) 56:17;183:11 four (17) 23:20;29:6,7,18; 38:19;56:2;183:13; 220:18,18,22,25; 272:25;273:3,4,4; 300:20;334:2 four-hour (1) 261:21 fourth (2) 226:24;267:16 fraction (6) 206:23,25;207:2; 209:3,15;302:7 frame (1) 89:4 framed (1) 351:2 frankly (3) 14:20;31:19;34:5 fraternal (1) 59:8 free (2) 134:20;351:13 freeway (3) 75:10,11;331:1 freeways (3) 126:23;213:7;329:25 frequency (2) 78:5;240:6 frequently (1) 192:16 fresheners (1) 59:5</p>	<p>Friday (3) 10:6;20:8;358:10 front (9) 9:2;87:23;157:14; 226:24;252:2;260:14; 270:1;307:13;321:10 fuel (1) 237:4 full (8) 49:8;51:8;238:15; 240:13;313:2;324:19; 340:11;359:9 full-time (2) 58:9;282:9 fully (1) 347:6 function (8) 86:2;126:24;208:5; 209:4,14,15;213:2; 215:5 functioning (1) 16:16 fund (2) 82:15;111:16 funded (4) 69:17;101:6;231:10; 232:3 funding (4) 51:25;84:2,21;232:8 funny (1) 90:11 further (11) 7:19;76:2;77:13; 78:10;111:20;234:17; 267:21;271:7;293:10; 346:16;349:11 Furthermore (1) 270:25 future (4) 92:23;233:9,17; 234:8</p>
G				
				<p>gallons (1) 306:8 Gas (97) 6:12;14:9;71:1; 112:9,12,18,22,24; 113:9,10,11,16,17,24; 114:5,6,20,24;115:2,7, 9,10,11,18;116:5,7,12, 16,20,22;117:4,18; 118:20,22;119:20,20; 120:4;121:3,17; 122:13,18;123:22,25; 124:3,5;125:2;140:18; 162:6,7,11;165:11,16, 18,21,22;166:1,3; 167:4,20;168:2,4,5,12, 18;169:2,16;170:2,14; 171:11,17,17;172:2; 215:13,19,20,21;</p>

216:11,12,13,17; 229:11;230:15;240:6; 265:22;308:16;312:7, 13;326:10,11,22; 330:11;338:10;339:3; 341:4,16;352:24;353:1 Gas/Electric (1) 59:1 gasoline (2) 120:8,9 gather (1) 356:13 gathered (1) 220:10 Gauderman (2) 206:8,13 gauge (2) 25:25;178:18 gave (7) 59:2;158:15;182:8; 277:17;300:23;320:22; 338:3 gene (1) 72:24 general (33) 5:10;65:22;76:19; 78:24;79:22;91:24; 92:12;95:6;99:6,7,11; 100:21;103:4,13; 132:17,20;139:2; 143:23;152:2;176:15; 185:16;186:14;188:11; 192:16;205:13,20; 220:1;285:5,8;322:6; 330:6;339:4;341:12 generally (15) 9:4,20;25:22;30:17; 36:1;54:11;57:21; 60:13,18;61:25;62:11; 124:19;127:24;184:16; 217:11 generate (4) 82:17;94:11;319:2; 320:4 generated (1) 73:13 generates (1) 337:15 generation (1) 111:16 generic (2) 285:3;340:4 George (1) 224:9 Georgia (5) 158:6,7;160:21; 220:7;349:3 gets (11) 91:14,14,15,23; 100:3;158:9;177:4; 220:5;299:19,23; 314:11 giant (2)	124:6,9 gist (1) 280:7 given (18) 10:23;23:16;34:5,14; 36:3;43:4;79:25;94:24; 114:21;123:25;145:1; 146:25;147:2;155:11; 310:23;312:14;317:25; 360:24 gives (2) 80:3;223:1 giving (3) 80:11;234:16;353:15 glaciers (1) 65:8 glad (1) 354:13 Glen (2) 49:11,17 global (3) 97:2;213:25;214:12 globally (1) 54:19 goal (1) 34:22 Goecke (162) 6:2,2,4;18:4;19:5; 22:2,8;23:23;25:24; 26:11;28:1;30:11,16; 32:25;36:7,8;40:2,4; 61:2,6;62:2,13;63:8,9; 64:22;65:9,13;66:2,6, 14,19,22;67:1,5,11,16; 68:17,21;69:3,10,12, 23;70:1,4,8,11,14,22, 25;71:3,9,14;72:9,12; 73:14,21;74:5;76:2; 77:13,21;78:9;94:14; 95:8;99:2,4,13;111:8; 117:3;133:5;145:7,21, 23;160:13;178:4; 183:11,24;193:2,12; 194:2;195:13,17; 196:1;204:12;236:20, 22;249:1,3,6;251:19; 252:6,10;253:13,14,19, 22,24;254:3;266:16; 278:18;285:19;286:22; 287:23;293:24;296:23; 297:1,6,17,18,19,21; 298:22;301:15;302:8; 303:16,18,21,23;304:2, 13,14;306:11,25;307:1, 24;308:2;309:3;321:7, 8;322:23;323:16; 324:5,15;327:13; 329:14,15;331:21,24; 332:1,4;333:3,12,16; 334:18,25;335:16; 336:7;340:13,15,18,20; 344:5,7;345:1,2;346:8, 11,14,15,16;349:13;	358:16;361:16 goes (20) 47:13;48:12;66:16; 91:6;95:4;166:11,11; 206:23;207:2,3;208:5, 21;211:4;212:9; 216:14;246:6;261:17; 265:7;297:3;339:2 gold (1) 281:2 Good (62) 5:22,23,24;6:2,7,11, 14;12:1,9;18:1;30:15; 65:23;84:1;85:24; 86:22,24;87:19;88:18; 89:9;99:16,22;112:6, 23;114:8,15;121:9; 123:5,10;126:11; 143:2;144:16;152:11, 20;175:17;194:21; 197:6;208:15;232:20, 23;239:16;242:1; 263:18;265:16;269:9, 10,13,14,14;297:22; 316:23;319:16;325:16; 326:3;327:3;341:18; 354:4;357:7;359:6; 360:3,8,23;362:4 Google (1) 156:3 gosh (2) 68:23;86:21 govern (1) 217:12 government (7) 9:5;11:20;57:17,19; 68:12,14;82:14 Governmental (6) 57:5,13;58:14;60:5; 67:8;127:19 governors (1) 214:15 graduated (1) 65:17 gram (1) 272:5 grandchildren (1) 348:3 grant (6) 17:14;56:14;92:17; 101:6;205:1;245:1 grants (1) 53:14 graph (3) 166:7;264:5,19 graphs (2) 122:19;275:16 grapple (3) 213:18,21;214:13 gravel (2) 62:23;63:2 great (4) 116:19;305:8;	309:20;349:16 greater (7) 64:19;90:18;91:13, 15;259:24;260:2;293:8 greatly (2) 276:13;297:3 grew (2) 49:17;50:18 grid (1) 74:15 GROSSMAN (934) 5:2,18,23;6:1,4,7,10, 13,14,16,21;7:1,3;9:14, 19;10:4;11:1,9,17; 12:1,4,6,17,21,25;13:6, 14;14:3,12,17,22,24; 15:1,7,10,14,16,20; 16:4,13;17:1,4,7;18:6, 12,16,17,20,25;19:8, 11,16,20,24;20:1,3,5,8, 12,14,18,22;21:4,7,9, 11,13,16,21,24;22:5,9, 14,21,24;23:3,8,13; 24:1,5,10,17,21;25:7, 11,19,25;26:3,6,9,14, 25;27:8,14,24;28:2,6, 10,16,18,24;29:12,20, 24;30:1,7,9,13,17,19, 22,24;31:3,9,22,25; 32:11;33:24;34:2,5,11, 25;35:4,7,9,14,18,20, 22;36:8;37:4;38:25; 39:2,6,17,25;40:2,3,9, 12,25;41:5,9,13,15,19, 21,24;42:3,21;43:1,14, 17;44:11,16,23;45:12, 15,20,25;46:5,16,18, 21,25;47:3,7,11,15,21; 48:2,7,11,14,17,20,24; 49:1,4,8,12,15,19;50:7, 9,11,15;58:20;60:15, 17,19,21;61:21;62:4,6, 12,20;63:8,18,21,23; 68:1,5,7,16;76:2,5,8, 15,21,23;77:3,9,12,16, 19;78:10,14;84:24; 85:5;86:10;87:1,5,9; 94:14,23;99:3,7;100:6, 17;103:3,11,14,16,18; 104:5,16,19,22,25; 105:4,7,9,12,14,18,22, 25;106:10,14,17,19,24; 107:3,8,11,15,17,20, 23;108:2,9,11,15,18, 21,24;111:10;112:14, 17,25;113:2,5,14,19, 21,23;114:1,11,20; 115:6,22;116:1,3,14; 117:1,6,13,16,22,25; 118:3,5,10;119:11; 120:18;121:15;123:2, 5,8,13,17;126:4; 128:17,20,22;129:1;	130:2,10,13,15,19; 131:25;132:2,6,9; 133:6;134:1,4;135:14, 17,19,21,23,25;136:6, 11,14,19,25;137:3,6, 16;138:2,4,8;143:4; 145:2;146:10,13; 149:20;150:2,8,11,13; 151:5,9,14,21,25; 152:5,8,14;153:7,10, 12;154:21;155:6,9,13, 16,19,24;156:6,9,11, 13,18,21,23;157:2,8, 12,16,18;158:14,20,23; 159:14,17;160:23; 161:10,13,17,20,23; 164:6;165:14,16,24; 166:5,13,17,20;167:2, 8,10,12,15,19;168:7, 24;169:7,10,12,19; 170:1,4,6,9,20,25; 171:3,6,8;172:1,5,23; 177:12,19;178:8,10,14, 18;179:14,17;180:2; 181:8,11,14;183:12,18; 184:1,9,11,20,24; 185:7,12,20,24;186:6, 10,14;187:5,7,12,14; 188:23;189:3,8,12,15, 19,22,24;190:1,5,16, 18,20,22,25;191:4,14, 17,21;193:16,20,24; 195:18,25;196:4,11,14, 17,20,22;197:8,11,15, 17,24;198:2,5,7,10,12, 16;200:20,23;201:1,4, 10,12,16,19,22,25; 202:3,7,12,19,21,24; 203:2,5,8,14,17,19,23; 204:3,7,14,17,22,24; 205:7,11,15,19;207:5, 9,13,18,22,24;208:1; 209:1,5,11,16,22; 210:8,11,14,19,24; 211:6,10,14,16,18,22, 24;212:1;213:20; 214:2,6,20;215:4,8,19, 23;216:1,3,15,22; 217:1,3,5,7,9,21,24; 218:2,19,21,24;219:12, 18;220:19,21,24;221:2, 5,9,14,17;222:6,11,15, 23;223:18,23;224:2,4, 9,13,16,19;226:6,9,11, 15;227:1,4,8,18,22; 228:1,5,8,12;229:2,4,6, 16,19;230:5;231:11,14, 16,20;233:7,10,13,20, 22,25;234:3,6;235:25; 236:3;237:11,14; 238:23;239:11;241:19; 246:1,3;248:15;249:7, 13,15,19,21;250:2,7;
---	--	--	---	---

<p>252:7,11;253:1,6,9,12, 16;254:5,11,14; 255:21;256:5,14,17; 257:6,10,14,19,22; 258:4,9,12,14,17,21, 25;259:2,7,10,21; 260:6,13,17,20,22; 261:14,23;262:1,5,7, 13,22,24;263:2,7,11, 14,18,22;264:2,14,16, 18,21;266:13,24; 267:11,14,17,19;268:3, 12;272:9,11,18,21,25; 273:2,4;274:18,23; 275:1,5;276:2,4,21; 277:14,17;278:20; 279:2,8,14,16,19; 280:2,5,7,12;281:14, 17,22,24;285:21,23; 286:23;287:6,24; 288:1,3,5,20;289:6,10, 15,17;290:14,21;291:2, 12,17,20;293:9,11,14, 18,22;294:5,7,10,16, 18,23;295:1,4,8,11,14, 17,19,22,25;296:2,4, 10,12,24;297:5,7,9,13, 18;298:12,18;301:8, 18;302:2;303:14,17,19, 22,24;304:3,11;305:7, 9,15,18,20,23;306:2, 18,23;307:22;308:1, 25;309:2;317:3,21; 318:2,6,13,16,22; 319:8,24;320:1,13; 321:7;322:19;323:12, 14,19,22;324:3,6,11; 327:5;331:13,17,20,22; 332:18,24;333:12,19, 20,21;334:3,8,11,20, 24;335:18,22,24; 336:3;340:14,17; 343:2,16;344:6,16,20, 24;346:9,10,13,15,17, 18;348:1,6;349:12,14, 21,25;350:2,3,9,16,24; 351:5,8,15,19;352:1,6, 14,17,19;353:4,8,12, 22,23,24;354:4,6,9,13, 18,21;355:2,6,8,11,14, 17,20,25;356:7,22; 357:3,7,11,14,17,21, 25;358:4,11,14,20; 359:4,12,17,19,22; 360:3,8,14,18,20,23; 361:4,7,12,14,17,23; 362:1,5,7,17</p> <p>groups (4) 283:5;298:4;299:6,6</p> <p>grow (1) 52:1</p> <p>growing (1) 125:22</p> <p>growth (1) 51:18</p> <p>guaranteed (1) 327:14</p> <p>guarantees (1) 327:16</p> <p>Guckert (6) 13:8,24;21:19;42:9; 294:3,13</p> <p>guess (37) 8:17;10:8;16:4; 17:15;18:12;20:22,23, 25;21:2;26:18;27:8; 33:1;48:10,20;61:12; 111:12;152:12;200:24; 235:23;257:11;259:24; 268:10;274:25;276:24; 306:18;317:9;318:2; 321:11;322:19;324:17; 330:15;331:11;332:5, 5;334:13;339:6;341:6</p> <p>guidance (1) 65:23</p> <p>guideline (3) 288:11;314:15,17</p> <p>guidelines (25) 67:3,13;93:4;283:1; 285:9,12;287:16; 288:7;289:21;302:18, 20,23,24;303:1,5,6,8; 304:25;306:12;308:10; 312:1,7;327:20; 328:13;350:21</p> <p>guides (2) 98:14;290:2</p> <p>guy (1) 314:2</p>	<p>handcuffed (1) 200:7</p> <p>handed (1) 249:15</p> <p>handful (1) 56:25</p> <p>handing (1) 153:5</p> <p>handle (9) 17:9;23:10;34:17,18; 42:5;43:25;296:11; 320:9;350:15</p> <p>handling (3) 22:19;33:2,12</p> <p>handout (1) 158:15</p> <p>hands (1) 288:11</p> <p>Hanford (3) 58:1;300:21,22</p> <p>hang (1) 149:17</p> <p>happen (4) 176:16;237:11; 282:20,21</p> <p>happened (8) 68:1;224:6;226:19; 238:23;260:9;300:2; 325:19;355:9</p> <p>happening (1) 10:4</p> <p>happens (3) 43:23;121:12;158:1</p> <p>happy (3) 9:17;54:7;77:5</p> <p>hard (23) 15:14,16;37:23;56:1; 65:23;66:3,5;74:12,14, 75:17;162:9;166:6; 180:23;188:7;199:15; 212:15;220:3;232:21; 269:16;280:21;285:2; 315:8;328:24</p> <p>harder (3) 264:13;315:12,12</p> <p>hard-to-read (1) 261:18</p> <p>Harford (4) 49:11;59:21;62:15; 299:12</p> <p>harm (1) 215:15</p> <p>harping (1) 183:19</p> <p>HARRIS (89) 5:24,24;6:1;9:18; 10:9,12;11:2;13:15; 14:5,7,14,21;15:12,19; 16:3;17:1,6;18:5,16,18, 23;19:3,6,10;20:11,13; 21:18,22,25;22:3,7; 23:12,15,24;24:3;25:1, 8;28:19,21;29:12;30:5,</p>	<p>8,10,19,23;31:5,11,24; 32:10;35:1,5,8,13,15; 42:12;44:14,18;45:24; 46:1,11,17,20,23;47:8; 294:3,6,9,12;295:2,5; 296:2,5,11,22,25; 302:1;305:15,19; 306:5,22;353:23,25; 356:14,18;357:2; 358:22;360:24;361:3; 362:23</p> <p>Harvard (6) 268:9,21;274:16,16, 21;275:3</p> <p>hat (1) 149:18</p> <p>hazard (4) 120:19;352:25; 353:2,2</p> <p>hazardous (5) 59:9;287:10;288:8; 292:11,12</p> <p>hazards (1) 51:20</p> <p>head (7) 97:6;108:5;135:1; 181:4;344:25;345:23; 352:1</p> <p>Health (173) 6:20;50:1,22,23,25; 51:1,15,17,21;52:6,12, 21,22;53:4;54:10,10, 15;55:7,9,24;59:3,8; 60:13,22;61:23;63:5; 64:3,6,7,8,11,12;71:5; 72:12,15;73:5,14,17; 74:11;75:15;76:10; 77:2;78:2,16;79:1,3, 25;87:7,12,13;89:5,8; 100:20,24;101:23,24; 109:16,19;111:13,22; 112:1,6;118:24; 120:19;121:11;124:12, 20,21,25;125:4,12,15; 126:12;129:18,25; 134:16,18;141:11; 142:24;144:8,12; 146:9,18;149:11,14; 150:9;164:16;169:25; 173:4,6,21;194:7,23; 195:11;196:10,19; 199:12,17,18,23;200:5; 203:11;205:2,6; 212:24;218:18;224:1, 5,17;230:6;240:3; 242:21;243:20;244:22; 246:22;247:2,8,14; 251:23;252:15,23; 254:21;255:6;256:9; 262:20;268:24;269:6, 21,23,23;270:5;271:9; 274:12,17;275:4,7; 282:6,13;283:9,21;</p>	<p>284:1;285:11;287:14; 288:14;289:5,8,10,12, 20,21;290:8;292:5,7, 11,17,17,23;293:8; 326:23;327:2,6,15; 336:16;339:18;350:6, 14;351:4,11;352:23, 25;353:1,2,2</p> <p>healthy (5) 126:19;132:24; 273:11;282:16;283:11</p> <p>hear (5) 10:8;13:14;42:14; 249:8;344:24</p> <p>heard (8) 11:15;23:18;24:6; 36:7;80:21;117:2; 185:12;358:17</p> <p>hearing (52) 5:3;12,16,17;7:6,21; 8:25;10:6;13:5,17; 14:12;18:15,4,6,11,18, 23,25;16:17,17;17:7, 11,18;18:18;19:1,13; 22:12;23:17;24:4,9,15; 25:4;26:16;27:9,15; 28:19;30:8;31:17;45:3; 46:15;59:21;76:22; 140:5;214:7;259:2; 296:6;336:6,13;342:6; 350:14;353:15;362:24</p> <p>hearings (5) 9:7;7;10:11;12:7; 335:2</p> <p>hearsayer (1) 356:10</p> <p>heart (2) 72:7;263:2</p> <p>heat (6) 64:17;237:4,5;239:8, 10;301:12</p> <p>heater (2) 239:9,10</p> <p>heavily (1) 81:11</p> <p>heavy (4) 294:23;358:15,15; 361:9</p> <p>Heights (5) 6:5,9;42:23;300:6; 302:10</p> <p>held (3) 53:3;283:5,6</p> <p>help (16) 51:20;57:19;66:1; 84:9;92:7;130:2,6; 182:13;232:5;265:11; 298:3;300:6;308:14; 314:2,3;356:25</p> <p>helped (2) 298:16,16</p> <p>helpful (3) 31:17;93:5;357:4</p>	
<p>grounds (1) 352:24</p> <p>group (9) 16:2;43:3,18;52:23; 205:14;212:19;218:5; 298:20;299:12</p>	<p style="text-align: center;">H</p> <p>half (15) 150:21;151:20,23; 222:14,15,21;232:20; 246:18;256:11,12; 272:5,5,11;283:7; 342:4</p> <p>halfway (1) 197:18</p> <p>hallmarks (1) 87:19</p> <p>Han (1) 71:10</p> <p>hand (5) 49:12;174:2;200:17; 235:19;321:16</p> <p>Handbook (1) 307:7</p>	<p>harder (3) 264:13;315:12,12</p> <p>hard-to-read (1) 261:18</p> <p>Harford (4) 49:11;59:21;62:15; 299:12</p> <p>harm (1) 215:15</p> <p>harping (1) 183:19</p> <p>HARRIS (89) 5:24,24;6:1;9:18; 10:9,12;11:2;13:15; 14:5,7,14,21;15:12,19; 16:3;17:1,6;18:5,16,18, 23;19:3,6,10;20:11,13; 21:18,22,25;22:3,7; 23:12,15,24;24:3;25:1, 8;28:19,21;29:12;30:5,</p>	<p>8,10,19,23;31:5,11,24; 32:10;35:1,5,8,13,15; 42:12;44:14,18;45:24; 46:1,11,17,20,23;47:8; 294:3,6,9,12;295:2,5; 296:2,5,11,22,25; 302:1;305:15,19; 306:5,22;353:23,25; 356:14,18;357:2; 358:22;360:24;361:3; 362:23</p> <p>Harvard (6) 268:9,21;274:16,16, 21;275:3</p> <p>hat (1) 149:18</p> <p>hazard (4) 120:19;352:25; 353:2,2</p> <p>hazardous (5) 59:9;287:10;288:8; 292:11,12</p> <p>hazards (1) 51:20</p> <p>head (7) 97:6;108:5;135:1; 181:4;344:25;345:23; 352:1</p> <p>Health (173) 6:20;50:1,22,23,25; 51:1,15,17,21;52:6,12, 21,22;53:4;54:10,10, 15;55:7,9,24;59:3,8; 60:13,22;61:23;63:5; 64:3,6,7,8,11,12;71:5; 72:12,15;73:5,14,17; 74:11;75:15;76:10; 77:2;78:2,16;79:1,3, 25;87:7,12,13;89:5,8; 100:20,24;101:23,24; 109:16,19;111:13,22; 112:1,6;118:24; 120:19;121:11;124:12, 20,21,25;125:4,12,15; 126:12;129:18,25; 134:16,18;141:11; 142:24;144:8,12; 146:9,18;149:11,14; 150:9;164:16;169:25; 173:4,6,21;194:7,23; 195:11;196:10,19; 199:12,17,18,23;200:5; 203:11;205:2,6; 212:24;218:18;224:1, 5,17;230:6;240:3; 242:21;243:20;244:22; 246:22;247:2,8,14; 251:23;252:15,23; 254:21;255:6;256:9; 262:20;268:24;269:6, 21,23,23;270:5;271:9; 274:12,17;275:4,7; 282:6,13;283:9,21;</p>	<p>284:1;285:11;287:14; 288:14;289:5,8,10,12, 20,21;290:8;292:5,7, 11,17,17,23;293:8; 326:23;327:2,6,15; 336:16;339:18;350:6, 14;351:4,11;352:23, 25;353:1,2,2</p> <p>healthy (5) 126:19;132:24; 273:11;282:16;283:11</p> <p>hear (5) 10:8;13:14;42:14; 249:8;344:24</p> <p>heard (8) 11:15;23:18;24:6; 36:7;80:21;117:2; 185:12;358:17</p> <p>hearing (52) 5:3;12,16,17;7:6,21; 8:25;10:6;13:5,17; 14:12;18:15,4,6,11,18, 23,25;16:17,17;17:7, 11,18;18:18;19:1,13; 22:12;23:17;24:4,9,15; 25:4;26:16;27:9,15; 28:19;30:8;31:17;45:3; 46:15;59:21;76:22; 140:5;214:7;259:2; 296:6;336:6,13;342:6; 350:14;353:15;362:24</p> <p>hearings (5) 9:7;7;10:11;12:7; 335:2</p> <p>hearsayer (1) 356:10</p> <p>heart (2) 72:7;263:2</p> <p>heat (6) 64:17;237:4,5;239:8, 10;301:12</p> <p>heater (2) 239:9,10</p> <p>heavily (1) 81:11</p> <p>heavy (4) 294:23;358:15,15; 361:9</p> <p>Heights (5) 6:5,9;42:23;300:6; 302:10</p> <p>held (3) 53:3;283:5,6</p> <p>help (16) 51:20;57:19;66:1; 84:9;92:7;130:2,6; 182:13;232:5;265:11; 298:3;300:6;308:14; 314:2,3;356:25</p> <p>helped (2) 298:16,16</p> <p>helpful (3) 31:17;93:5;357:4</p>

<p>helping (2) 59:1;67:23</p> <p>helps (2) 83:22;121:10</p> <p>herein (2) 80:22;212:5</p> <p>here's (13) 38:7,22,22;43:17; 72:23;74:7;97:10,11, 12;100:4;178:20; 248:4;323:19</p> <p>hesitate (1) 346:4</p> <p>hesitating (1) 317:9</p> <p>heterogeneity (4) 71:11;143:15; 148:17,25</p> <p>heterogeneous (1) 141:22</p> <p>Hi (1) 41:21</p> <p>hiatus (1) 308:12</p> <p>high (22) 50:17,18;73:1;79:18; 90:7;97:12,18;109:15, 18;122:12;126:23; 141:1,6,23;142:15; 162:7;176:2;239:5; 256:16;320:20;333:25; 339:25</p> <p>higher (40) 38:9;75:5;79:12; 84:13;110:14;126:2; 134:22;148:8,13,18,21; 149:1;170:24;184:18; 185:2,5;186:20,22; 187:2,2;192:12,15; 210:25;244:9;250:21, 24,24;259:23;265:6,7; 269:22;274:9;307:6, 12,15;321:4;330:2,5,6; 333:6</p> <p>highest (11) 37:16,19;150:5; 153:25;162:10;165:1; 195:6,7;260:11,11; 337:21</p> <p>high-level (1) 254:18</p> <p>highlighting (1) 265:15</p> <p>highlights (1) 232:9</p> <p>highly (1) 117:10</p> <p>highways (1) 329:18</p> <p>historical (1) 121:9</p> <p>historically (3) 52:15;67:7;95:16</p>	<p>History (1) 7:18</p> <p>hits (1) 232:9</p> <p>hoc (2) 57:24;65:20</p> <p>hold (16) 15:2,4,4;60:15,19; 91:18;145:4;168:15; 170:9;178:8,8;223:23; 231:11;235:14;331:17; 332:18</p> <p>holistic (1) 83:11</p> <p>holistically (1) 84:16</p> <p>Holland (4) 7:25;42:17;356:8; 357:12</p> <p>Hollingsworth (1) 70:11</p> <p>home (13) 73:6,12;83:16;87:15; 204:8;216:25;236:18; 237:5;240:12;281:10, 11;304:23;358:18</p> <p>homes (14) 59:4;65:1;83:15; 126:2;188:12,12; 197:3;234:24,24; 237:4,4;240:18;245:4; 308:8</p> <p>homogenous (1) 141:20</p> <p>hone (1) 32:1</p> <p>honed (1) 33:16</p> <p>honest (1) 99:22</p> <p>Honor (2) 346:17;351:14</p> <p>hope (3) 351:22,23;353:15</p> <p>hopefully (4) 22:4;197:19;213:18; 313:18</p> <p>hoping (1) 48:9</p> <p>Hopkins (14) 6:19;49:25;50:22; 51:5;52:4,21;53:3; 54:12;80:9,18;232:7; 304:16,18,21</p> <p>horizon (1) 84:18</p> <p>horizontal (2) 209:6;260:18</p> <p>horrible (1) 301:6</p> <p>hospital (2) 240:3;262:11</p> <p>host (2)</p>	<p>89:5;206:20</p> <p>hot (10) 158:12;170:18,20; 188:3;339:13,14,22,24, 25;340:3</p> <p>hour (4) 26:20;282:7;356:15, 16</p> <p>hour-ish (1) 356:17</p> <p>hours (5) 9:10,11;295:13; 356:15;362:12</p> <p>house (2) 242:10;294:2</p> <p>houses (2) 238:23;247:4</p> <p>Houseworth (5) 8:16;354:25;355:17, 21;357:11</p> <p>housing (2) 227:9,12</p> <p>How's (1) 30:3</p> <p>huddle (1) 237:6</p> <p>huge (3) 110:5;176:20;345:16</p> <p>hugely (1) 246:16</p> <p>human (14) 9:21;29:19,21;72:12, 16,25;79:1,2,3;80:7; 81:8;100:20;138:14,14</p> <p>humans (4) 71:18;73:3;79:17; 80:6</p> <p>hundred (6) 12:23;154:2;175:3, 10;196:12;307:24</p> <p>hundreds (2) 31:14;321:15</p> <p>hungry (2) 152:14;197:12</p> <p>hydrocarbons (1) 126:5</p> <p>Hygiene (6) 57:4;60:12,17;61:22; 76:10;78:15</p> <p>hygienist (10) 51:11,13,14,23; 285:6,17;286:3,14,18; 287:4</p> <p>Hygienists (5) 57:6,13;60:5;67:9,13</p> <p>hypersensitivity (1) 175:19</p> <p>hypothesis (6) 87:2;101:2,5,7,8; 208:17</p> <p>hypothesize (1) 194:24</p> <p>hypothetical (5)</p>	<p>99:11;118:7;332:16; 334:14,15</p> <p>hypotheticals (1) 328:16</p> <p style="text-align: center;">I</p> <p>I-95 (2) 329:24;349:8</p> <p>IBM (2) 58:24;67:6</p> <p>idea (3) 42:10;204:20;362:4</p> <p>identification (12) 47:18;156:16;157:4; 202:14;203:25;204:10; 224:22;231:24;236:10; 250:4;264:4;268:17</p> <p>identified (1) 315:14</p> <p>identify (5) 5:21;199:10;223:23; 231:14;235:20</p> <p>idle (1) 225:7</p> <p>idling (10) 97:9,10,18;117:20; 118:15;119:4;124:11; 224:14;228:24,25</p> <p>ie (1) 133:10</p> <p>illustrates (1) 269:8</p> <p>imagery (1) 65:3</p> <p>impact (12) 64:9,19;71:18;97:9; 205:5;229:10;230:14; 262:16;342:12;343:13; 344:11,14</p> <p>impacted (2) 63:4;176:11</p> <p>impacting (2) 63:6;206:21</p> <p>impacts (6) 63:5;73:24;74:11; 188:8;225:9;292:7</p> <p>implement (1) 328:7</p> <p>implication (1) 262:13</p> <p>implications (4) 111:6,12,13,14</p> <p>implies (1) 120:22</p> <p>imply (2) 64:11;144:15</p> <p>implying (4) 161:14;325:18; 326:6;346:5</p> <p>importance (1) 144:19</p> <p>important (13)</p>	<p>25:10;32:2,3;88:14; 127:2,9;136:21;137:1; 212:23;256:7;284:22; 290:23;319:5</p> <p>importantly (1) 225:8</p> <p>impose (2) 12:17;350:19</p> <p>impossible (1) 214:21</p> <p>improper (1) 314:16</p> <p>improve (3) 73:5;245:5;344:5</p> <p>improved (2) 225:13,24</p> <p>improvement (1) 311:1</p> <p>inappropriate (1) 130:7</p> <p>inappropriately (1) 182:3</p> <p>inch (1) 294:25</p> <p>incidence (1) 75:5</p> <p>Incident (3) 204:5,7;218:22</p> <p>include (9) 5:7;45:5;73:8; 269:24;304:20;327:21; 328:19,21;344:4</p> <p>included (1) 299:24</p> <p>includes (3) 44:24;337:11;358:25</p> <p>including (11) 11:11;52:17;60:25; 73:7;131:8;137:13,25; 186:25;270:15;312:13; 333:14</p> <p>income (1) 228:14</p> <p>incorporate (3) 192:13;328:5,12</p> <p>incorporated (1) 328:9</p> <p>incorrect (7) 41:4;158:19,20,21; 317:7,10;336:3</p> <p>incorrectly (1) 336:6</p> <p>increase (28) 71:23,24;87:24;88:1; 90:5;102:4;187:7; 238:10,11,13,19,20; 243:11;244:10;250:21; 251:3;260:24,24; 261:3,5,10,12,20; 265:19;275:13;292:13; 327:8;330:21</p> <p>increased (6) 63:1;90:16;126:13;</p>
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<p>132:17;238:3;265:18 increases (3) 125:16;197:2;210:15 increasing (5) 209:12;255:7;265:8, 8,19 indeed (1) 355:5 independent (6) 83:14;278:3,4; 336:23;339:16,17 index (2) 223:14;260:18 indicate (4) 24:22;109:6;163:16; 225:17 indicated (5) 17:10;42:8;119:21; 348:8;355:12 indicates (1) 118:14 indicating (1) 167:20 indication (3) 36:23;225:15;257:8 indicators (1) 238:8 individual (15) 43:22,24;44:8;47:24; 84:9,10;85:2;153:6; 199:8,11,13,16;311:17, 23;354:8 individually (1) 43:3 individuals (6) 9:22;44:12;46:6; 268:4,6,6 indoor (9) 52:2;54:14;73:9; 78:7;125:6;236:4; 240:12;241:12,13 indoors (4) 125:1,2,3,9 Indulgence (1) 340:13 industrial (21) 51:11,13,14,23;57:4, 6,13;60:5,12,17;61:22; 67:8,13;76:10;78:15; 285:5,17;286:3,18; 287:4;312:13 industries (1) 60:6 inevitable (1) 292:8 Infant (3) 224:1,5,17 infiltration (1) 240:10 inflammation (2) 81:7;141:2 influence (3) 42:14;69:16,21</p>	<p>inform (3) 265:11;314:2,3 information (9) 31:13;35:19;46:2; 55:6;242:2;296:7; 297:14;313:16;339:8 informative (3) 122:2;124:23;269:8 informed (2) 255:18;293:22 informs (1) 125:4 inhale (1) 301:14 inhaling (1) 72:4 inherent (6) 112:12,22,23; 216:10,12;292:4 inherently (1) 215:21 In-Home (3) 235:21;236:6,23 initial (2) 269:1;302:17 initially (1) 44:25 Inkyu (1) 71:10 inner (1) 73:22 Inner-City (3) 236:5;237:3;240:7 input (7) 93:9,12;96:9,17; 97:20;179:22;308:15 inputs (18) 66:10,16;93:6,16; 94:11,18,19;98:1; 153:23;156:2;181:20; 183:15;186:25;187:18; 195:8;273:20;317:14; 341:14 inquiry (1) 87:23 inside (3) 73:11,13;173:7 insignificant (1) 342:23 instance (11) 105:2;106:2;162:25; 163:2;175:8;181:7; 201:8;236:19;243:5; 258:7;281:23 instead (6) 183:14;213:9; 239:23;253:25;304:22; 317:5 instill (1) 81:6 Institute (2) 51:3;285:10 insufficient (1)</p>	<p>126:22 insurance (1) 302:3 integrate (1) 255:13 Integrated (5) 201:14;202:1,3; 204:16;276:12 intended (2) 13:25;50:23 intends (1) 44:3 intent (3) 326:7;353:13,19 interest (4) 74:9;75:7;101:10; 349:10 interested (6) 55:12;57:25;69:18; 124:20,24;301:1 interesting (3) 74:8,17;301:11 interestingly (1) 265:12 interests (1) 302:5 interior (1) 160:19 international (1) 56:18 Interquartile (4) 222:24;241:7,10,15 intersections (1) 330:15 interval (6) 89:16;90:14,15; 259:13,25;260:2 intervention (1) 245:2 into (48) 7:10;8:9;14:1;20:24; 26:10;31:16;33:5;36:2; 46:8;58:10;61:9;66:10, 16;94:21;96:4;99:14; 100:13;102:17;129:1; 136:9;138:16;162:14, 21,23;163:10;164:23; 171:15;188:7,21; 192:13;199:7;207:19; 217:13;220:4;221:12; 233:2;240:19;255:13; 257:1;273:19;308:15; 312:10;313:20;314:4; 328:4,4;336:13;361:18 introduce (2) 47:5;223:16 introduced (3) 34:8;298:20;343:8 introducing (1) 264:10 introduction (3) 178:25;225:5;226:20 investigating (2)</p>	<p>55:10;326:21 investment (1) 82:14 invitations (1) 57:22 involve (4) 9:20;11:22;66:7; 316:14 involved (11) 9:22;53:22;93:8; 94:18;135:8;228:8; 297:23,25;299:19,23; 300:1 involves (2) 9:22;12:22 IQ (1) 126:8 IQR (1) 222:19 irritant (1) 140:18 irritation (3) 140:19,20,22 ISA (7) 145:10;222:3; 249:17,21,24,25;250:2 isoconcentration (1) 163:10 isolate (1) 75:8 isopleth (8) 153:2;160:1;164:15; 173:1;174:7;175:1; 190:25;221:11 isopleths (2) 172:9;331:8 issue (21) 13:21;40:5;63:1; 100:8;108:8,9;121:4; 124:7;171:8;176:22; 177:1,1;214:11,15; 296:5;306:6;350:14; 351:1,3,11;353:1 issued (4) 108:10,12;109:4; 294:21 issues (20) 29:15;32:6,17,18; 47:14;52:17,23,25; 60:14,22;61:23;76:10; 78:16;103:6;118:19; 124:14;190:19;282:3; 288:19;297:2 issuing (2) 12:17;343:14 it's (1) 94:24 items (1) 35:3 iterates (1) 321:14 iteratively (1) 321:16</p>	<p style="text-align: center;">J</p> <p>January (13) 7:7,8,9,11;13:17; 159:2,3,17,21;160:16; 161:8;162:4;172:18 jeez (2) 88:9,21 Jersey (1) 224:8 Jison (15) 7:15;8:20;10:13,17; 11:13,19;12:10;13:7, 17;19:4;22:2,3;36:18; 40:6;296:7 Jison's (2) 7:8;13:10 job (16) 53:9;58:9;168:16; 215:10;242:1;282:17; 286:20,24,25;287:21; 290:9;291:6;336:25; 351:4;353:12,16 jobs (1) 282:22 Johns (14) 6:19;49:25;50:22; 51:4;52:4,21;53:2; 54:12;80:8,18;232:7; 304:16,18,20 Johnson (2) 59:3,3 join (1) 57:1 joint (5) 18:14;53:23,24;54:7; 84:22 jointly (1) 17:20 Jonathan (1) 128:10 journal (4) 56:10;64:3;203:11; 244:20 journals (2) 56:8;87:11 judgment (8) 32:13;91:16;115:22; 146:17;287:18;292:15; 317:12,19 judgments (7) 81:13;107:6;108:6,7; 286:11;288:12;292:16 July (4) 204:2,3,16;268:13 jurisdiction (1) 217:14 justifiability (1) 177:6 justified (1) 169:21 justify (1)</p>
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100:15 juxtaposition (1) 330:14	76:25;79:6,18,25;80:3, 22;81:3,8,11,20,23; 82:3,4,17,20;83:5,8,11, 23;84:14,16,16,22,22; 85:1;86:6,24;88:2,8,11, 25;89:1,6,12;90:8,25; 91:2,21,22;92:7,15,17, 18;93:22;94:12;95:21; 96:21,22;97:7,16,17, 24;98:9,11,12,14,15, 15,15,16,20;99:19,19, 24,25,25;101:5;102:5, 17,18,18,20,20,25; 103:7;109:24;110:1, 17;111:15,20;113:12; 115:18;117:8,21; 119:5,5;120:14;121:9, 10,13,14;122:19;124:7, 24,25;125:4,14; 126:10;127:2,8,10,16; 129:8,16;130:24,25; 131:9,17;132:16; 133:17;134:14,15,21; 138:20,20,25,25,25; 139:3,6,7;140:21,22, 24;141:10,11,24;142:5, 18,18,22;143:12,12,13, 14,16;144:2,3;146:20, 21;147:9,10,10,11; 148:2,20;149:12; 150:18,22;152:2,3,6,6; 154:6,9;158:3,7; 162:25;166:18,22,22, 23;176:18,19;177:4; 178:23,24;179:1,5,6; 180:18,18,19,20,23; 181:3,4,5;182:10,12, 14,20;188:6,7;194:11, 17;213:11,12,14; 218:16;223:14,21; 225:13;226:4;229:3; 232:9;234:14,17,22; 235:4,6,6,8;237:5; 238:7,7,10,17;239:6, 10;240:8;242:7; 243:17;245:6;247:1, 16;250:11;251:5,6; 252:2,14;254:25; 255:13,14,18;256:25; 258:5;260:10;261:9; 262:11;265:15,20; 269:8;271:4;272:5; 274:1,4,11;278:1; 280:23;281:1;282:24; 283:8,10,11;284:8; 287:14;289:20,24,25; 290:2,6,11;296:16,19; 298:4;300:6;302:5,13, 17;303:5;307:13; 308:14;309:7;310:12, 13;311:7,9,10,13,22; 312:10;313:2,13,14,21, 21,23,25;314:1;315:2,	9,12;316:1,5,5,21; 317:5;318:20;319:16, 18;320:4,20;321:15, 24;322:11,16;325:10; 326:4,22;327:9,10,11; 328:6,9,9,13;329:1; 330:14,18;337:23; 338:3,4,5,6,13,21; 339:7,14;341:12,20; 342:5;347:16;350:20	351:11 large (6) 55:1;74:17;75:13; 82:7;264:25;302:19 larger (6) 74:24;79:12;92:10; 102:13,13;130:4 larger-scale (1) 64:24 Larry (1) 6:11 last (36) 7:5;18:2;24:3,9,15; 27:9;28:8,19;30:6,7, 18;45:4;54:13,14;56:2; 61:2;64:3;65:10;195:2; 199:4;206:12;212:21; 233:5;263:17;267:4,7, 17,18,20;268:7;271:6; 282:3;291:23;343:17; 358:14;359:6 late (6) 9:11,11;15:3;16:8; 269:15;358:19 lately (1) 300:19 later (11) 6:25;22:6;27:4; 35:11;36:3;51:24; 122:5;127:3;153:24; 205:18;359:24 latter (1) 95:2 law (2) 322:22;327:24 lawsuit (4) 59:20;67:14;68:1,8 lawsuits (5) 59:19;60:8;135:8; 301:2,7 lawyers (2) 41:6;297:12 layperson (1) 36:19 laywitness's (1) 36:22 lead (7) 53:8;71:23;117:15; 120:8,8;126:1,9 Leadership (2) 53:12;57:10 leading (16) 103:20;104:6;109:3; 111:8;117:21,22; 118:5;185:10;252:6; 277:17;278:18;285:19; 286:22,24;287:23,24 lean (1) 290:7 leans (1) 290:5 learn (2) 241:23;294:3	learned (1) 242:14 least (17) 17:18,25;18:9;34:8, 19;35:3;45:21;109:25; 112:10;114:5,22; 167:22;183:13;262:14; 288:5;354:7;362:21 leave (7) 15:5;45:15,17; 217:22;282:17;320:6; 325:20 leaving (2) 22:18,24 led (3) 53:11,14;140:14 Lee (2) 224:11,13 leery (1) 9:23 leeway (1) 134:14 left (5) 154:6;158:13;210:9; 257:7;293:17 left-hand (5) 146:3,4;173:8;207:8; 208:9 legal (5) 59:19,20;113:5; 133:5;217:22 legally (1) 283:4 legislation (1) 14:8 legitimate (1) 118:10 length (3) 23:16;26:1;356:10 less (25) 82:22;90:7;91:12,15; 115:11;132:8;134:17; 142:19;143:6;164:20; 176:13;206:25;208:14; 211:9;240:9,10,20; 255:12;261:4,4; 269:16;271:5;315:7; 330:8,9 letter (12) 135:1;303:12,12,13; 304:7,16,20;305:16; 306:19;307:2,25; 308:23 letterhead (2) 304:17,21 letters (5) 297:4,5,11;303:8; 309:10 letting (2) 291:11;349:10 leukemia (1) 310:20 level (105)
K				
Kansas (1) 269:1 Karen (3) 6:5;47:16;163:3 keep (29) 15:10;16:9,14;22:22; 25:10;34:16;61:18; 139:21;141:8;142:17; 144:2;148:3;150:6; 152:12;157:14;179:6; 181:11;182:24;183:19; 185:8;191:11;248:2; 283:10;295:17;296:13; 302:13;352:16;354:19; 356:6 keeping (5) 139:24;142:18; 162:24;288:19;294:18 keeps (2) 58:9;185:9 Kensington (7) 6:5,8;41:25;42:23; 300:5;302:10;313:24 kept (1) 191:11 key (5) 94:9,10;142:22; 146:10;269:2 kid (3) 131:5;176:18;239:2 kids (52) 59:7;63:7;82:10,11; 83:24;88:16,19,19,21, 22;101:15;102:21; 126:7,23,25;127:6,7,8; 133:14,18;171:25,25; 175:19,24,25;176:1,3, 5;197:2;205:4;206:24, 25;207:2,10;208:4,10, 17;209:3,14,15;235:7; 239:2,7,15,23;240:13, 14;242:10;311:14,14, 360:7;362:14 kids' (2) 101:23;234:24 kilometers (1) 225:11 kind (363) 17:16;32:19;39:17; 41:11;44:13;48:24; 51:12;54:6,6;56:15,18; 57:23;58:2,16;61:9; 64:11;65:5,19,20;66:1, 10,12,16;67:23;68:25; 69:18;70:16,18,19; 71:22,23;72:6,25;73:5, 25;74:14,22;75:9,17;	119:5,5;120:14;121:9, 10,13,14;122:19;124:7, 24,25;125:4,14; 126:10;127:2,8,10,16; 129:8,16;130:24,25; 131:9,17;132:16; 133:17;134:14,15,21; 138:20,20,25,25,25; 139:3,6,7;140:21,22, 24;141:10,11,24;142:5, 18,18,22;143:12,12,13, 14,16;144:2,3;146:20, 21;147:9,10,10,11; 148:2,20;149:12; 150:18,22;152:2,3,6,6; 154:6,9;158:3,7; 162:25;166:18,22,22, 23;176:18,19;177:4; 178:23,24;179:1,5,6; 180:18,18,19,20,23; 181:3,4,5;182:10,12, 14,20;188:6,7;194:11, 17;213:11,12,14; 218:16;223:14,21; 225:13;226:4;229:3; 232:9;234:14,17,22; 235:4,6,6,8;237:5; 238:7,7,10,17;239:6, 10;240:8;242:7; 243:17;245:6;247:1, 16;250:11;251:5,6; 252:2,14;254:25; 255:13,14,18;256:25; 258:5;260:10;261:9; 262:11;265:15,20; 269:8;271:4;272:5; 274:1,4,11;278:1; 280:23;281:1;282:24; 283:8,10,11;284:8; 287:14;289:20,24,25; 290:2,6,11;296:16,19; 298:4;300:6;302:5,13, 17;303:5;307:13; 308:14;309:7;310:12, 13;311:7,9,10,13,22; 312:10;313:2,13,14,21, 21,23,25;314:1;315:2,	kinds (5) 38:20;54:25;82:25; 103:21;237:19 kitchen (2) 237:6;239:8 Klein (8) 298:8,9,10,11,11,23; 300:2,10 Klein's (1) 299:13 knew (5) 13:19;65:19;129:17; 281:3;301:8 Knolls (14) 131:21;132:12; 133:11;151:10;167:5; 171:4,16;172:8,11; 175:20;308:4;338:25; 339:5;341:3 knowing (7) 16:11;29:19;164:10, 11;242:14;273:8; 275:25 knowledge (8) 134:7;140:14; 180:10;198:25;284:24; 326:7;336:8;337:2 known (3) 5:10;140:17;277:2	LA (1) 75:9 label (2) 266:19,21 labeled (22) 36:11;119:16,19; 153:3,14,17;154:1; 159:2;163:8;174:11; 175:4;176:6;187:11; 219:15;220:25;223:25; 231:1,5;233:9;258:16; 331:22;332:1 labeling (1) 261:15 labels (1) 222:19 land (4) 15:9;77:20;214:6; 307:7 language (4) 39:3;43:22;44:8;	learned (1) 242:14 least (17) 17:18,25;18:9;34:8, 19;35:3;45:21;109:25; 112:10;114:5,22; 167:22;183:13;262:14; 288:5;354:7;362:21 leave (7) 15:5;45:15,17; 217:22;282:17;320:6; 325:20 leaving (2) 22:18,24 led (3) 53:11,14;140:14 Lee (2) 224:11,13 leery (1) 9:23 leeway (1) 134:14 left (5) 154:6;158:13;210:9; 257:7;293:17 left-hand (5) 146:3,4;173:8;207:8; 208:9 legal (5) 59:19,20;113:5; 133:5;217:22 legally (1) 283:4 legislation (1) 14:8 legitimate (1) 118:10 length (3) 23:16;26:1;356:10 less (25) 82:22;90:7;91:12,15; 115:11;132:8;134:17; 142:19;143:6;164:20; 176:13;206:25;208:14; 211:9;240:9,10,20; 255:12;261:4,4; 269:16;271:5;315:7; 330:8,9 letter (12) 135:1;303:12,12,13; 304:7,16,20;305:16; 306:19;307:2,25; 308:23 letterhead (2) 304:17,21 letters (5) 297:4,5,11;303:8; 309:10 letting (2) 291:11;349:10 leukemia (1) 310:20 level (105)
L				

<p>37:16;65:4;102:8,9; 110:17;113:8,16; 114:5,20;119:22; 130:1;131:12;133:19; 136:5,9;140:2,3,4; 141:6,8,13,25;142:12; 143:22,22,24;144:1,2, 22;147:20;148:3,9,14; 153:24;154:14;158:16, 19,21,22;164:2; 167:25;175:22;187:20; 192:23;195:4,9,24,24; 196:9,18;197:1; 199:23;200:5;208:11, 17,19;214:23;216:11, 13;219:21;236:18; 240:24;243:10;245:14; 247:1,14,18;260:10,11, 11;272:8,15,22,23; 275:20;276:18,20; 279:5,13,17;282:12; 283:11,20;288:25; 310:25;312:15,15,20; 325:4,10;330:21,24,25; 332:9;333:6;335:7,9; 336:21;340:2;341:15; 342:13;343:13;344:11, 14;345:20</p> <p>Levels (128) 7:17;54:25;64:10,10; 67:24;81:1;96:25; 109:15,16,22;110:9; 112:10,21;119:25; 120:10;121:3,13,22; 122:6,6,12,23;124:1; 125:3;129:6,7,7;130:6; 143:24;144:2;147:14, 18;152:7;162:20; 163:15,16;166:25; 168:20,25;169:3,8,24, 24;172:8;174:17; 187:25;188:1,2,16; 191:12;192:15;199:8, 13,19;208:5;210:2; 218:9,9,10,12,12,14,16, 25;219:4,7,23,24; 221:25;225:16;228:14; 234:21,22;235:1; 236:5;237:17;238:1; 239:20;245:13,24; 246:20,24;247:3; 251:3;252:15,24; 254:25;255:4,7; 257:10,11,21,23;258:1, 1;261:11;262:15,19, 20;269:21,22;272:6; 273:17;274:8,9;275:3; 278:16;282:6;284:8; 286:5;292:10;293:7; 323:4,4,9;330:1,8,10; 331:8;332:15;336:15, 16;337:20;341:21; 342:2,19;345:15,17</p>	<p>levels/below (1) 255:7</p> <p>lexicon (1) 86:25</p> <p>liberal (1) 36:1</p> <p>lie (1) 295:1</p> <p>lies (3) 40:8;80:22;212:6</p> <p>lieu (1) 20:19</p> <p>life (1) 127:3</p> <p>light (1) 14:24</p> <p>liked (1) 348:2</p> <p>likelihood (2) 20:25;92:19</p> <p>likely (14) 84:11,13,13,25; 91:12,15,16;92:16; 110:2;118:15;175:25; 247:8;271:9;333:8</p> <p>likes (2) 77:7;184:21</p> <p>Lima (1) 74:18</p> <p>limit (17) 30:21,21;31:5,18,20; 32:8,12;67:10,16; 127:20;141:24;148:9, 15;156:4;157:23; 286:8;287:20</p> <p>limitations (2) 79:16,17</p> <p>limited (6) 13:8;93:6;188:9; 192:1;238:4;283:19</p> <p>limits (5) 30:25;31:23;147:4,5; 283:2</p> <p>Lincoln (1) 224:11</p> <p>line (41) 14:4;55:18,18;85:22; 144:6;160:9,10,16,16, 19,24;161:3,9,14,18, 20;162:2,10;163:13; 164:15,18;175:1; 189:6;212:4;245:25; 251:14;252:2;256:7, 21,22;257:5,6,7; 259:12,17,18,19;281:4, 6,7;319:2</p> <p>linear (3) 265:7;270:22;307:11</p> <p>lined (1) 13:19</p> <p>lines (21) 59:1,2;144:12,12; 159:22;160:1,1,13,14;</p>	<p>163:10;170:23;173:1, 12;220:18,22;221:11; 246:5;247:4;255:25; 261:18;288:7</p> <p>link (2) 72:4,5</p> <p>Linked (1) 236:7</p> <p>list (12) 8:1;17:20;18:14; 33:10,11;70:7;144:21, 23;156:12;252:18,22; 263:19</p> <p>listed (7) 53:16;55:20;58:5,14; 119:21;145:12,15</p> <p>listen (1) 36:5</p> <p>literally (2) 31:14;74:19</p> <p>literature (18) 61:14,18;75:13; 125:14;134:11;139:7, 11;164:17;173:5; 199:1;250:15;292:11, 19,25;293:1,1;326:20; 336:22</p> <p>litigation (2) 59:17;137:10</p> <p>limit (48) 8:6;9:23;26:1;51:12; 63:15;75:12;82:18; 100:19;111:5;138:18, 19;142:20;156:3; 158:13;162:13,22; 164:20;165:13;173:8; 174:24;175:16;176:14; 187:24;190:10;191:9; 194:20;214:14;217:5; 220:13;231:10;234:25; 239:19;240:20;242:13; 245:7;255:25;259:9; 261:18;264:12,13,23; 266:10;273:7;282:2; 290:13;293:11;303:4; 309:13</p> <p>live (7) 30:4;49:11;59:2; 81:16;126:23;176:9; 292:8</p> <p>lives (1) 126:18</p> <p>living (8) 74:11;118:24;226:5; 240:17;241:6,12,14; 242:25</p> <p>loading (3) 171:12;283:14; 338:18</p> <p>localized (1) 339:25</p> <p>locate (1) 305:14</p>	<p>located (2) 5:8;123:23</p> <p>location (7) 115:13;123:23,25; 133:3;173:12;255:25; 337:21</p> <p>locations (3) 160:2;329:16;330:6</p> <p>logical (4) 130:12;215:23; 216:4;228:19</p> <p>long (20) 8:18;12:7;13:5; 25:21;31:12;33:10; 48:14;55:19;63:24; 82:13;102:19;119:4; 140:21;224:14;234:21; 259:17;283:14;319:17; 325:23;354:10</p> <p>longer (6) 16:12;79:19,20; 102:16;152:13;259:18</p> <p>Longitudinal (2) 235:22;236:4</p> <p>long-term (6) 137:24;219:7; 234:14;235:6,11; 246:22</p> <p>look (181) 8:12;18:7;29:14; 37:11,17;38:3,7,10,12, 13,18,23;59:1;63:25; 65:3;68:24;72:23;74:7; 75:2,9;79:9;81:12,20, 21;82:2,3,22,23;83:2,2, 5,12,12,15,17,22;84:2; 86:6;88:12,14,18,25; 89:3;90:4;92:5;93:11; 96:3;101:12;102:1; 106:22;109:16,17; 110:5,6;111:17;119:8; 121:1;130:7;138:12; 139:1,21;144:25; 146:24;150:19;152:25; 153:3;155:9;157:19, 19;158:4;159:1,20; 162:1,6,20,22,24,24, 25;164:12;165:12; 166:8;170:17;172:8; 173:7;174:10,17; 179:10,21,24;180:3; 186:19;187:23;190:19; 192:19;199:22;204:15; 206:4,11,18;210:3; 211:2,8;212:10;218:4; 220:6,13;226:22,23; 232:4;238:25;239:24; 242:20;243:2,16,25; 244:22;245:1,9,10,23, 24;246:20;247:1; 251:9;252:17,17,18,18, 19,22;254:19,20,22; 255:19;258:7,15,17,23;</p>	<p>259:4;260:4;262:19; 264:11;267:4,7;269:7, 8,15;270:13;271:12; 272:19;273:15;275:25; 285:8,12,18;286:4,6,7, 7,7,8,10,15;287:12,13, 13,15,16;289:1,2; 290:3,12;291:5; 292:22;295:2;305:23; 312:4;314:18;321:2; 336:14</p> <p>looked (25) 64:4;69:7;124:16,16; 210:2;218:17;227:12, 14,20;228:2;242:23; 243:19;261:1;265:2; 268:23,24;292:2,3; 310:16;312:9,19; 324:20;325:3;335:4; 341:8</p> <p>looking (97) 20:5;21:9;34:23; 37:25;44:19;51:23; 58:24;64:7,8,15,25; 70:10;71:17,22;72:8, 15,24;73:4,9,24,25; 75:13;79:22;82:9; 83:10;84:12,16;86:13; 88:11;89:5,25;93:15; 102:7,8,8;105:16; 106:21;119:23;125:1; 135:12;144:19;146:8; 150:13;157:14;161:24; 162:13;164:12;166:13; 172:10,14,15,16; 174:15;188:24;190:23; 191:8;199:4;200:8; 210:1;212:3;213:25; 218:10;219:9;221:24; 227:11;236:16;243:15, 18;244:6;245:12; 246:12;250:9,22; 251:23;254:21;255:16; 256:18;258:9,19; 262:20;264:15;266:3, 11;272:2;273:9; 274:19,24;275:21; 278:10;282:25;304:12; 306:18;311:13;312:12; 329:13,19;349:1</p> <p>looks (21) 20:10;38:11;91:19; 109:19;137:19;171:21; 173:2;174:19;209:18, 19,20;220:3,7;239:18; 245:24;246:5,6,16; 263:5;266:4,7</p> <p>loosey-goosey (1) 117:8</p> <p>Lot (71) 5:9;9:21;12:12,15, 16;26:15;31:13;32:3; 36:12,12;37:9,10,21;</p>
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52:19;53:25;54:3; 56:13;57:22;58:8,11; 59:22;66:8,15;71:25; 72:7;74:9,11,20,24; 75:5,7,7;80:7;82:6,9, 13;84:2;85:14;87:11; 92:12;115:9;127:12; 132:13,14;177:2; 190:3;208:7;225:21; 226:5;240:14;242:4; 262:17,18;269:10; 276:10;282:15;283:24; 298:5;300:8;301:7,22, 23;310:21;312:10,14; 318:18;325:2,15; 328:23;329:3;332:25	270:21 lungs (3) 72:6;141:2;301:14	Mann (3) 258:16;259:5;260:5 manner (3) 31:16;79:13;83:4 manufacturing (1) 301:5 many (20) 12:22;31:6,9;32:6; 33:3;55:19,23;87:25; 118:16;141:22;185:12, 17,20;228:5;232:21; 233:5,6,6;242:18; 310:19 map (2) 131:24;154:7 maps (1) 170:18 March (42) 10:21,24;11:8;14:11, 11;16:21,21,23,25; 18:2,2,7;20:6,8,15; 21:1;27:10,12,15,15; 34:3,21;35:2,23; 109:22;111:20;217:13; 303:8,12,22,24;304:3, 6;305:10,13,16;306:19, 23;307:2;308:23; 309:1,4 margin (4) 327:21;328:5,11; 348:10 margins (2) 92:15;195:22 mark (4) 200:21;201:7,9; 231:12 marked (17) 33:6;47:17;156:15; 157:3;201:1;202:12, 13;203:24;204:9; 219:24;224:21;231:23; 236:10;250:3;264:3; 268:16;340:22 marker (1) 125:25 markers (1) 131:4 marks (1) 41:2 marsala (1) 152:21 Martin (1) 5:18 Maryland (8) 5:9;49:11,17;50:1; 59:21;62:15;229:9; 230:5 master's (1) 50:21 material (2) 27:19;190:11 materials (5) 7:10,12,12,14;37:1	math (2) 181:3;191:2 mathematical (1) 261:6 matter (32) 5:3;17:12;46:8; 66:20;71:12,16,20; 73:9,10;83:16,21;84:7; 90:23;112:11;113:10; 125:15,16,23;128:16; 134:25;212:12,13; 231:6,20;232:5,6; 268:24;271:8;273:11; 289:13,17;309:4 matters (13) 7:4;41:16,17,18; 42:6;47:1,22;48:7,18; 115:2,3;298:3;299:7 max (7) 192:22,22;220:11; 221:15;246:17;272:15, 23 maximum (10) 147:6,21;148:3; 175:4;194:23;220:4; 223:2;245:25;246:7; 271:20 maximums (1) 147:6 may (41) 7:14;8:24;14:25; 15:5;16:8;17:15;19:18; 25:19;34:13;35:4; 36:19;38:9;40:2;42:14; 46:2,5;49:15;80:8,20; 88:7;116:14;122:5; 123:17;171:9;186:8; 216:11;230:24;294:19; 296:8,9,21;310:24; 334:22,23;340:15; 344:4;347:4,4;354:1; 361:9,10 maybe (34) 20:5;25:25;38:19; 56:1;102:14,15; 111:18,18;112:4,6; 123:6;134:17;170:3; 176:2,9,21;178:3,22; 183:4,4;186:6;233:13; 246:6;269:2;282:18; 291:17;316:23;320:20, 23,24;346:19;350:20; 355:20;362:19 MDE (5) 322:17;326:10; 336:9;337:3,15 mean (92) 9:19;13:25;25:3,21; 26:14;28:7;29:14; 31:20;35:9;39:2;43:14; 48:3;57:4;86:7,18,25; 87:2,3;89:14;92:6; 98:12;104:8;105:2;	106:12;109:9,10,10; 112:11;114:6,23; 117:9,20;120:6; 125:17;130:5;136:11; 140:8;148:19;150:25; 159:21;160:9;173:15; 183:12;185:22;205:17; 209:7;210:20;222:19; 226:14,18;227:15; 228:17,21;229:16; 236:23;239:20;241:12, 13;255:25;257:25; 259:17;260:10,10; 265:24;279:6,25; 282:17,20,21,21; 296:16,20;299:21; 301:23;311:6;320:23; 327:3;329:21;334:7, 23;338:17;341:8; 342:14;343:7,8; 350:17;352:10;356:14, 16;357:23;362:9,18 meaning (4) 104:14;143:11; 194:10;308:17 meaningful (1) 278:24 means (28) 5:18;74:22;86:2; 87:6;90:19;109:22; 110:25;111:15;114:25; 120:15,17;127:3; 131:3;168:22,22; 184:12;194:11;207:15; 211:1,1,3;241:11; 256:8;271:2;307:5; 347:17;359:16;361:21 meant (2) 133:1;266:2 meantime (1) 309:9 measure (20) 55:2,4,5;80:15,16; 81:7;83:16;90:10,11; 102:19,19,21,24; 207:20;210:21;213:6, 12;234:24;235:3;242:9 Measured (6) 7:18;75:2;156:3; 241:2;258:1;260:12 measurement (7) 76:12;78:17;89:3; 94:25;142:22;151:16; 235:1 measurements (3) 64:2;222:14;260:9 measurement-strategy (1) 144:17 measures (5) 86:15;101:23,24; 192:13;281:1 measuring (1) 73:23
lots (15) 56:19;77:24;79:16; 82:1;96:2;102:17; 131:4;240:13;257:15; 284:1,11;297:11; 313:1;326:22;327:3 love (1) 142:9 low (9) 97:12,18;208:21; 210:12;225:10;256:16; 265:5,6;267:23 lower (29) 69:19;73:6;79:19; 109:17,19;111:15,18, 19;129:25;141:24; 144:1;151:2,2,17; 187:1,1;191:2;219:1; 240:5,6,15;245:5; 255:4;269:21;270:6; 291:5;321:5;332:15; 334:2 lowered (2) 290:1,2 lowering (3) 135:3,6;173:24 lowers (1) 109:20 lowest (4) 208:17,18;285:13; 319:6 low-land (1) 349:19 lunch (2) 152:18;198:13 luncheon (1) 198:14 Lunchtime (1) 22:6 lung (23) 85:11,12,14;126:14, 17,19,21,24;127:5,7; 202:21;203:8;206:21; 207:20;208:2,4;209:4, 14,15;213:1;300:25; 301:3,6 lung-cancer (1)	M ma'am (1) 206:17 machine (1) 207:19 magic (1) 342:10 magical (3) 91:4,7,11 magically (2) 144:15;288:13 magnitude (1) 78:5 main (4) 74:25;236:17; 240:17;362:22 maintain (2) 126:22;147:22 maintenance (1) 58:10 major (13) 52:22;55:1;75:10,11; 81:11;315:22;329:23, 23;330:8;337:16; 343:4,14;344:8 majority (3) 88:22;284:21,23 maker (1) 321:1 makes (5) 16:6;18:4;32:15; 227:4;356:2 making (15) 61:10;68:11;69:22; 95:14;106:9;107:6,7; 108:6,20;170:10; 193:14;230:24;322:6; 350:18;351:23 Mall (4) 5:10;234:23;338:17; 339:4 malnutrition (1) 302:1 mammoth (1) 61:17 manage (1) 67:23 managed (1) 50:23 management (6) 286:19;287:9; 288:18,21;289:13,18 mandate (3) 129:14;139:8;348:19 mandated (1) 130:23 manifest (1) 124:22	Mann (3) 258:16;259:5;260:5 manner (3) 31:16;79:13;83:4 manufacturing (1) 301:5 many (20) 12:22;31:6,9;32:6; 33:3;55:19,23;87:25; 118:16;141:22;185:12, 17,20;228:5;232:21; 233:5,6,6;242:18; 310:19 map (2) 131:24;154:7 maps (1) 170:18 March (42) 10:21,24;11:8;14:11, 11;16:21,21,23,25; 18:2,2,7;20:6,8,15; 21:1;27:10,12,15,15; 34:3,21;35:2,23; 109:22;111:20;217:13; 303:8,12,22,24;304:3, 6;305:10,13,16;306:19, 23;307:2;308:23; 309:1,4 margin (4) 327:21;328:5,11; 348:10 margins (2) 92:15;195:22 mark (4) 200:21;201:7,9; 231:12 marked (17) 33:6;47:17;156:15; 157:3;201:1;202:12, 13;203:24;204:9; 219:24;224:21;231:23; 236:10;250:3;264:3; 268:16;340:22 marker (1) 125:25 markers (1) 131:4 marks (1) 41:2 marsala (1) 152:21 Martin (1) 5:18 Maryland (8) 5:9;49:11,17;50:1; 59:21;62:15;229:9; 230:5 master's (1) 50:21 material (2) 27:19;190:11 materials (5) 7:10,12,12,14;37:1	math (2) 181:3;191:2 mathematical (1) 261:6 matter (32) 5:3;17:12;46:8; 66:20;71:12,16,20; 73:9,10;83:16,21;84:7; 90:23;112:11;113:10; 125:15,16,23;128:16; 134:25;212:12,13; 231:6,20;232:5,6; 268:24;271:8;273:11; 289:13,17;309:4 matters (13) 7:4;41:16,17,18; 42:6;47:1,22;48:7,18; 115:2,3;298:3;299:7 max (7) 192:22,22;220:11; 221:15;246:17;272:15, 23 maximum (10) 147:6,21;148:3; 175:4;194:23;220:4; 223:2;245:25;246:7; 271:20 maximums (1) 147:6 may (41) 7:14;8:24;14:25; 15:5;16:8;17:15;19:18; 25:19;34:13;35:4; 36:19;38:9;40:2;42:14; 46:2,5;49:15;80:8,20; 88:7;116:14;122:5; 123:17;171:9;186:8; 216:11;230:24;294:19; 296:8,9,21;310:24; 334:22,23;340:15; 344:4;347:4,4;354:1; 361:9,10 maybe (34) 20:5;25:25;38:19; 56:1;102:14,15; 111:18,18;112:4,6; 123:6;134:17;170:3; 176:2,9,21;178:3,22; 183:4,4;186:6;233:13; 246:6;269:2;282:18; 291:17;316:23;320:20, 23,24;346:19;350:20; 355:20;362:19 MDE (5) 322:17;326:10; 336:9;337:3,15 mean (92) 9:19;13:25;25:3,21; 26:14;28:7;29:14; 31:20;35:9;39:2;43:14; 48:3;57:4;86:7,18,25; 87:2,3;89:14;92:6; 98:12;104:8;105:2;	106:12;109:9,10,10; 112:11;114:6,23; 117:9,20;120:6; 125:17;130:5;136:11; 140:8;148:19;150:25; 159:21;160:9;173:15; 183:12;185:22;205:17; 209:7;210:20;222:19; 226:14,18;227:15; 228:17,21;229:16; 236:23;239:20;241:12, 13;255:25;257:25; 259:17;260:10,10; 265:24;279:6,25; 282:17,20,21,21; 296:16,20;299:21; 301:23;311:6;320:23; 327:3;329:21;334:7, 23;338:17;341:8; 342:14;343:7,8; 350:17;352:10;356:14, 16;357:23;362:9,18 meaning (4) 104:14;143:11; 194:10;308:17 meaningful (1) 278:24 means (28) 5:18;74:22;86:2; 87:6;90:19;109:22; 110:25;111:15;114:25; 120:15,17;127:3; 131:3;168:22,22; 184:12;194:11;207:15; 211:1,1,3;241:11; 256:8;271:2;307:5; 347:17;359:16;361:21 meant (2) 133:1;266:2 meantime (1) 309:9 measure (20) 55:2,4,5;80:15,16; 81:7;83:16;90:10,11; 102:19,19,21,24; 207:20;210:21;213:6, 12;234:24;235:3;242:9 Measured (6) 7:18;75:2;156:3; 241:2;258:1;260:12 measurement (7) 76:12;78:17;89:3; 94:25;142:22;151:16; 235:1 measurements (3) 64:2;222:14;260:9 measurement-strategy (1) 144:17 measures (5) 86:15;101:23,24; 192:13;281:1 measuring (1) 73:23

<p>mechanism (1) 71:22</p> <p>mechanistic (1) 73:2</p> <p>Median (4) 222:19,21;239:20; 260:9</p> <p>medical (4) 58:24;88:16;239:25; 287:15</p> <p>medication (1) 256:10</p> <p>Medicine (5) 51:3;53:17;54:3,5; 282:8</p> <p>meet (6) 17:19;18:22;87:2; 91:20;214:22;361:6</p> <p>meeting (5) 13:1;16:18,19;18:13; 294:17</p> <p>meetings (8) 11:20,22,24;12:4,6; 68:10;128:5;316:24</p> <p>meets (1) 19:20</p> <p>member (5) 56:24,25;57:3,6,8</p> <p>members (2) 36:14;133:23</p> <p>membrane (1) 140:19</p> <p>memo (2) 7:9;273:15</p> <p>memory (1) 58:20</p> <p>mention (4) 9:2;191:25;200:3; 303:15</p> <p>mentioned (11) 11:9;54:19;78:2; 92:1;151:10;200:13, 14;227:9;249:11; 286:6;349:2</p> <p>merely (1) 337:1</p> <p>meritorious (2) 31:21;32:1</p> <p>met (2) 64:9;316:12</p> <p>meta-analysis (3) 106:5,6,11</p> <p>metal (1) 71:11</p> <p>meteorologist (1) 185:23</p> <p>meteorologists (1) 359:5</p> <p>meteorology (2) 39:10,13</p> <p>meter (50) 110:12;140:4; 153:23;154:13,17,25;</p>	<p>156:14;157:6,11; 162:14,23;163:7,10,18; 164:7,8,11;165:9; 174:14;175:4;186:21; 187:3;188:5,6;189:14; 191:1;195:4,9;196:10, 13;197:4;220:4,5; 240:20;241:5,6;247:9, 13;269:17,19,25;270:9, 17,20;271:14;272:17; 275:3;280:15;341:4; 342:22</p> <p>meters (6) 307:6,10,17,22,23,24</p> <p>method (2) 177:9;321:17</p> <p>methodologies (2) 76:13;95:2</p> <p>Methodology (4) 7:19;36:16;78:18; 94:15</p> <p>methods (1) 84:1</p> <p>metrics (1) 84:23</p> <p>MGPY (1) 307:4</p> <p>Michele (2) 6:8;356:20</p> <p>microgram (8) 153:23;154:13; 164:11;174:13;220:15; 271:14;272:5,12</p> <p>micrograms (41) 110:12;140:4; 154:17,25;156:14; 157:6,11,22;162:14,23; 163:7,18,20;164:6; 175:4;186:20;187:3; 188:6;189:13;191:1; 195:4,9;196:9,13; 223:8;240:19,22; 241:5;243:8;247:9; 269:17,25;270:9,16,19; 272:16;273:2;275:2; 280:15;341:4;342:22</p> <p>micrograms/cubic (9) 163:9;165:9;188:5; 197:4;220:4,5;241:4; 247:12;269:19</p> <p>micrograms/cubic-meter (1) 163:6</p> <p>microwave (3) 301:13,18,21</p> <p>microwaved (1) 301:24</p> <p>mid-2008 (3) 139:14;191:20;202:5</p> <p>mid-2009 (1) 232:15</p> <p>middle (8) 93:24;97:13;115:8,9; 146:24;170:22;239:6;</p>	<p>316:11</p> <p>mid-morning (1) 123:3</p> <p>midway (2) 146:4;175:8</p> <p>might (79) 9:25;13:12;39:11; 42:10;49:6;55:9,21; 59:6;61:12;63:6;64:1, 6;65:5,6,7;66:17,18; 71:23;72:6,25;75:11, 18;79:23;80:4;81:2; 86:7;88:23,25;92:1,2; 96:12,15;97:23;98:1,2; 101:11;112:5,5,21; 119:2;120:14,18,19; 121:8,24;132:17; 133:3;152:12;195:7, 21,21;197:6;216:24; 226:19;239:2,3; 255:17,19;282:21; 283:25,25;284:1; 287:3;301:22;305:13, 22,25;306:20;311:14; 315:10;316:23;319:14; 320:15,23;333:10; 338:5,24;354:7,16</p> <p>Mike (1) 6:2</p> <p>miles (3) 331:4;349:19,19</p> <p>Mill (1) 5:8</p> <p>million (1) 119:22</p> <p>million-gallon-per-year (1) 307:5</p> <p>mimic (1) 79:19</p> <p>mind (4) 122:22;162:25; 288:17;322:2</p> <p>mine (6) 128:12;145:14; 153:14;222:8,8;230:1</p> <p>minimize (1) 289:24</p> <p>minimum (1) 223:2</p> <p>minus (1) 241:4</p> <p>minute (4) 113:14;141:20; 235:15;348:1</p> <p>minutes (11) 24:19;25:18,22;26:6, 20;198:7;275:19; 276:7,8;346:10;354:12</p> <p>miraculously (1) 144:16</p> <p>mirror (1) 44:20</p> <p>miscalculated (1)</p>	<p>163:23</p> <p>misleading (2) 266:18,20</p> <p>misprint (1) 209:19</p> <p>mistakes (1) 98:5</p> <p>mix (2) 212:14;239:2</p> <p>mixed (1) 176:14</p> <p>mixes (1) 279:2</p> <p>mixing (2) 278:15,25</p> <p>mixture (9) 73:12;82:23,24;84:4, 14;199:6,11,12;215:14</p> <p>mixtures (4) 83:1;84:17,19; 234:14</p> <p>mobile (2) 75:21;124:14</p> <p>MOBILE6 (2) 184:6,13</p> <p>model (41) 55:3;80:2;93:1,2,8, 15,18,20;94:3,11; 95:12;96:9,17;97:7,10, 20;99:15;156:1; 158:11;166:2;177:17, 25;178:24;180:19; 181:2,4;183:9;184:18; 186:22;235:10;242:7; 293:1;314:22,24; 315:3,5;317:5,23; 339:6;347:7,8</p> <p>modeled (2) 64:5;271:21</p> <p>modeler (3) 99:23;183:3;325:16</p> <p>modeling (57) 63:10,12,16;64:13, 16,17;65:10,11,14,15, 18;66:2,6,8,20;71:1; 92:22,25;94:10,15,16; 99:5;115:4;152:4,10; 154:13;160:18;161:3; 168:21;171:22;172:3; 179:11;180:25;181:20; 183:14;184:7;195:8; 255:17;272:14;273:20; 276:18;310:10;313:19, 23;314:24;315:20; 316:14,21;322:11; 330:17;332:2,8,10; 341:10,13;345:4,12</p> <p>models (30) 63:16,19;64:25;65:5, 21,22,25;66:4,7,10,18; 71:19;94:3;95:11;96:1, 2,3,4,5;178:25;179:7; 183:1,23;313:20;</p>	<p>314:2,8,9,20;318:18; 339:21</p> <p>modestly (1) 100:2</p> <p>modified (1) 78:14</p> <p>modify (2) 55:13;81:19</p> <p>molecules (1) 126:6</p> <p>moment (4) 45:10;127:19; 171:15;248:25</p> <p>Monday (1) 16:21</p> <p>money (2) 82:9,13</p> <p>Mongolia (1) 54:21</p> <p>monitor (7) 37:11,16;51:19; 142:1;165:7;242:12; 274:2</p> <p>monitoring (8) 142:5,14;149:4; 176:24;192:3,4,16; 329:16</p> <p>Monitors (9) 7:18;37:13;142:2,3; 192:1,7;225:21; 273:25;274:1</p> <p>monolithic (1) 185:2</p> <p>monoxide (1) 84:7</p> <p>monster (1) 138:25</p> <p>Monte (2) 321:21;322:2</p> <p>Montgomery (8) 9:4,5,9;10:5;295:3,5, 9;358:1</p> <p>month (2) 21:11,11</p> <p>months (3) 308:21,21,22</p> <p>morbid (1) 242:3</p> <p>morbidity (1) 125:19</p> <p>morbidity (17) 55:13;73:10;90:6; 102:3,4,22;103:1; 125:16,19;236:7; 238:8;241:21;242:13; 245:6;271:4;284:2; 292:13</p> <p>more (107) 10:18,22;16:1;22:11; 23:16;30:19;34:9;39:3, 3,11;40:9;44:2;47:2; 55:10;56:13;57:1;65:5; 69:11;75:12;76:19;</p>
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<p>80:2,13;82:6,18;83:10; 10;84:15,21;85:14; 86:3,12;91:3,13,14,16, 22;95:23,25;97:4; 98:20;100:3,19; 102:14;103:4;116:10; 121:3;123:6;124:13; 125:9;126:22;132:23; 133:3;139:18;147:12; 152:16;158:9;176:13; 177:10;179:13;180:24; 181:23;184:16;185:8, 15;186:14;188:9; 192:4,16;197:17,18; 205:23;214:14;215:6; 225:8;233:3;234:14; 245:1,16;255:3,3,9,18, 19;257:2,2;259:18,19; 262:18;276:10;282:18; 286:16;299:8;310:15, 16,21;311:7,24;312:5; 313:5,25;314:1;315:5; 325:15;327:11;334:18; 343:21;348:17</p> <p>morning (14) 5:22,23,24;6:2,7,11, 14,25;8:24;22:17,35;3; 237:7;357:24;362:21</p> <p>mortality (3) 125:18;268:15; 270:22</p> <p>most (29) 33:13;40:21;67:13; 73:13;74:3;127:5; 131:14;157:9;161:25; 176:1;192:19;193:5,7; 194:5,5;220:16; 228:19;256:6;284:15, 19;285:13,15;286:15, 16,17;300:14;319:5; 322:4;338:10</p> <p>mostly (2) 219:10;302:5</p> <p>mothers (2) 225:11,13</p> <p>mother's (2) 227:13;228:15</p> <p>Mount (1) 349:17</p> <p>mountains (1) 349:20</p> <p>mouth (2) 287:1;305:1</p> <p>move (20) 23:4,8;42:19,25; 83:9;84:15;99:18; 158:9,10;166:9,19; 208:21;242:4;244:7; 273:13;275:14;281:14, 24;290:22;344:25</p> <p>moved (2) 50:20;167:6</p> <p>moves (6)</p>	<p>82:6,18;99:17; 110:16;184:6,13</p> <p>moving (7) 16:10;124:4;180:20; 229:22,22;234:19; 243:10</p> <p>Mrs (2) 25:14;268:13</p> <p>much (56) 24:17;25:13;26:22; 28:18;32:16;58:10; 61:17;65:2;68:3;78:4; 80:15;81:7;87:25,25; 102:12;110:14;116:9, 9;178:23;182:13; 197:15;199:25;210:3; 212:16;215:11;224:9; 225:15,22;238:14,14; 240:5,15;244:13; 250:14;261:10;265:13; 273:19;277:22;278:7; 280:24;281:7,8,9,10; 297:14;303:3;308:13; 309:13,22;330:2; 339:3;341:11;348:5; 349:14;353:21;362:11</p> <p>mucous (1) 140:19</p> <p>multiple (3) 84:3;93:15;183:15</p> <p>multiply (3) 97:3,6;155:18</p> <p>multi-pollutant (3) 83:7;234:13,18</p> <p>must (7) 41:3;82:16;112:24; 220:10;233:12;308:24; 340:2</p> <p>myself (9) 56:9;63:16,20;77:1; 233:3;317:15;326:24; 353:8;358:7</p>	<p>68:18;69:14;94:5; 127:23;144:9;149:21; 245:2;246:25;267:25; 269:3;285:10;312:15; 314:18;345:12</p> <p>nationally (1) 110:7</p> <p>natural (3) 166:19,25;223:21</p> <p>nature (6) 11:14;29:19,21; 45:20;132:15;138:20</p> <p>nays (1) 17:7</p> <p>near (8) 148:7,12;150:16; 169:8;188:12;192:9; 213:7;312:7</p> <p>nearby (1) 326:11</p> <p>nearly (1) 307:6</p> <p>near-roadway (3) 148:25;192:13;338:4</p> <p>necessarily (13) 33:7;76:17;89:20; 107:12;117:22;191:17; 280:16;281:6;283:19; 296:20;319:6;347:1; 355:3</p> <p>necessary (6) 10:22;11:13;18:3; 107:21;320:9;348:18</p> <p>need (34) 16:8,16;30:23;31:20; 35:4;37:17;51:18;82:7, 9;87:22;88:1;90:3,3; 91:22;96:16;102:13; 111:19;117:4;118:25; 129:19,21;130:7; 153:8;217:25;239:9; 267:24;277:19;278:7; 280:22;289:22;295:2; 350:1;360:20;362:18</p> <p>needed (1) 41:3</p> <p>needle (1) 167:6</p> <p>needs (10) 13:1;92:10;126:10; 129:19;270:11,11; 295:20;341:22;342:7; 356:19</p> <p>negative (10) 86:21,23;87:1,6,16; 88:4,9;89:8;256:8; 348:16</p> <p>neglected (1) 123:2</p> <p>neighborhood (20) 63:2,6;74:16;116:7, 20,22;124:6;132:18; 163:10,16,17;164:23;</p>	<p>171:23;188:7,10; 189:7;191:1;216:10; 220:5;361:10</p> <p>neighborhoods (1) 74:3</p> <p>neither (2) 11:24;361:11</p> <p>Nepal (3) 64:25;65:8;349:16</p> <p>new (27) 15:7;37:15;51:21; 52:10;67:24;77:15,16, 19;100:14;110:9; 112:3;125:24;127:10; 129:21;132:18;137:15; 140:14;169:5;187:21; 195:8;200:25;201:9; 224:8;265:11;271:13; 312:11;334:11</p> <p>news (7) 80:21;203:17,19; 269:9,10,13,14</p> <p>newspapers (1) 352:24</p> <p>next (39) 5:14;10:6,24;11:3; 17:8;23:9;31:6;59:9; 74:11,14;75:9,10; 84:18;101:18;111:16; 126:23;142:14,15,15; 147:17;159:1;189:11; 202:16;212:4,22; 223:16;230:23;231:1; 239:3;242:15;261:11; 288:16;289:13,18; 308:11;310:25;314:14; 336:5;347:8</p> <p>nice (1) 321:12</p> <p>NIH (1) 245:1</p> <p>NIHS (1) 205:1</p> <p>nine (2) 238:12;308:21</p> <p>ninety (1) 154:2</p> <p>Ninety-eight (1) 164:6</p> <p>NIOSH (2) 283:6;286:8</p> <p>nitrogen (1) 265:11</p> <p>nitty-gritty (1) 103:5</p> <p>NO2 (137) 69:6,7;83:15,17,18, 18,19;84:6;104:1; 106:3,5,6;109:4,7; 121:14,20;122:1,6,11; 123:21;124:16;125:2, 3,13;139:14,20,25; 140:9,18;141:1,7,13,</p>	<p>15,21;142:24;146:9, 19;147:7,21,23;148:7, 12;149:22;150:15; 164:17,25;166:9; 168:4,9;170:15; 171:23;173:6,25; 175:11;182:3;192:1,3; 196:15,16;198:21; 199:20,21,23;200:1,9; 206:23;208:18,20; 209:9,11;210:4,11; 212:6,11,13,25;218:9; 222:13;225:16,18; 228:22;234:21,24; 235:8;236:5,18,23; 237:9,21;238:1,12; 240:4,15;241:13; 242:23;244:7,10,15; 245:11;246:12;247:19; 256:9;257:10,11; 260:9,23;276:15; 282:6;284:24;285:3; 323:4,10;329:6;330:2, 9,18,21,25;331:8,9,10, 22;332:1,3,14,22,25; 333:5,6,14;334:22; 336:10;337:20;338:11, 24;342:13;345:17</p> <p>nobody (1) 144:9</p> <p>nocturnal (1) 238:6</p> <p>Nolan (1) 49:10</p> <p>noncompliance-type (1) 165:6</p> <p>noncompliant (3) 165:11,23,25</p> <p>non-compliant (1) 165:10</p> <p>none (3) 29:15;282:7;288:6</p> <p>non-hazardous (1) 288:8</p> <p>non-inherent (3) 216:14,16,17</p> <p>no-no (1) 266:13</p> <p>non-occupational (1) 284:13</p> <p>non-workplaces (1) 78:8</p> <p>nor (1) 217:14</p> <p>norm (1) 215:21</p> <p>normal (5) 25:4;207:1,16,20; 284:10</p> <p>normally (4) 65:10;102:21; 285:18;330:13</p> <p>North (1)</p>
--	---	--	--	--

<p>49:25 north-south (3) 154:4;156:4;158:5 Nos (1) 236:9 nose (1) 81:7 noses (1) 81:6 not-agreed-to (1) 18:17 note (6) 39:21;56:23;58:4; 241:25;273:20;307:9 notes (4) 22:22;106:4;147:20; 307:13 notice (7) 7:6;15:18,21;16:1; 46:19;208:3;296:18 noticed (8) 5:13,14;9:24;12:7; 13:5;16:20;28:4; 303:11 notices (3) 12:22,25;16:21 not-significant (1) 256:23 novel (1) 225:10 November (5) 7:24;156:2;159:20; 179:23;250:6 nowadays (2) 70:16;301:6 nowhere (1) 115:8 NOx (10) 331:9;332:2,14,14, 23;333:5,13,14; 334:22;342:20 nuance (1) 144:17 nuanced (1) 142:20 number (130) 8:11;24:13,14;37:19, 22,23;38:24,24,24; 43:6,7;53:5,11;54:19; 56:1,7;57:20;58:3,13; 60:6;66:12;69:8;70:13, 14,18,20,20;71:17; 72:1;90:15;91:4;92:2, 19;93:1,20,21,22,25; 98:16;99:23,24;100:4, 5,14,16;102:13,13,14; 119:3;124:10,15; 135:4;139:12;141:17; 143:8;144:6,7,15,16, 23;153:1,15;159:7; 162:14;163:25;168:13, 17;171:22;179:3,3,4; 181:20;184:8;186:1;</p>	<p>189:3;192:1,19,24; 193:5,6;194:5,5,22; 205:3,8,9;206:1; 222:12;223:4;228:10; 231:9;233:11,15,20,22; 238:20;251:22;255:10; 263:7;280:3;284:22; 288:13;290:11;291:3; 304:4,5,6;305:13,14; 309:16;310:11;315:9, 10,11;317:16;319:6,7, 11,12,13,15,20;320:19; 325:17;331:4;341:24; 342:10;347:5;362:20, 23 numbered (2) 222:9;230:2 numbers (46) 37:18;38:12;41:3; 79:12;82:8;93:2,9; 94:19,21,22;99:1; 140:8;145:14;157:14; 160:14,25;161:15; 162:25;163:1;165:8; 172:3;174:16;175:23; 185:5;187:1,2;192:21; 193:9,10;220:8,16; 223:1;243:14;246:17; 251:14;263:10;303:14; 315:14;326:2;328:16; 330:17;333:25;334:1; 339:20,21;341:8 numerous (4) 5:13;57:18;183:16; 289:7</p>	<p>32:25;33:10,11,13; 34:20,24;36:1,4 obligations (1) 11:14 oblique (1) 136:11 observation (4) 13:4;95:4;127:2; 138:14 observational (3) 81:10,15;102:10 observations (4) 87:21;88:5,10; 270:15 observing (1) 81:23 obstructive (2) 55:11;127:13 obvious (5) 72:6;99:10;131:4; 166:10;291:20 obviously (17) 42:15;79:7;91:12; 105:3;136:15;155:11; 168:17,18;186:22; 271:18;281:4;292:18; 294:12;309:7;315:3; 336:25;338:8 occasion (3) 58:8;59:22;298:3 occasions (3) 59:19,25;300:17 occupational (14) 50:21;51:1,3,17,21; 282:3,8;283:15,17,20; 284:5,6,12;285:11 occur (8) 27:14;85:21;86:7; 106:8;166:22;182:4; 221:25;293:5 occurred (1) 120:19 occurring (2) 149:14;250:19 O'clock (5) 123:14;198:3; 294:13;357:18;360:10 October (1) 236:4 odd (3) 91:17;237:3;241:22 odds (10) 250:16,18,19,19,20, 20,25;259:9;260:20; 261:16 off (21) 41:4;97:5;101:2; 126:24;138:23;139:2; 143:24;144:14;150:6; 151:4;158:4,8;168:25; 175:8;181:3;290:6; 294:1,8;345:22; 350:18;358:21</p>	<p>offer (4) 6:17;53:23;77:5; 345:24 offered (6) 11:7,13;43:8;77:4; 116:17;361:17 offering (2) 43:18;61:22 offhand (1) 304:9 office (3) 304:22;312:11; 361:17 official (2) 161:2;230:6 offline (1) 22:11 often (12) 63:17,25;79:18;80:5; 82:8;95:17;97:4,4; 102:18;199:6;242:2; 296:14 oftentimes (4) 81:15;92:8;199:10, 21 Ohio (1) 268:25 oil (1) 237:4 old (2) 126:21;207:11 older (1) 126:19 once (10) 7:12;58:22;62:14; 65:17;93:20;190:5; 191:21;286:23;320:21; 352:8 one (278) 10:22;11:9;13:4,9; 21:1,13;24:10;26:8; 30:19;33:21,23;35:11; 37:5,24;38:3,4,16,21; 40:21,22;41:1;43:6; 47:2;48:9;50:23;59:22; 60:3,3,3;61:3,12,12; 63:23,24;65:24;70:3,5; 71:8,8;74:19,19;75:20; 80:2;82:1,10;83:23; 84:12;85:19;87:2; 90:13,15,22,23;91:25; 94:17;96:9,25;98:19, 25;101:17;103:24; 109:10;111:5;112:14, 17;113:21;114:10,15; 119:16,19;123:6,9; 124:6,6,9,9;126:6; 129:11;134:24;136:7, 20;137:15;141:16,19; 145:17;147:12;150:21; 153:3,17,22,25;155:11, 21;156:20;157:5; 159:1,11,19;160:10;</p>	<p>161:25;162:4,6,12; 166:13,17;168:13; 170:7,9,9;172:10,19; 173:18;174:14,16; 176:22;177:7,7,9,22; 179:3,3,7,15;180:10, 21;181:2;182:13; 184:23,25;185:9; 187:22,22;189:11; 191:6;192:18;194:4, 13,15;195:2,3,5; 196:23;199:4,5;200:8, 19,19,19;201:11,12,14; 202:16,19,20;204:2; 205:10,18,23,23;206:5; 208:16;209:20,22,23, 25;210:9,22;211:2,4,4, 23;212:4,7,16;213:16; 215:16;216:8;218:8; 219:15,20;220:14,17, 25;221:19;222:3,10; 223:16,17,23;225:20, 20;230:25;231:5,11; 232:9;233:12;236:1, 17;239:2,19;240:2; 241:24;242:17;244:2, 15,19,21;250:20,21; 254:7;255:13;256:12, 12,13,20,22;257:1,5,6, 7;261:4,7;262:4,25; 263:1,4,17,20;264:10; 265:10,16;268:8,10; 270:13;272:16;274:3, 3,3;278:12;282:6,14; 285:13,17;294:6; 301:23;303:11,19,20, 21,25;304:5,15;305:10, 10,12,25;306:24; 307:24;313:23;314:5, 5,8;319:17,18;322:2; 332:6;340:6,7,25; 342:8;347:7,21;349:5; 350:18;352:15;353:23; 354:10;358:14 one-assumption-at-a-time (1) 194:17 one-hour (26) 140:3,15;141:8,25; 142:7,10;147:6,6; 148:3;149:15,22; 168:5;170:15;182:3; 196:20,21;219:11,22; 245:13,19;261:22; 275:16;323:4,10; 329:6;330:9 one-part-per-billion (1) 238:19 ones (16) 17:22;58:14;88:24; 137:11;187:18;200:24; 210:1;219:6;245:11; 263:4;284:22;286:16; 309:16;312:25;320:5,6</p>
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<p>one-week (1) 245:12</p> <p>one-year (1) 57:15</p> <p>only (23) 10:14;19:12;29:13; 46:22;56:11;68:19; 90:19,24;127:4; 140:10;148:21;263:1; 266:16,18,20;272:4; 275:8,13;276:14; 299:19;343:25;347:11, 21</p> <p>on-roadway (1) 154:10</p> <p>onto (1) 187:4</p> <p>Ooh (1) 358:18</p> <p>open (12) 9:10,11,12,24;68:10; 237:7,14;316:3,4; 317:11;325:21;326:4</p> <p>open-ended (1) 185:9</p> <p>opening (1) 9:12</p> <p>operate (2) 5:6;288:24</p> <p>operating (1) 361:21</p> <p>operation (3) 62:23;63:3;118:16</p> <p>operations (2) 117:18;288:19</p> <p>opine (1) 44:4</p> <p>opinion (13) 36:12;45:21;92:24; 96:23;135:15;179:13; 182:15;248:21;275:22; 276:9;282:11;304:8; 306:20</p> <p>opinions (3) 43:7,9;313:17</p> <p>opponents (9) 10:16,21;13:16; 14:15;23:17,20;25:5; 29:16;294:14</p> <p>Opponents' (2) 10:13;13:22</p> <p>opportunities (2) 51:25;290:3</p> <p>opportunity (9) 23:22;24:23,24;25:2; 29:1;43:6,21;45:22; 77:13</p> <p>opposed (6) 27:23;35:5;82:23; 276:20,22;339:4</p> <p>opposing (3) 11:19;299:17;300:16</p> <p>opposite (1)</p>	<p>334:15</p> <p>opposition (9) 17:22,23;26:19;29:1, 4;30:2;33:15;36:15; 149:21</p> <p>opposition's (2) 39:18;40:19</p> <p>oral (22) 23:13;24:11,16,23, 24;25:1,3,15,18,20,21, 22;26:3,15,22;28:6,9; 30:11;42:1;313:11; 350:25;352:9</p> <p>order (4) 59:8;110:11;182:2; 277:21</p> <p>Ordinance (5) 5:5;46:10;351:11; 353:14,19</p> <p>organization (1) 57:15</p> <p>organizations (2) 299:14;300:15</p> <p>organized (1) 34:19</p> <p>original (8) 153:22;179:11; 181:7;182:18;192:20; 193:7;242:7;269:3</p> <p>Originally (2) 14:7;51:10</p> <p>OSHA (9) 68:12;284:14,25; 285:1,6,10,14;286:7; 287:20</p> <p>OSHA's (1) 283:2</p> <p>others (5) 56:6;160:4;186:20; 201:5;310:2</p> <p>otherwise (4) 79:15;129:9;281:3; 321:6</p> <p>ought (8) 8:23;33:1;111:19; 137:6;233:20,22,24; 350:15</p> <p>ours (1) 29:17</p> <p>ourselves (2) 34:13;52:10</p> <p>out (126) 12:22;15:18;16:20; 22:10;30:13;35:7,23; 36:12;38:11,22;40:21, 22;57:2,2;58:2;62:25; 68:6;70:17;71:3;74:12; 75:3,10,17;82:24;83:7; 93:17;94:8;98:13; 100:3;107:7,11; 109:15;112:10,21; 113:9,15;120:9;121:2; 125:24;126:14;131:23;</p>	<p>137:15;138:6,25; 140:10;141:17,18; 143:19;147:13;152:18, 23;153:5;155:18; 161:4;163:1,2,10; 164:23;172:7;174:2; 175:13,13,15;183:9; 184:18;186:7;187:25; 192:1,23;193:10; 197:22;199:11;200:17, 18;213:5,14;220:4,6; 234:9;237:4,25;247:3, 20;248:11;249:17; 250:5;255:14,19; 262:18;263:15,18; 264:8,19;283:3;284:1, 4;294:19;296:5; 298:13;300:7,22; 301:21;304:10;313:21; 315:15;318:6,14; 320:5;321:4;326:1; 329:9;331:18;334:1; 336:4;347:7,19;348:2; 349:23;353:13,18; 354:15,18;356:5; 357:9;361:9;362:14</p> <p>outcome (5) 82:8;89:5;96:7; 98:20;225:13</p> <p>outcomes (1) 225:9</p> <p>outdoor (3) 52:2;54:15;78:7</p> <p>outdoors (5) 73:8;125:3,9,10; 283:13</p> <p>outlie (1) 90:12</p> <p>outline (1) 357:5</p> <p>outlining (1) 45:20</p> <p>output (9) 96:3;97:16,24;160:7; 186:24;187:7;314:22, 22;320:17</p> <p>outputs (8) 94:3;97:16;180:20; 314:2;316:10;320:12; 341:10,13</p> <p>outside (19) 11:23;52:2;58:11; 73:13;94:22,23;95:6; 116:14;135:2;172:22; 215:21;240:10;249:12; 281:6,10;303:4;318:3, 7;335:6</p> <p>oven (4) 237:5,7,8,9</p> <p>over (53) 16:8;52:20;54:12; 59:14;64:17,18;67:25; 79:20;98:11;101:11;</p>	<p>102:9,21;109:22,23; 110:7;113:4;120:10; 121:14,21;122:2,6,17, 18,24;129:6,18; 142:16;157:22;183:19, 19,20;212:22;227:16; 228:10;235:3;243:7, 14;244:7;259:8; 266:10;269:11;271:1; 272:3;276:12;280:2; 282:25;290:5,7; 297:24;298:17;305:24; 352:1,7</p> <p>overall (6) 168:16,22;202:9,10; 204:20;256:18</p> <p>overestimate (1) 333:8</p> <p>overestimation (1) 333:9</p> <p>overkill (1) 230:24</p> <p>overlaid (1) 64:6</p> <p>overlaps (1) 221:21</p> <p>overly (3) 22:16;182:18;310:13</p> <p>overprotective (1) 320:21</p> <p>overregulate (1) 348:12</p> <p>overrule (4) 95:6;99:12;111:10; 288:1</p> <p>overruled (1) 252:11</p> <p>overstepping (1) 60:6</p> <p>overt (1) 289:20</p> <p>own (9) 40:16;56:4;214:2,25; 216:16;234:20;253:15; 278:11;280:18</p> <p>OZAH (1) 5:4</p> <p>ozone (9) 64:9;69:15,17,19,22; 80:15,17;210:3,4</p>	<p>174:11;181:25;187:11; 206:4,11,11,15;212:10, 18,22;219:15,17,18; 220:19;225:17;226:24; 233:5,10,11,15,20,22; 241:18;245:10;247:7; 252:2;255:23,24; 256:4,5;258:8,10,11, 20,23,24;259:1,5; 260:4,15;263:4,8,10, 19;264:6,14,15;267:4, 8,11,13;270:1;271:12; 274:6;275:15;282:5; 307:3;335:13,16,20; 340:11;341:1</p> <p>pages (20) 7:15;30:22;31:7,9, 11,15;55:19;58:14; 104:8;153:6;174:9; 201:13,17,19;202:8,10; 248:23;249:16;254:8, 12</p> <p>pages' (1) 254:8</p> <p>PAH (1) 125:24</p> <p>PAHs (4) 126:2,2,3,5</p> <p>paid (1) 12:11</p> <p>panel (2) 66:24;207:8</p> <p>panels (3) 57:16,18;66:22</p> <p>paper (21) 64:2,8;75:5;88:7,8; 90:4;91:9,9;92:9; 182:11;222:8,11; 223:13,15,20,24; 224:25;232:9,15,16,21</p> <p>papers (9) 28:8;56:6,8;88:3; 96:5;150:14;244:21; 301:21;322:4</p> <p>paragraph (6) 146:25;147:12,17; 206:12;267:17,18</p> <p>parameters (3) 96:9,17;319:17</p> <p>Parcel (1) 5:9</p> <p>Pardon (1) 41:23</p> <p>parents (2) 237:6;239:7</p> <p>parse (1) 338:21</p> <p>part (57) 17:25;24:2;28:21; 39:14;40:14,19;42:12; 43:8;60:8;62:9,24; 69:13;78:3,23;82:14; 111:20;118:21,21;</p>
			P	
			<p>package (1) 201:5</p> <p>page (93) 30:21,21,25;31:5,18, 20,22;32:8,12;56:23; 58:5,17,19;70:14,18, 20,20;105:1,2;106:2; 133:22,23,25;134:1,4; 137:9;144:25;145:20; 146:1;156:7;158:14;</p>	

<p>119:3,4;152:3;157:5; 192:3;205:1,3;213:13; 217:10,15,15;226:3; 233:9;234:16;237:23; 239:1;241:23;244:20; 246:13;261:7;270:7; 282:23;314:23;315:24; 317:14;322:4,24; 326:16;338:15,16,19, 20;339:19;342:6; 343:15;344:2;348:18; 350:16,22</p> <p>partial (1) 340:10</p> <p>partially (1) 185:22</p> <p>participant (1) 80:10</p> <p>participants (2) 45:3;101:9</p> <p>participate (7) 59:16;88:17,20,22, 23,24,25</p> <p>participated (3) 53:11;71:17;232:7</p> <p>particles (14) 71:23;72:4,6,7; 73:11,12,13;74:25,25; 85:23,24;86:3;137:25; 268:14</p> <p>particular (48) 52:8;63:3;72:4;79:4; 84:7;89:11;92:2;95:5; 99:8;100:25;103:2; 108:4,25;113:24; 121:17;123:22;124:22; 128:11;130:22;133:3; 134:24;136:24;138:17; 141:13;144:18;176:17; 203:10,15;204:1; 205:9;213:9;219:24, 25;232:2;234:12; 251:3;260:8;263:16; 264:5,11;275:23; 277:2,12;278:21,23; 287:5;292:14;343:21</p> <p>particularly (9) 54:4;60:25;63:6; 130:25;132:16;133:2; 171:25;244:11;266:22</p> <p>particulate (20) 71:11,16,20;73:8,10; 83:16,21;125:15,16,23; 128:16;134:25;212:12, 13;231:5,20;232:5,6; 268:24;271:8</p> <p>parties (25) 5:21;7:7;8:2,4,24; 10:9,10;11:10,23; 12:18;14:4;17:8,15,17; 18:8;23:9;24:7;29:8; 30:14;32:15;33:19; 42:4;76:6;214:19,21</p>	<p>parties' (1) 18:15</p> <p>parts (67) 53:21;54:8,21;79:8; 140:2,3;142:13,16,21, 25;143:2,4,11;146:19; 147:7,20,23;148:9,10, 14,15;149:14,23,24; 150:7,10,15;154:25; 155:2;156:13;157:6, 10,21;162:15,16,20,22; 164:19,20;167:25; 189:14;191:9;197:3; 201:5;210:14,16; 220:16;221:12,12,23; 222:20;236:24;240:16, 17;242:18;246:8; 257:23;260:22;261:1, 8,16,20;266:8;319:21, 22;330:9;347:11</p> <p>parts-per-billion (2) 163:5;235:9</p> <p>party (1) 8:16</p> <p>passed (1) 51:17</p> <p>past (4) 120:15;121:9; 122:12;255:5</p> <p>Pat (1) 5:24</p> <p>patient (1) 282:10</p> <p>patients (2) 236:16;265:15</p> <p>Patrick (3) 6:19;49:10;306:21</p> <p>pattern (5) 63:5;204:20;205:13; 265:3,4</p> <p>patterns (3) 62:25;81:13,14</p> <p>pay (2) 57:1;332:9</p> <p>paying (1) 266:24</p> <p>PDF (1) 7:15</p> <p>peak (4) 142:8,18;143:13; 147:10</p> <p>Pediatric (2) 263:25;265:14</p> <p>peer (3) 56:11;62:9;92:12</p> <p>peer-review (1) 56:10</p> <p>peer-reviewed (1) 70:5</p> <p>peer-reviewing (1) 182:6</p> <p>people (99) 6:17;10:1;11:22;</p>	<p>12:22,23;14:17;15:21; 16:1;32:1;51:18;52:24; 55:3,5,9;56:11;59:2; 65:21;73:1;78:4;80:5, 14,17,20,23,25;81:1,4, 12,13;82:8;83:18; 86:20;87:5,17;88:1,12, 13;102:13,15;115:4,7, 10,14;118:24;120:11; 125:17,17,18;127:12, 13;128:7;131:8,8; 137:13;144:14;146:21; 176:15;188:12;197:25; 226:5;232:21;234:25; 237:17;241:8,25; 242:3,14;244:22,25; 245:3;248:2,14; 282:15,16,18,19; 283:24,25;286:10; 288:8,8;290:12;292:7; 293:7;301:21;309:7; 313:5;325:7;326:21; 327:4;328:21,23,25; 329:1,6;353:11,17; 354:19;359:6</p> <p>people's (12) 56:7,12,15,19;59:4; 81:6;83:15;208:7; 234:20;247:4;292:10; 326:23</p> <p>per (112) 110:12;140:2,3,4; 142:13,16,17,21,25; 143:2,4,11;146:19; 147:7,20,23;148:9,10, 14,15;149:14,23,24; 150:7,10,15;153:23; 154:13,17,25,25;155:3; 156:13,14;157:6,6,10, 11,21;162:14,15,16,20, 23,23;163:7,18;164:6, 8,11,19,20;167:25; 174:13;175:4;186:20; 187:3;188:6;189:13, 14;191:1,9;195:4,9; 196:9,13;197:3; 210:14,16;220:16; 221:12,12,23;222:20; 236:24;238:19;240:16, 17,19;241:5;242:18, 18;246:9;247:9; 257:23;260:22,22; 261:1,7,7,8,16,16,21; 266:8;269:17,25; 270:9,16,19;271:14; 272:17;273:20;275:2; 280:15;306:8;314:13; 319:21,23;330:9; 341:4;342:22</p> <p>percent (73) 90:5,6,7,18,19,24,24; 91:5,5,8;96:21;119:18; 131:7;148:8,12,18,21;</p>	<p>149:1,1;150:20,23,23; 151:2,2,4,16,16,17,17, 21,21,22,22,23;175:24; 176:2;206:24;207:1, 11,16,21;208:13,14; 225:12,18,23;228:22, 25;238:9,9,13,15,18; 241:8;243:11;244:9; 250:24,24;261:5; 265:19,23;266:1; 319:22;320:18;330:5; 334:1,6;337:20; 341:25,25,25;342:2,3</p> <p>percentage (3) 208:4,10;333:9</p> <p>percentile (10) 142:8,10;147:5; 222:25;243:7;266:6, 23;320:22,24,24</p> <p>perfect (9) 74:21;84:5;140:16; 200:15;245:21;291:13, 13,14,14</p> <p>perform (2) 66:19;308:3</p> <p>performed (2) 65:11;66:20</p> <p>perfumes (1) 59:6</p> <p>perhaps (15) 10:18;82:5;109:11; 118:16;126:21;127:5; 132:24;133:15;139:9; 171:10,20;192:19; 270:10;310:17;351:20</p> <p>period (18) 51:16,22;57:15; 67:25;102:16;118:15; 121:14,21;227:16,18; 228:3,3;235:3;239:14, 15;260:8;261:25;278:1</p> <p>periodically (2) 129:19;139:8</p> <p>periods (3) 79:19,20;283:14</p> <p>peripheral (1) 32:6</p> <p>peri-urban (1) 74:18</p> <p>permissible (2) 129:7;333:17</p> <p>permit (3) 342:15;343:14; 345:13</p> <p>permitting (3) 322:24;337:14; 342:19</p> <p>person (18) 51:14;55:16;62:9; 95:11;98:7;107:6; 108:6;126:19;131:19; 177:11;178:2;277:2; 278:3,5;280:15,24,25;</p>	<p>281:1</p> <p>personal (9) 116:19;276:12; 277:8,20;278:11,15; 279:3,25;289:5</p> <p>personally (2) 91:18;110:18</p> <p>person's (8) 276:11;277:8,20; 278:10,15;280:1; 281:11;282:25</p> <p>perspective (6) 32:15;144:11,12; 199:14,18;314:1</p> <p>Perspectives (3) 64:4;111:23;203:11</p> <p>Peru (2) 54:20;74:17</p> <p>petition (1) 5:4</p> <p>petitioner (1) 5:6</p> <p>PhD (2) 50:24;51:2</p> <p>phenomenally (1) 127:2</p> <p>phenotype (1) 176:19</p> <p>phone (1) 298:2</p> <p>phrase (2) 122:4;351:6</p> <p>phrased (2) 117:7;351:20</p> <p>physical (2) 132:13,14</p> <p>physiology (1) 80:17</p> <p>pick (16) 95:12;183:2,3; 194:15;207:7;271:11; 273:22,25;274:3; 285:13;302:4;318:14; 319:17;320:19,23,24</p> <p>picked (3) 37:16;91:17;194:21</p> <p>picking (4) 93:9;274:2;346:22, 23</p> <p>picks (1) 346:25</p> <p>picture (4) 82:4;119:3,4;226:3</p> <p>piece (3) 39:10;219:11;281:11</p> <p>pieces (1) 200:25</p> <p>PIH (1) 126:4</p> <p>pin (1) 168:3</p> <p>Pinkerton (1) 70:12</p>
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<p>pitch (5) 24:23,24;25:1,3; 351:1</p> <p>place (22) 30:12;38:3,16,21; 74:21;115:20;123:10, 11;159:22;172:12; 197:6;224:7;226:23; 232:23;266:14;280:10; 302:19;309:8;315:9; 316:16;361:13,18</p> <p>placed (2) 139:4;144:19</p> <p>placement (1) 242:12</p> <p>places (7) 37:23;41:2;56:19; 276:14;277:12;312:2,3</p> <p>planning (4) 42:11;168:19;306:1; 349:17</p> <p>plausibility (2) 79:23;80:4</p> <p>play (1) 199:7</p> <p>played (1) 68:17</p> <p>Plaza (8) 5:9;224:15;225:5,11; 227:17,20,23,25</p> <p>plazas (2) 224:8;228:11</p> <p>please (6) 5:21;44:23;49:9,13; 235:17;275:24</p> <p>plus (4) 26:14;83:5;85:14; 241:4</p> <p>PM (13) 69:4;83:18;110:10; 122:1;137:11;198:14; 199:20,20;200:1; 206:22;231:21;271:4; 362:24</p> <p>PM10 (1) 210:5</p> <p>PM2 (2) 127:22;218:9</p> <p>PM2.5 (46) 73:23,24;74:2;104:1; 109:4,7;121:14,20; 122:6,11;123:21; 124:16;125:13;137:22; 139:20;140:4;141:19; 200:10;210:5;212:3,6; 232:14;233:1;241:1,3, 9,10,20;242:25; 244:17;247:8;269:3; 270:5,15,21,25;284:24; 285:1;330:2;335:6; 336:10;342:18,20,23; 345:17,21</p> <p>pocket (1)</p>	<p>57:3</p> <p>point (95) 9:16;13:24;24:10; 31:15,18;32:16;34:7, 19;40:18;56:9;63:23, 24;66:13;70:24;71:3; 95:5;98:25;109:24; 110:18,25;111:23; 114:22;122:11;127:22; 131:23;134:20;138:21, 24;139:17,23;150:5; 152:12;153:25;161:24; 163:14;165:2;172:7; 181:8;190:6;192:14; 193:21;194:23;195:3, 6,7,25;208:18;216:3,4, 8;219:10;228:18,22, 23;230:24,25;234:8; 247:22;248:12;257:25; 260:10;262:23;271:15; 273:3,4,4;278:14; 281:20;287:21;289:20; 290:24;291:23;296:12; 300:24;308:13;316:21; 318:2,25;320:2;321:1; 328:10;333:24;336:4; 343:17,20;346:4; 348:24;350:22;351:8, 24;357:7;360:3,8,23; 362:19</p> <p>pointed (1) 36:12</p> <p>pointing (2) 274:20,23</p> <p>points (7) 92:2;147:17;148:5; 156:19,23;169:25; 193:15</p> <p>police (2) 59:8,9</p> <p>policy (11) 9:17;10:2;111:6,12, 13,14,22;112:6;271:8; 295:9;341:20</p> <p>policymaker (1) 319:9</p> <p>pollutant (17) 75:2,14;83:2,3,3,23; 111:5,7;112:10,21; 126:7;127:16;199:8, 11;213:12;221:22; 235:3</p> <p>pollutant-by-pollutant (1) 213:24</p> <p>pollutants (41) 71:7;73:20;79:1,9; 80:13;81:5;82:23;84:3, 4,5,19,20;85:17; 112:24;113:9,12,17; 114:6,21,23;119:2; 122:17,19;124:17,20; 199:14;206:20;212:15; 213:7,8;215:15;</p>	<p>216:11;229:10;230:15; 240:9;263:25;287:10; 292:9;318:24;336:15, 16</p> <p>polluter (1) 337:16</p> <p>pollution (90) 51:1,24,25;52:23; 55:13,14,15;61:15; 63:2;64:1,15,16,20; 65:4;73:2,7,25;76:18; 78:6,7;84:22;101:19, 24,24;102:1,8,9,11,12, 24;103:1;109:15; 116:25;118:19,23; 119:6;124:2,3,14; 125:6,25;126:24; 127:10;132:17;144:14; 168:14,17;169:6; 199:6;202:21;203:6; 204:6,8;205:5;207:3; 208:5;209:12,13; 212:24;214:7,10,12; 218:11,24;219:7; 225:5,7,13;226:4; 232:5,6;234:10;236:6; 244:22,24;245:5; 265:3;268:24;271:9; 272:8;273:12;275:11; 293:1,6;299:9;312:13; 328:23;329:2,4;340:1</p> <p>pollution-related (1) 261:10</p> <p>pollutions (5) 55:25;112:4;126:13; 132:17;168:15</p> <p>polyaromatic (1) 126:5</p> <p>pool (13) 165:12,13;173:11, 12;174:17;175:18,21; 176:9;188:8;255:8; 308:6;311:15;335:10</p> <p>poor (1) 209:4</p> <p>popcorn (8) 300:25;301:3,5,13, 19,22,25;302:2</p> <p>population (11) 131:1;133:3;141:24; 240:6,7,11;242:11; 277:3;283:22;284:7,10</p> <p>populations (14) 81:12;130:22,24,25; 131:15,16;138:1; 176:11;268:2;326:11; 327:22;328:4,10,18</p> <p>portions (4) 309:23;323:14; 324:6,16</p> <p>posed (1) 105:5</p> <p>poses (1)</p>	<p>106:17</p> <p>position (10) 12:11;53:3;115:17; 185:25;190:17;193:7, 8;326:4;332:17,19</p> <p>positions (1) 56:5</p> <p>positive (3) 86:19,24;90:25</p> <p>possibilities (5) 317:6,25;318:9; 320:5;353:17</p> <p>possibility (5) 21:2;185:2;290:25; 320:7,8</p> <p>possible (11) 20:9;109:17;131:19; 226:19;250:15,15; 294:19;295:14;297:14; 303:3;328:14</p> <p>possibly (2) 59:3;357:12</p> <p>postdoctoral (1) 51:2</p> <p>postponed (1) 357:22</p> <p>postulate (2) 107:21;344:23</p> <p>postulating (2) 107:18;108:16</p> <p>potential (4) 59:15;176:10; 273:17;342:15</p> <p>potentially (2) 63:4;79:3</p> <p>potentials (1) 195:5</p> <p>power (3) 59:1,2;257:2</p> <p>powerful (1) 102:25</p> <p>PowerPoint (1) 119:9</p> <p>practical (4) 46:6,8;289:12,17</p> <p>practice (8) 93:11;94:5;96:23; 112:1;237:3;282:10; 283:6;322:7</p> <p>practices (1) 58:2</p> <p>practicing (1) 282:8</p> <p>practitioner (1) 283:20</p> <p>precisely (1) 52:5</p> <p>precision (1) 346:5</p> <p>preclude (1) 133:1</p> <p>predict (4) 64:6;127:4;152:6;</p>	<p>318:10</p> <p>predictability (1) 214:23</p> <p>predicted (2) 206:24;221:25</p> <p>predicts (3) 158:11;315:3,6</p> <p>predominant (1) 74:2</p> <p>preexisting (3) 168:12,14,15</p> <p>preface (1) 107:24</p> <p>preference (5) 14:5;23:11;24:22; 167:23;290:19</p> <p>pregnant (1) 225:14</p> <p>prejudicial (1) 36:20</p> <p>preliminaries (2) 22:17;47:20</p> <p>preliminary (9) 7:4;41:16,17,18; 42:6;46:25;47:22;48:7, 18</p> <p>prematurity (1) 225:10</p> <p>premise (1) 194:16</p> <p>prepare (5) 29:6,9;43:21;46:14; 325:13</p> <p>prepared (11) 36:24;56:6;121:20; 122:10;312:10;313:1; 316:24;317:13;323:7; 334:21;335:15</p> <p>preparing (4) 12:16;23:21;232:2; 296:8</p> <p>presence (1) 336:23</p> <p>present (8) 45:10;46:3;60:11; 90:3;250:22;267:23; 287:16;320:7</p> <p>presented (7) 88:3;104:20;169:17; 323:12,14,19;324:7</p> <p>presenting (1) 56:4</p> <p>presents (5) 176:20;212:23; 251:5;292:4,5</p> <p>press (3) 75:7;353:9,11</p> <p>prestigious (2) 57:22;244:20</p> <p>presumably (4) 6:22;29:16;227:24, 25</p> <p>presume (1)</p>
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<p>24:24 pretty (16) 36:1;57:21;65:23; 75:15;82:16;85:24; 88:18;127:10,15; 135:1;141:6;143:2; 176:7;227:25;319:11; 362:11 prevent (1) 164:24 previous (7) 100:16;162:6; 164:17,25;166:7; 200:24;329:12 previously (3) 16:20;201:6;269:22 prices (1) 227:9 primarily (3) 35:2;37:8;240:7 primary (4) 12:13;54:9;137:22; 315:17 principal (1) 71:12 principle (2) 185:17;285:5 print (3) 40:22;70:18;234:5 printed (2) 40:21;41:3 prior (4) 17:18;59:17;165:25; 284:18 priori (2) 283:15;284:4 private (3) 58:15,15;282:9 probability (6) 90:1,7,13,17,17; 91:12 probably (65) 23:16;25:18;56:2; 65:12;67:24;79:25; 90:8;91:9;93:5,21; 95:22;97:12;114:18; 115:11;120:13;137:18; 142:17;144:8;145:20; 176:16;177:4;194:14; 232:19;235:5;242:10, 13;243:22;245:14,16; 247:17,18;249:25; 266:4,8;283:2,23; 285:13,14;292:12; 297:24;299:8;301:22; 303:4;304:22;305:20; 308:12;309:21;311:16, 17,24;313:5;325:6,7, 12;328:5;329:2,3; 334:5;335:3;339:19; 341:22;346:5;352:11; 356:1,17 problem (34)</p>	<p>9:6;19:12;79:7;80:9; 81:3;86:20;95:14,18; 98:16;117:1;168:23; 170:11,11,15;171:19, 21;177:19;182:25; 186:10;194:22;195:1; 199:9;200:14;213:5; 214:23;216:1;252:9; 266:17;282:23;290:11; 310:24;311:23;314:12; 347:13 problematic (7) 40:10,15;178:10,14; 189:5,17;191:18 problems (6) 80:8;82:7;126:9; 169:6;171:25;282:14 procedural (1) 296:3 procedure (1) 9:3 proceed (5) 13:13;49:15;123:17; 231:16;293:20 proceeding (2) 12:22;31:19 proceedings (3) 12:15;29:21;309:12 process (25) 9:5;52:9;54:6;67:23; 69:14,24;77:24,25; 78:1,3;89:12;100:23; 125:5;127:25;128:19; 138:11,21;228:2; 247:25;322:24;336:13; 337:15,18;352:5,8 produce (7) 97:9;112:3;186:2; 187:1,2;292:9;330:25 produced (9) 81:7;100:15;119:2,6; 126:6;180:11;293:6; 296:15;302:19 produces (1) 319:4 product (1) 309:9 products (1) 59:4 profession (1) 12:13 professional (5) 44:21;56:24,25; 285:10;292:17 professionals (1) 288:11 professor (6) 51:5,7,7,8;53:17,17 professors (1) 65:19 proffer (2) 139:23;232:13 profile (1)</p>	<p>278:9 program (5) 50:25;53:14;58:25; 65:17;321:24 programs (1) 53:23 progressively (1) 84:2 project (1) 300:16 projected (1) 121:2 projection (1) 320:4 projects (3) 53:14;299:20;300:18 promise (1) 28:15 Promotions (1) 53:9 promulgate (1) 139:9 properly (1) 186:18 properties (1) 335:10 property (1) 132:5 proponent (1) 177:9 proportion (1) 207:11 proposals (3) 56:14;62:10;92:13 propose (1) 336:12 proposed (9) 24:7;33:21;34:24; 35:25;113:21;253:6,7; 330:10;338:9 proposition (1) 106:17 protect (16) 133:10;146:21; 268:2;286:13;290:9, 13,19;301:2;316:7,8; 325:22;327:15,21; 328:19;329:6,11 protected (1) 131:10 protecting (1) 188:10 Protection (6) 107:13;137:24,25; 148:23;267:25;319:14 protective (8) 131:6,7;133:18; 142:4;320:16;321:3; 328:25;329:8 protects (1) 131:14 protocols (1) 316:13</p>	<p>provide (10) 55:2;84:9;92:15; 103:12;106:6;212:25; 299:13;308:14;311:7; 313:7 provided (6) 50:6;55:17;59:18; 137:23;313:11,17 provider (1) 287:15 provides (3) 94:11;147:3;270:4 providing (1) 285:7 provocative (1) 126:10 proximity (1) 312:12 prudent (8) 15:2;112:6;229:11; 230:16,19,21,22;290:2 public (33) 5:2;6:20;9:7,7,21,24; 12:7;15:17,23,25; 16:17;28:4;50:1,22; 52:22;54:9;68:10,11; 111:13,22;112:1,6; 124:12;135:1;199:17; 229:13;230:17;248:11; 249:17;271:8,9;289:4; 292:17 publication (8) 70:17;71:19;86:20; 129:25;182:11;201:23; 221:22;248:9 publications (1) 56:3 publicly (1) 295:22 publish (5) 63:17;67:9;86:22; 87:17,18 publishable (1) 92:16 published (17) 9:3,9;64:2,8;70:4,24; 232:19;238:21;239:13, 18;244:20;247:16; 269:1;283:1;295:9; 329:12;336:22 publishing (1) 56:10 pull (4) 37:21;38:8;257:15; 262:3 pulled (1) 263:15 pulling (1) 37:8 Pulmonary (3) 54:4;55:12;127:14 pulmonologist (1) 126:16</p>	<p>pumps (1) 5:7 purport (1) 116:15 purports (3) 253:19;279:1,5 purpose (5) 69:21;80:23;81:19; 205:4;245:5 purposefully (1) 69:16 purposely (1) 81:22 purposes (3) 58:21;93:3;332:2 pursuant (1) 5:5 pushed (1) 169:3 pushing (1) 66:12 put (69) 15:17;31:18,22;32:8, 12;37:21;38:3,16;56:1; 58:22;76:25;80:14; 81:5;85:23;86:1;90:13, 16;91:22;93:24;96:15; 112:10,21;115:20; 118:24;120:8;140:15; 142:1,2,14;154:23; 155:17;157:5;165:7; 179:5,18;196:8; 217:19,25;224:7; 230:25;235:16;245:4; 246:8;256:25;261:7,7, 8;262:4;268:15; 280:25;286:16;292:3; 293:7;294:6,13; 297:10;299:11;300:5; 302:9;305:1;315:12; 318:19;325:7;327:11; 334:4,14;336:5;346:4; 360:4 puts (2) 107:11;115:17 putting (10) 37:14;38:21;59:4; 107:6;155:22;169:2; 227:16,24;264:9; 286:25</p>
Q				
			<p>qualification (1) 193:25 qualifications (4) 8:2;43:7,9;44:20 qualified (7) 36:13;39:9,9;117:10; 128:22;332:22;333:1 qualifies (1) 349:5 qualify (4)</p>	

42:19;43:2;63:14; 340:3 qualities (1) 109:23 quality (35) 52:2,17,25;54:15,20; 60:25;61:4;62:4,6; 63:15;64:4;65:18; 66:24;67:3;68:18; 69:14;76:12;78:17; 89:6,21;94:25;110:6; 127:23;130:21;133:1; 144:10;149:22;176:24; 268:1;269:3;304:8; 306:21;308:15;345:13, 13 quantify (3) 90:3,12;92:19 quantitative (2) 116:10;311:7 quarter (1) 197:4 queue (3) 275:18;283:13;341:4 queuing (2) 119:3;338:19 quick (4) 8:12;141:6;229:5; 231:10 quickly (6) 69:20;103:9;158:4; 346:19;347:18;356:5 quit (1) 127:14 quite (20) 26:8;43:10;69:20; 71:25;84:17;91:20; 113:15;114:1;120:16; 121:25;131:2;159:24; 160:19;182:21;207:5; 228:17;270:10;294:19; 326:20;341:7 quote (17) 25:4;32:24;104:1,13; 109:8;133:10,21,23,24; 181:25;182:1;193:22; 195:13,14,16;196:4; 248:9 quote/unquote (1) 297:2 quoted (4) 108:11;193:4;203:1, 4 quotes (1) 106:1 quoting (5) 37:9;223:1;230:5,8,8	227:14 radar (3) 133:16;284:2;326:23 raise (5) 49:12;292:10;343:5; 347:12;352:9 raised (8) 32:23,25;36:9; 170:12;183:6;297:2; 352:9;354:13 raises (1) 121:4 ran (1) 80:17 randomly (1) 97:14 rang (1) 355:7 range (90) 52:16;79:6;91:24; 93:2,9,12,14;95:11,15; 96:18,21,24;97:9; 118:16;125:15,19; 126:12;134:11,13,15; 135:2,4,5;149:11; 162:17;163:1,17; 164:16,24;173:21; 189:17;191:10;210:2; 220:1;221:10,19,24; 222:24,25;223:6,9; 229:10;230:14;235:9, 9,12;238:12;240:21; 241:7,9,10,15;243:6,8, 15;246:8,11,21,23; 251:21,22;252:19; 255:12;262:21;266:3, 11;274:11,11;284:7; 287:3,7,12,15;292:11; 315:14;316:9,10,17; 317:5,22,25;318:3,7; 320:2,3,5;327:10; 337:25;338:23;345:24 ranged (4) 221:23;236:24; 238:9;261:1 ranges (9) 66:17;150:22; 221:20;244:6;254:23; 258:6;265:21;269:24; 287:13 ranks (1) 51:6 rare (1) 300:17 rarely (1) 83:6 rate (3) 125:16,17,18 rates (4) 122:13,18;191:11; 310:18 rather (12) 10:11;26:3;38:18;	39:12;84:19;103:5,7; 149:24;181:4;185:16; 186:12;345:25 ratio (10) 250:18,20,20,24,25; 259:9;260:20;261:16; 265:5,6 ratios (2) 250:17;265:18 reach (1) 362:20 reached (1) 109:24 reaching (2) 144:19;164:23 react (2) 192:24;329:2 reaction (2) 95:15;182:8 reactions (2) 283:20;332:22 read (18) 32:9;61:14;142:23; 143:9;147:1,16;148:5; 162:9;174:24;175:7; 182:19;212:21;213:3; 220:3;233:3;255:23; 261:4;264:13 reading (8) 128:4;137:19; 174:21;210:8;229:18; 234:4;270:3;273:9 readings (3) 37:11;192:10,11 ready (4) 48:21;297:15; 333:11;358:7 real (16) 32:16;44:16,17; 82:21;83:6,23;90:19; 93:18,21,22,25;96:18, 20;98:2,19;102:11 realistic (2) 100:3;181:23 reality (16) 84:11;88:4;93:7; 95:21,23;96:10,12; 99:15,16,17,18;148:23; 179:4;182:4;194:14; 213:17 realize (1) 11:19 really (58) 12:9;16:10;28:12; 29:3;32:4,13;37:20; 38:16;39:6;44:20;77:1; 86:15;88:1;90:19; 93:22;95:25;96:14; 97:12,12;100:1; 112:22;114:18;118:3; 126:15,21;143:3,12; 169:14;177:9,16,17; 184:19;185:3,25;	197:21;199:12;208:7; 211:3,15,15;213:4; 228:19;229:1;233:11; 243:25;254:22;279:9; 291:22,22;294:22,24; 312:10;319:21;329:1; 352:4,16;358:13;361:8 realm (1) 56:9 reason (16) 14:15;15:11,24; 39:14;43:4;79:23; 85:15;88:23;91:17; 100:12;103:3;120:10; 151:9;175:20;190:22; 293:4 reasonable (3) 24:20;113:11;337:24 reasonably (1) 280:11 reasons (9) 37:2;91:25;131:4; 161:21;186:19;240:5; 249:3;283:24;284:11 rebut (2) 25:2,6 rebuttal (19) 13:9,10,13,19,23; 22:1;23:23,24,24;29:5; 30:12;34:7,18;42:8,10; 296:6,14,20,20 recalculated (1) 219:22 recall (10) 15:5;104:22;159:14; 226:21;239:14;309:15, 16,24;333:12;335:11 receive (6) 39:14,18,22;40:18; 353:15,18 received (8) 7:4,11;8:14;29:17; 51:10;287:17;309:15, 15 recent (5) 40:21;55:11;127:9; 270:15;286:15 recently (5) 69:11;134:24;140:9; 286:17;313:6 receptors (2) 115:3,14 recess (4) 123:15;198:14; 293:21;346:12 recognizable (1) 118:24 recognize (1) 33:12 recognizing (1) 21:20 recollection (5) 168:7;312:6;333:13;	334:12;362:15 recommend (4) 17:12,13,15;32:5 recommendation (5) 5:19;24:12;92:9; 130:3,6 recommendations (2) 133:25;137:13 recommended (8) 17:20;133:23; 134:23;143:14;286:8; 307:7,16;310:24 recommends (1) 134:11 reconsidered (2) 33:16;270:11 reconsidering (1) 69:16 record (31) 5:21;7:10;13:3,5; 23:20;24:2,2;28:11,11; 29:8;33:6;36:2,47:5; 49:9,17;50:5;69:21; 137:7;143:1;193:12, 14,15;218:1;229:24; 230:4;231:18;254:13; 264:10;334:15;336:5; 346:13 records (4) 36:23;58:25;88:16; 302:13 recross (1) 349:12 recruit (2) 88:13;101:9 recruited (1) 88:12 recruitment (3) 88:14;89:1;101:4 red (2) 49:6;172:22 redirect (5) 334:20;335:19; 336:5;346:18,20 redo (2) 325:5,6 reduce (8) 182:1;271:8;283:10; 289:22;290:3,10,24; 291:6 reduced (4) 187:21;225:10,12; 271:3 reduces (1) 84:8 reduction (6) 151:15;225:4; 228:21,21,25;271:4 reductions (1) 150:25 reevaluate (3) 98:11;129:16,19 reevaluated (2)
R				
race (1) 228:14 racial (1)				

129:13;285:4 reevaluates (1) 129:9 reevaluating (2) 124:1;189:25 refer (4) 139:13;147:24; 200:2;283:5 reference (4) 136:12;137:3; 212:19;286:9 referenced (2) 7:14;260:5 referred (4) 136:21,22,22;205:17 referring (16) 91:13;127:21; 135:14;137:7;146:6, 14;184:4;189:4;191:5; 236:13;260:14;302:24; 324:14,17;340:16; 344:3 refers (1) 174:13 refined (2) 187:19;246:21 reflected (2) 139:12;219:1 reflecting (1) 147:21 refrain (1) 341:12 Refresh (3) 58:20;333:13;334:12 reg (1) 143:14 regard (4) 44:14;124:22; 141:19;326:8 regarding (11) 7:8,22;8:1,3,5;14:9; 32:23;61:23;76:10; 78:11;106:11 regardless (6) 83:18;168:4;218:1; 336:20;346:5;361:8 regional (2) 64:22,23 Register (6) 105:14;106:2; 137:10;145:7,18; 232:14 regulate (4) 84:4,10,19;232:6 regulated (1) 214:22 regulating (2) 164:25;215:9 regulation (2) 234:10,18 regulations (3) 84:18;293:2,3 regulator (2)	133:2;149:16 regulatory (10) 11:22;68:14;94:7; 127:20;138:20;142:22; 144:10;149:4;247:15; 337:5 reinforcing (1) 267:24 reintroduced (1) 14:8 reject (5) 39:22;88:8;101:5; 215:19,20 rejected (1) 344:15 rejection (1) 215:24 relate (9) 79:10;89:4,18;188:1; 200:13;218:12;234:9; 254:25;280:17 related (7) 56:3;72:2,25;89:20; 127:15;141:14;211:4 relates (1) 235:5 relating (8) 55:25;60:14,23;61:1, 5;71:4;79:2;137:11 relationship (11) 55:8;58:10;79:21; 103:1;206:22;212:5; 226:7;238:11;265:17; 270:20;338:4 relationships (2) 103:21;210:7 relative (4) 115:14,20;250:18; 338:13 relatively (5) 141:20;197:19; 225:9;234:1;267:23 relevance (2) 128:17;288:20 relevant (2) 155:22;234:15 relied (3) 81:11;161:7;164:17 rely (7) 36:19;40:15;152:3; 190:7;254:3;292:21; 313:16 relying (2) 40:13;106:8 remain (1) 36:10 remanded (1) 137:21 remarkable (4) 39:7;126:15;208:6; 359:4 remarkably (1) 359:6	remember (22) 14:1;57:9;80:8; 144:5;179:6;181:24; 189:25;212:1;232:11; 298:18,19;300:4; 302:13,15,21;306:10; 307:19;308:13,20; 309:18;323:5;333:4 reminder (1) 356:18 removal (1) 160:24 remove (1) 160:9 removed (2) 161:19,21 reorganizing (1) 52:10 repeat (1) 325:6 repetition (1) 185:16 rephrase (2) 108:24;344:3 reply (6) 23:21;25:2,6;29:2; 30:3,18 report (34) 5:19;158:16;159:5, 14,20,20,21;160:16; 161:2,2;174:10; 177:18;181:25;182:19; 187:15;193:5;222:3; 262:18;296:19,20; 314:5,19;323:3,8,11; 324:7,13,17,19;331:7; 333:15;340:22;341:1; 352:25 reported (1) 206:13 reports (20) 31:13,15;43:13; 152:25;157:1,2;296:6, 8;305:3;309:22; 312:18;313:4,13; 315:18;324:20;325:1; 333:14;339:7;345:3,9 represent (2) 144:13;258:3 representation (2) 99:15,16 representative (3) 96:10;235:6;304:17 represented (1) 300:25 represents (12) 59:14;92:19,20; 124:3;142:4,7;143:12; 144:4;166:18;256:21; 257:4;259:12 reproduced (1) 126:11 require (6)	28:3;45:16;108:25; 322:17,20;356:22 required (6) 131:5;322:22; 327:24;328:3;348:12, 17 requirement (3) 9:9;49:20;192:6 requires (3) 43:18;141:4;240:2 requiring (1) 44:7 requisite (1) 137:24 research (29) 54:12;55:2,11,11; 56:15,18;60:25;62:1; 63:25;64:14;68:20,21; 71:16;72:8;74:10;84:2, 22;111:16;127:12; 205:2;231:6,6,21,22; 232:5,10,23;234:14; 309:8 reserve (3) 25:17;126:20;127:5 residences (1) 189:5 resident (2) 8:15;12:14 residential (3) 308:8;335:10;338:11 resources (3) 82:17;298:5;325:9 respect (20) 42:8;58:6,15;60:13, 22;61:25;76:18;79:1; 108:4;109:4,6,9; 117:17;118:18,20; 212:24;232:2;234:21, 22;292:2 respectively (1) 241:13 respects (1) 114:3 respirable (1) 285:2 respiratory (14) 85:18,23;125:20; 132:15;140:19;171:25; 188:13;205:6;212:24; 236:5,7;241:21; 256:10;292:14 respiratory-related (1) 262:10 respond (2) 29:10;333:18 responded (2) 8:10;29:1 response (7) 17:10;75:17;76:7; 115:23;141:6;182:7; 296:8 responsibilities (1)	53:6 responsibility (1) 359:9 responsible (2) 67:23;213:1 rest (6) 8:25;22:18;158:1; 242:9;264:1;275:19 restrictions (1) 26:13 restructure (2) 13:22;14:2 resubmitted (1) 33:16 result (6) 68:5;82:5;179:13,17; 243:9;313:20 resulted (3) 135:3;160:7;225:16 resulting (1) 55:24 results (20) 86:17;87:2;88:25; 153:21;181:18;183:16; 187:4;188:11;206:13; 212:10;225:1,24; 228:11;231:6,22; 243:3;245:12;271:7; 316:18;317:24 resume (1) 5:14 résumé (5) 47:5,16;53:16;76:17; 201:2 resumed (1) 5:13 retained (3) 58:6;59:16;60:2 returned (2) 51:4;138:5 reveal (2) 41:7,9 reverse (1) 85:1 review (41) 40:15;43:6;45:22; 46:1;56:7,8,11,12,13, 14,19;57:24;60:24; 61:25;62:7,8;69:8; 92:13;94:6;96:4; 137:15;138:5,22; 144:24;180:17;198:23; 199:1,3;200:4;247:20; 302:18,23;303:1; 312:17,21,25;324:18, 19;325:11;326:20; 335:1 reviewed (16) 36:25,25;67:24; 198:22;308:10;309:11, 14,17,18,19,24;312:20, 22;313:1,13;325:1 reviewing (5)
--	---	--	---	--

<p>56:6;88:8;98:3; 177:8;180:19 reviews (2) 62:9;134:10 revise (1) 129:21 revised (3) 181:20;271:12;323:8 revision (1) 274:16 rezonings (1) 25:22 Richard (7) 298:6,8,10,11,11,17, 23 rid (1) 343:3 right (570) 6:21;7:1;9:19;10:1,8, 19;13:6;14:3;16:14,23; 18:6,25;19:3,25;20:18, 21,23;22:5,10,23;1,2,3, 3,3,8;24:3,5,21;25:7, 11,17,19;26:25;27:8; 28:2,5,16,24;29:24; 30:7;31:2,2,24;32:11, 22,22;33:25;34:25; 35:13,18,20;36:9;37:7; 38:25;39:16,24;40:1; 41:13,15,21;42:3,5; 43:1;44:23;45:25; 46:11,18,20;47:3,7,21; 48:9,17,20;49:12,15, 16,21;50:10,12;51:16; 56:8,9;60:10;63:8,20; 72:11;73:10,19;74:13; 75:24,24;76:5,16,21; 77:3,3;78:14;80:19; 82:13;83:11;84:1; 85:11,14;87:4,10;88:2, 7;89:19,23,24;90:1,11, 12,20;93:1,19,19; 95:24;96:1,12,15; 98:18,20;99:17,24; 100:5,16;101:6,15; 102:10,11,16;103:14, 17,20;105:6,8,25; 108:2,23;110:14,24; 113:4,8,18,20,22,25; 114:11,13,13;115:1,2, 3,4,6,7;116:5;117:24; 118:2,4,9,12,22;121:6, 6;122:15;123:13,18; 124:13;125:8;126:18; 128:24,24;129:3; 130:13,17,19,21;132:7, 9;133:8;135:12,22,24; 136:6,11,13,17,18; 137:2,5,9,19;138:6,19, 21,22;139:16;140:1; 141:16,22;142:1; 143:6,12;144:1; 146:15;147:9,12;</p>	<p>148:1,18;149:3,11; 150:8,12;151:1,9,13; 152:5,8,10;154:8,9,19, 19;155:2,5,7;156:6,17, 21;157:2,12,12,16,18; 158:3,4;159:16;160:3, 12;161:12,23;164:6,8; 165:19;166:8,11,15,21; 167:12;168:24;169:7; 170:18,18,21,21,22,22, 25;171:5,9,15,16; 172:1,2,5,7,12,19,20; 173:17,17,19,23; 174:21,22;175:24; 176:22;177:7;178:21, 21;179:3,18;180:22; 181:15,17;182:25; 183:17;184:9;185:7, 24;186:6,24;187:10, 16;188:4;189:10,11,19, 22;190:1,16,24;191:16, 25;193:20,24;194:10; 195:2;196:3,5,24; 197:8,15;198:12,16,18; 199:9,10,16;200:11,18, 19;201:3,3,7,8,16,21; 202:23,24;203:19,20; 204:11;205:12;206:21; 207:14,16,22,25;208:9, 12,14,23,24,25;209:25; 210:13,18;211:6,8,10, 12,13,19,19,24;216:19, 22;217:6,19,21,24; 218:4;219:9,12; 220:12;222:13,23; 223:7,12;224:13,16,16, 18,24;226:1,11;228:1, 7;229:2;231:9,15,19; 232:1,22;233:17; 234:5,6,19;238:22; 239:1,22;241:16,22; 242:1;243:17;244:17, 18;245:23;246:10,24; 247:6,19;248:6,11,17, 22;249:10;250:9; 251:13,14;252:1,4,25; 253:3,5,8,17,18,21,23; 254:11;256:6,10,15,17, 18,20;257:9,22; 258:25;259:10,21; 260:13,14,16,19,21,25; 261:14;262:1,5,5,7,8, 21;264:8,18;267:10, 19;268:10,13,20; 269:13,14,18;270:18, 24;272:21,24;273:1,5, 7;275:14;276:4,11,23; 277:14,16,18,21,25; 278:7;279:19;280:12; 281:7,16,25;282:14,23; 288:10;289:15;293:11, 19;295:7,8,25;296:10, 23,24;297:5,7,13,15;</p>	<p>298:14;300:12;302:2; 304:11;305:5;307:25; 310:9;311:6;313:2,19; 315:1,10,11;316:20; 317:10,11;318:4,15,21; 319:7,8,23,24;320:13, 14;321:7;323:16; 324:4;327:5,19; 328:16,22;329:20; 330:4,13,23;331:24,25; 332:12;333:19;334:10, 13;339:11;340:10; 341:23;345:5;346:25; 349:9,14;350:1;351:7, 19;352:20;353:22; 354:9,21,25;355:17,25; 356:1;357:2,7,10,15, 23;359:21;360:14,18; 361:1,2,20;362:3,11 right-hand (8) 154:5;162:5;167:1; 172:21;175:8,9; 206:10;256:19 rights (1) 9:21 rigor (1) 310:21 ring (3) 335:6;338:24;339:13 risen (1) 51:6 risk (82) 54:25;64:7;71:24,25; 73:1;83:17,19;85:10, 12,14,20;86:9;89:25; 90:2,16;91:19,20;93:3; 94:6,9,10,13;103:20; 110:1,2;115:11;124:8; 130:7;131:12,13; 189:18;196:18;199:23; 212:8,14;239:5; 250:18,21;257:4,4; 261:10;265:5,6,18; 271:3;277:2,3;278:11; 279:23,24;280:18; 292:20;293:8;301:22, 23;306:9;307:4,8,9,16; 308:3;310:8,11,14,16, 19,22;311:1,3,4,5,8,9, 12,16,17,23;314:19,22, 23;326:5;350:6 risks (4) 110:21;111:2; 115:19,21 Road (31) 5:8;49:11;74:19,19, 20,21,22;75:4,4,6,6,14, 15;139:18;143:22,24, 25;144:1,2,3;158:5; 166:8,9,19,23;169:2; 213:19;281:8,9;335:6; 338:24 roads (10)</p>	<p>75:11,16;148:8; 158:10,22;192:9; 329:19,21;349:2,5 roadside (2) 147:10,11 roadway (25) 75:21;142:14; 148:18,19,19,21; 150:16,17;151:4,16; 152:1;154:4,8;160:5,9, 9,10;165:2,7;167:1; 168:21;175:9;188:16; 191:12;338:6 roadways (14) 142:15;148:7,12,14; 150:5,7,23;175:7,12; 188:19;192:4,17; 329:17,17 role (7) 56:5;57:10;68:17; 134:8;232:1;288:22; 314:20 roll (2) 48:21,21 Ron (1) 128:14 roof (1) 172:12 room (11) 5:16;19:14,17;20:7, 15,24;21:17;91:7; 101:16;263:19;311:1 rooms (1) 293:23 roots (1) 52:14 ROSENFELD (91) 6:8,8,10,24;7:2,9,11, 13,24;8:7;9:13,17; 11:3,5,7,16,18;12:3,5, 9,20,24;13:3,7;14:20, 24;15:2,8,15;16:7,23, 25;17:3;19:15;20:4,10, 20;21:3,5,9,12,15; 22:13,16;23:1,5;24:5,7, 12,19,23;25:12;26:5,7; 27:12;28:12,15,22; 29:3,19,22,25;30:4; 31:2,8,12;33:22;34:5, 23;35:16,19,21;42:6,7, 16,22;43:12,15;44:10, 17,19;45:8,13,19;47:2, 4,10,12,19;48:1;356:24 roughly (11) 151:23;154:4;155:2; 156:3;162:21;174:23; 192:20;193:11;221:12; 240:20;246:17 routinely (1) 283:3 rubric (1) 76:25 rule (24)</p>	<p>36:5;43:20;45:9; 46:4;108:12;136:23; 138:17;140:11,14; 143:19,21;145:1,12; 153:21;154:10;175:11; 188:1;192:3,6;195:23; 233:1;284:4;285:8; 296:9 ruled (1) 216:24 rule-making (3) 136:9;200:7;255:9 rules (12) 30:25;32:10;103:25; 104:1,4;108:7,10,20; 109:3;145:24;200:2; 348:24 run (22) 63:16,18;93:8,15,20; 96:1,2,9,17;97:8,21,21, 22,23;183:15;237:4; 314:8,9;317:24; 318:18;321:13;322:15 running (13) 66:4,7,18;94:3; 95:11;154:4;179:7; 181:4;183:1,2;238:5; 263:18;322:2 runs (6) 94:19;97:22;158:5; 298:24;347:5,12 rural (11) 156:1;176:23; 177:16;187:23;192:21; 193:6;195:8;246:15; 271:14;345:5,7</p> <hr/> <p style="text-align: center;">S</p> <hr/> <p>S-2863 (1) 5:4 sacrifice (1) 79:13 safe (13) 109:22;111:6,17; 120:4,9,23;141:9,17; 142:12;301:12;325:25; 328:14;349:21 safer (1) 120:22 safety (17) 50:21;51:1,15,17,20, 21;120:6;195:23; 285:7,11;289:5; 319:13;327:21;328:5, 9,12;348:10 Sam (1) 7:22 same (59) 26:12;33:20;50:16; 52:1;72:3;73:11;83:20, 25;92:25;94:2;107:1,9; 115:8;121:25;122:8;</p>
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<p>129:8,22;159:22,23,25; 160:2,2;161:3;173:14, 14,15;174:23;179:22; 181:12;183:2,3; 185:10;212:4;216:13; 218:5;219:14;222:2; 225:2;237:9;244:7,8; 247:2;248:15;250:20; 256:1,25;257:21; 262:11;264:9;269:6; 271:2,4;280:2;310:10; 311:12;321:12;326:16; 335:3;343:6</p> <p>Samet (1) 128:10</p> <p>sample (7) 87:21;88:2,5;92:7; 93:14;97:14;101:5</p> <p>sampler (1) 280:25</p> <p>samples (2) 102:13,15</p> <p>sampling (1) 321:25</p> <p>sand (2) 62:23;63:2</p> <p>sanitary (3) 52:15,16,19</p> <p>sanitation (1) 52:17</p> <p>sat (2) 66:23,24</p> <p>satellite (1) 65:3</p> <p>satisfied (1) 273:10</p> <p>satisfy (2) 318:8;320:8</p> <p>Savage (32) 45:14;293:17; 294:17,22,24;295:7,10, 12,16,18,21,24;354:2, 15;356:7,8;357:11; 358:8;359:2,12,15,18, 21,23;360:12,16,19,21; 361:11,19;362:4,6</p> <p>Savage's (1) 22:19</p> <p>saw (23) 144:4;149:10,10; 190:25;197:1;221:23; 235:7,10;238:3,4,12, 14;241:23;242:11; 243:19;246:14;247:2; 265:12;269:7,21; 270:7;345:9;358:14</p> <p>saying (66) 18:21;36:18;37:10; 38:9,21;39:20;66:2; 84:25;89:18;100:4; 104:7;105:7;106:10, 12;108:3,19;117:7; 120:18,20;122:22;</p>	<p>135:2;143:21;148:22; 149:16,21;150:1,3; 151:6,14,17,18,22; 161:1;163:11;169:10; 186:3;193:2;209:23, 25;217:7,18;218:25; 219:2;222:6,11;223:4; 225:23;234:10;245:15; 250:23;252:8,23; 266:22,24;272:21; 278:14;279:2;284:19; 285:16;289:1,3;15:13; 316:8;317:18;331:19; 334:13;356:23</p> <p>scale (3) 124:7;244:4;247:1</p> <p>scales (1) 124:8</p> <p>scaling (1) 261:6</p> <p>scenario (11) 115:16;214:21; 282:11;283:12;310:12; 311:17;317:7;318:13; 319:5;334:23;346:23</p> <p>schedule (7) 8:3,19;10:19;11:24; 14:2;23:19;361:22</p> <p>scheduled (12) 8:13,19,22;10:6; 11:21;12:6;13:2;16:11; 18:13;27:14;28:9; 354:24</p> <p>schedules (1) 10:23</p> <p>scheduling (4) 7:8;8:17;10:10; 34:15</p> <p>School (45) 6:20;50:1,17,18,22; 52:22;53:24;54:2,3,9; 63:3,7;131:21;132:12; 133:10,11,14;151:11; 165:12;167:6;170:15; 171:1,4,16,23;172:8,9, 11;173:3;174:22; 175:20;188:8;204:8; 295:9;308:4;311:14; 312:12;335:10;338:25; 339:5;341:3;358:21; 360:7;361:21;362:10</p> <p>Schools (13) 9:10;10:5;295:6; 312:7,13;358:1; 359:15,20,24;360:18, 19,25;361:8</p> <p>school's (1) 53:8</p> <p>Schools' (1) 9:5</p> <p>science (36) 56:16,17;57:7;76:25; 77:12,21;78:11,19;</p>	<p>82:5,6,15;83:9;86:20; 109:14,18;110:3,8,16; 111:19,20;126:9; 138:24;140:17,24; 149:16,17;190:3; 201:14;202:2,3; 204:16;214:25;247:15, 17;284:17;326:15</p> <p>sciences (10) 50:19;52:7;54:10; 56:17;57:20,21;66:23; 77:25;94:6;314:19</p> <p>scientific (16) 31:15;55:19;58:6; 60:24;62:1,11;76:13; 77:24;78:18;84:20; 95:1;104:15;128:8; 131:2;139:7;275:22</p> <p>scientifically (1) 83:21</p> <p>scientist (4) 77:1;79:4;109:7; 180:17</p> <p>scientists (3) 86:16;104:13;326:23</p> <p>scope (3) 94:22,24;297:3</p> <p>Scotland (1) 51:4</p> <p>scratch (1) 183:2</p> <p>screening (1) 310:23</p> <p>scrutinize (1) 312:22</p> <p>scrutinized (1) 312:20</p> <p>scrutiny (4) 98:11;317:11,14; 325:2</p> <p>se (2) 273:20;314:13</p> <p>search (1) 69:1</p> <p>season (3) 265:13,13,14</p> <p>Seattle (1) 50:18</p> <p>second (27) 5:15;13:1;43:8; 121:1;155:21;165:14; 170:9;178:8;207:7,8; 210:9;211:19,25; 219:15;223:23;231:11; 239:17;254:24;258:10, 11;260:4;261:12; 272:9;274:7;317:3; 331:17;354:14</p> <p>secret (2) 29:15;248:2</p> <p>Section (1) 5:5</p> <p>seeing (30)</p>	<p>111:2,3;113:13; 124:24;150:9;153:22; 154:3;173:21;181:18; 211:11;218:12;220:7; 221:20;234:22;235:12; 244:3;245:23;246:22; 250:11;251:24;252:24; 254:25;255:3,15; 265:17,22;269:6,20; 272:6,6</p> <p>seek (3) 42:24;43:2;284:1</p> <p>seem (5) 16:11;173:25;210:4; 225:21;326:22</p> <p>seemed (2) 271:2;297:10</p> <p>seems (6) 15:2;35:1;95:2; 242:21;337:24;350:7</p> <p>sees (1) 86:25</p> <p>send (4) 15:18;16:20;39:21; 45:6</p> <p>sending (1) 45:1</p> <p>sends (1) 45:6</p> <p>senior (1) 267:9</p> <p>sense (16) 13:16;16:6;18:3,4; 32:15;33:11;39:19; 44:6;109:24;120:3; 243:17;255:14;288:23; 317:17;328:9;356:2</p> <p>sensitive (11) 131:14,16,19;133:2; 186:24;273:21;327:21; 328:4,9,18;341:14</p> <p>sensitivity (2) 175:22;178:22</p> <p>sent (6) 7:6,23;42:17;43:10; 44:24;137:14</p> <p>sentence (8) 147:1;212:21;213:3; 226:23,25;267:7,21; 271:6</p> <p>separate (4) 53:18;62:8;214:3,7</p> <p>separately (2) 34:19;227:21</p> <p>September (6) 133:8;134:3;203:22; 247:6;282:5;333:24</p> <p>sequentially (3) 321:10,12,14</p> <p>series (6) 37:18;154:25; 183:16;294:20;321:2; 331:7</p>	<p>seriously (1) 133:4</p> <p>serve (2) 128:7,8</p> <p>served (8) 53:15;57:14,16,20, 23;60:4;67:22;128:15</p> <p>service (9) 158:11;188:4; 302:19,20;303:4; 330:16;338:16,20; 339:23</p> <p>Services (4) 298:25;299:2,3,14</p> <p>session (3) 5:14;7:5;28:4</p> <p>set (52) 16:2;51:20;64:10; 67:3;69:14;70:2;88:9; 93:3;96:9;99:1;103:12; 118:8;127:25;128:19; 130:12;131:6,12; 134:12,13,14,19;136:9; 140:23;141:12;142:10; 144:22;146:21;148:21; 180:14;185:4;204:17; 214:24;219:14;220:17; 269:4;278:17,21,23; 280:3;290:14;316:5; 318:8;319:17;321:13; 342:12;348:9,9,13,17; 350:4,11;351:3</p> <p>setback (1) 311:8</p> <p>sets (3) 134:22;342:19;347:6</p> <p>setting (28) 58:24;62:6;68:18; 75:8;81:9,21;125:1; 134:8;136:4,24; 138:11,17;143:23; 147:4,4;148:19; 149:16;150:3;165:6; 199:7,16;200:6; 213:23;269:2;282:9; 284:6,6;296:16</p> <p>seven (4) 139:6;201:13; 232:11;301:24</p> <p>seventy-five (1) 162:12</p> <p>seventy-seven (1) 196:12</p> <p>several (5) 42:17;136:10;174:9; 258:19;262:9</p> <p>severe (6) 240:2;242:20,24,25; 243:11;244:8</p> <p>shaking (1) 344:24</p> <p>shall (3) 15:10;16:14;41:17</p>
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<p>shape (1) 361:18</p> <p>shared (1) 11:18</p> <p>sharing (1) 349:15</p> <p>sheet (7) 8:6;154:23;155:21; 162:13,22;191:9; 220:14</p> <p>sheets (2) 155:19,20</p> <p>SHEVEIKO (1) 152:22</p> <p>shift (1) 234:12</p> <p>shifting (1) 124:8</p> <p>short (9) 219:11;227:16; 228:2;234:21;259:17; 297:10;325:9;346:8; 357:16</p> <p>short- (1) 137:24</p> <p>shorter (8) 79:19;141:5;197:21; 198:5;259:19;261:24; 297:5,9</p> <p>shortly (2) 130:18;191:23</p> <p>shortness (1) 238:7</p> <p>Short-term (6) 141:1,10,11;255:10; 263:24;266:12</p> <p>show (30) 43:2;46:7;87:12,13, 16,18;89:8;91:2;104:8; 105:1;122:11;126:7; 141:5;216:19;220:16; 230:1;248:23;256:16; 272:13;305:7;323:11; 325:25,25;335:12,15; 340:15,21;345:12; 358:4;360:12</p> <p>showed (4) 75:5;160:16;208:3; 225:7</p> <p>showing (13) 9:21;43:22;158:22; 159:21,25;160:10,15; 188:18;193:15;206:19; 221:19;272:15;331:7</p> <p>shown (16) 75:1;110:3;156:20; 160:14,19;161:4,6; 164:2;165:2;172:9; 174:18;221:11;271:20; 331:9;352:24;353:1</p> <p>shows (10) 106:23;155:25; 156:1;157:20,25;</p>	<p>162:10;261:13;264:7; 272:14;330:18</p> <p>sick (1) 125:17</p> <p>side (22) 25:23;41:8;43:6,20; 45:1,5;146:3;154:5; 155:12;167:1;175:9; 206:10;207:8;256:12, 12,19;290:6;296:17; 297:14;313:21;329:18; 350:25</p> <p>sides (3) 29:8;34:20;326:16</p> <p>Sierra (3) 135:23;136:4;344:1</p> <p>signal (2) 83:19;244:23</p> <p>significance (5) 89:16;91:21;92:1; 94:1;149:9</p> <p>significant (32) 90:1,16;91:2,10,13; 92:9;170:14,17;171:8; 211:1,2,7,15;238:9; 242:21;244:12;256:21; 257:4;335:7,9;338:11; 341:5,17,21;342:6,11, 11,12;343:13,25; 344:11,14</p> <p>significantly (2) 240:15;339:18</p> <p>SIL (1) 136:5</p> <p>SILs (2) 343:4,22</p> <p>Silver (1) 5:8</p> <p>SILVERMAN (66) 6:11,11,13;8:10; 17:11;18:11;20:17; 41:6,11,14;78:12; 107:1,4;111:9;114:8, 15;136:1,3,18;152:14, 16,18,21;156:10; 196:15;197:11,14; 216:2;219:3;233:17; 249:24;254:13;266:18, 20;297:12;298:9; 342:24;343:2,3,7,11; 344:17,19;347:23; 350:2,3,4,11,23;351:2, 7,17,22;352:3,13,15, 18,20,23;353:7,10,20; 360:6,10;361:2;362:13</p> <p>similar (17) 62:22;119:18;121:8, 13,20;122:10;126:1,9; 179:24;212:5;228:11; 239:22;250:18;289:1; 305:25;313:14;336:15</p> <p>similarly (2) 122:11;310:25</p>	<p>simpler (3) 194:20;215:11; 354:16</p> <p>simplistic (1) 310:13</p> <p>simply (6) 38:7;94:18;160:9; 186:3;280:15;286:20</p> <p>Sims (6) 8:15;354:23;355:18, 23,24;357:12</p> <p>simultaneously (1) 24:8</p> <p>single (14) 79:25;83:6;84:19; 93:1,5,20;99:1,24; 100:4;102:8;234:12; 282:10;310:11,12</p> <p>single-estimate (1) 98:15</p> <p>single-number (2) 99:20;100:14</p> <p>single-point (1) 182:12</p> <p>sit (2) 242:5;290:12</p> <p>site (8) 5:8;59:10;222:13; 330:11,19,21,25;333:7</p> <p>sited (1) 123:23</p> <p>site-specific (1) 338:8</p> <p>siting (7) 59:9;123:25;302:18, 23;304:25;312:7,12</p> <p>sits (1) 188:4</p> <p>sitting (5) 48:4;91:7;181:2; 281:4,5</p> <p>situation (13) 63:11;75:18;124:9; 165:11,22,25,25;168:3; 303:2;304:25;318:9; 320:9;325:19</p> <p>situations (1) 299:16</p> <p>six (16) 29:14,17;53:7;56:12; 91:8;139:6,11;201:13; 268:21,25;269:11; 274:16,16,21;275:3; 308:21</p> <p>six-hour (1) 261:21</p> <p>size (19) 25:20;29:8;87:21; 88:2,5,6;101:5;113:10; 115:2,13;116:16; 117:4;123:25;303:3; 306:7,10,14,15;349:8</p> <p>sizes (2) 88:11;92:7</p>	<p>skimmed (1) 335:3</p> <p>sleep (1) 358:18</p> <p>sleeping (1) 242:8</p> <p>slept (4) 242:1,3,6,14</p> <p>slide (1) 121:2</p> <p>slides (4) 119:8,16,23;120:2</p> <p>Slightly (5) 162:16;197:21; 198:5;243:7;275:14</p> <p>slot (1) 14:2</p> <p>slow (2) 48:21;60:15</p> <p>slowly (3) 82:6,19;130:10</p> <p>small (10) 32:9;74:25;92:3; 112:11;115:10,12; 124:5,8;216:10;302:7</p> <p>smaller (9) 91:14,14;102:14; 119:18;156:5,5; 259:24,25;264:12</p> <p>smaller-scale (1) 247:2</p> <p>smallest (1) 175:1</p> <p>smoke (1) 85:10</p> <p>Smokers (1) 236:7</p> <p>smoker's (1) 127:12</p> <p>smoking (3) 127:14;228:14,15</p> <p>smoothly (1) 13:20</p> <p>snow (7) 8:24;294:23;358:7,9, 11,15;361:9</p> <p>snowed (2) 294:19;357:9</p> <p>SO2 (1) 200:1</p> <p>so-called (2) 14:4;96:10</p> <p>societies (3) 56:24;57:1,11</p> <p>Society (4) 57:4,6,8;69:18</p> <p>socioeconomic (1) 227:10</p> <p>software (1) 66:13</p> <p>solely (1) 292:21</p>	<p>somebody (27) 37:16,19;43:2;55:7; 65:25;80:11;91:17; 92:17;102:19;177:15, 24,24;182:8;231:18; 243:9,10;275:18; 278:7;282:20;283:13; 301:24;313:24;316:4; 317:4,15;325:5;334:12</p> <p>somebody's (7) 32:8;81:19;94:12; 111:16;279:23;280:18; 316:2</p> <p>somehow (1) 161:14</p> <p>some-odd (1) 129:9</p> <p>someone (13) 36:13;37:23;38:17; 55:14;56:9;92:22; 94:19;128:10;180:13; 281:13;292:19;346:25; 347:5</p> <p>sometimes (10) 55:3,4;63:10;81:17; 129:8;157:13;358:23; 359:1,2,3</p> <p>somewhat (3) 99:9;121:2;197:20</p> <p>somewhere (16) 55:21;93:18,23; 142:13;149:23;150:20; 164:20;193:5;194:15; 229:16;236:8;245:13; 261:4;308:24;316:11; 319:22</p> <p>soon (1) 213:19</p> <p>sophisticated (1) 96:1</p> <p>sorry (66) 18:20,24,25;19:8,10; 20:15;24:3;40:11;41:9; 60:16;61:2,6;72:14; 77:6;89:22;106:6; 112:22;113:1;134:2; 147:6;158:5,14;163:1, 4,11;165:3;172:10; 192:25;195:6;202:15, 15;203:13;204:12; 211:19;219:20;221:7, 8;223:25;226:14; 229:22;231:12;232:17; 236:20;241:15;244:17; 251:20;256:1;259:1; 263:9;264:12;265:23, 23;267:5;268:5,6; 273:4;275:24;292:5; 298:7,15;299:1; 302:12;305:3;324:8; 340:13;350:9</p> <p>sort (21) 55:9;61:15;80:1;</p>
--	---	---	---	---

<p>92:20,25;94:1;99:10; 100:2,23;116:7; 134:23;213:14;225:2; 230:23;242:17;267:3; 271:3;300:16;343:8; 349:1,24 sorting (2) 82:24;213:5 sorts (3) 66:9;92:14;341:14 Sounds (1) 70:15 source (33) 74:2,25;75:22;112:3; 115:12,13,14;118:22, 23,23,25;119:5,7; 121:5,6;124:14; 132:18;142:15;151:11; 158:8;166:10,22; 169:4,5,8,14;206:7; 292:9;293:6;337:20; 338:21;339:25;343:14 sources (11) 73:7;89:2;121:7; 141:23;168:17;234:13; 237:19;312:13;343:4, 25;344:8 Southern (8) 74:10;126:14;127:1; 200:12;204:19,25; 205:25;206:2 space (4) 141:21;276:12; 280:23,24 sparse (1) 326:20 spatial (7) 142:18;143:14,15; 148:17,24;337:24; 338:4 speak (7) 9:16;10:18;119:5; 193:12;284:2;299:18; 302:11 speaking (4) 9:4;152:10;177:6; 217:11 speaks (8) 90:22;120:6;121:5; 146:16;147:9;148:17; 178:24;182:23 special (6) 5:5;17:14;26:11; 214:1;215:13,17 specialized (2) 51:18;54:14 species (1) 80:2 specific (17) 30:14;137:16; 147:13,18;185:9,14,15, 16;186:12;196:1; 213:7,8;239:25;243:3;</p>	<p>262:25;341:10,13 specifically (23) 60:13,20;73:17; 75:21;76:18,19;99:8; 100:19;108:1,4; 124:13,17;126:2; 133:9;172:7;183:22; 184:3;218:15;238:4; 248:10;255:19;286:1; 313:25 speech (1) 238:4 speed (1) 225:6 spend (9) 242:5,9;275:18; 277:22;281:7,8,10,10; 326:1 spends (2) 278:8;280:24 spent (4) 12:15,15;16:9; 300:20 split (1) 29:22 spoke (1) 323:2 spot (13) 158:12;170:18,20; 188:3;278:6,6,8; 339:13,14,22,24,25; 340:3 spread (1) 362:22 spreadsheet (1) 155:17 Spring (2) 5:9;102:23 spurious (1) 90:25 squeezing (1) 34:13 stab (1) 178:11 stable (1) 271:1 staff (1) 168:19 stage (1) 198:24 stand (5) 67:5,7;98:10;211:20; 253:14 standard (107) 64:10;93:11;94:5; 96:6,23;116:7,12; 118:20;129:20,22; 131:6,11;133:18; 134:12,13,15,19; 136:24;137:23;138:6, 19;139:4,5;140:5,10, 15,23;142:7,20,21; 143:10,11;146:21;</p>	<p>147:4,5,13,18,21; 148:2,9,13,14;149:6, 22;158:22;164:18,25; 167:22;188:2;190:12; 196:21;198:21,22; 199:24;200:6,6; 213:24;214:1,3,8,9,15, 17,24,25;215:11,13; 217:11;219:23;242:17; 247:12;252:24;255:19; 261:9;265:11;269:3; 270:9,16;271:25; 281:2;283:6;285:1,3,3, 15,17,23,24;286:3; 288:6;289:2;292:22, 24;310:10;322:7; 328:15,24;329:6,10,12; 336:20,23;350:20,21; 351:3,12,12 standardize (3) 251:6;257:18;262:6 standardized (3) 251:3;257:24;261:19 standards (66) 60:7;61:1,5,5,8,10, 24;62:4,7;66:24;67:3, 4;68:13,18;69:1,14,17, 20;70:1;76:12;78:17; 95:1;106:9;107:7; 110:3;127:23,25; 128:19;130:22;133:1, 9,21,22,23,24;134:9, 22;137:11;138:11; 139:19;142:14;144:10; 182:5;190:8,9;199:14, 16;200:10;217:12; 255:5;268:1,1;275:17; 284:14;285:3,6; 286:15;288:7;292:16, 18;327:14;336:9; 343:12;345:13;348:10, 17 standing (1) 290:6 stands (2) 207:13;355:15 start (30) 15:3;16:8;22:1; 41:17;50:3;78:24; 98:11;101:2;113:4; 126:24;140:9;153:20, 24;209:23;210:14; 263:23;266:13;277:11, 15,15;282:24;318:6; 354:1;357:15;359:16, 23;360:2,10,25;361:10 started (9) 34:6;49:2,18;52:1; 100:22;109:15;113:15; 145:20;239:6 starting (3) 29:17;266:8;316:21 starts (4)</p>	<p>146:25;147:13; 192:16;267:21 state (11) 27:21;49:8,16,24; 50:20;58:3;247:15; 300:22;302:18;312:15; 334:16 stated (6) 10:2;169:23;229:9; 230:14;232:14;307:3 statement (20) 25:3;29:10;30:20; 44:3;107:13;108:11, 12;109:7;118:17; 119:23;120:4;133:12; 170:13;196:2;229:13; 230:8,12,18;247:10,12 statements (7) 24:8;38:6;43:5; 104:4;109:5;143:8; 309:25 States (4) 54:18;148:24;286:4; 337:5 stating (1) 169:23 station (110) 5:7;14:9;71:1; 112:10,13,18,22,24; 113:9,11,12,16,17,24; 114:5,6,20,24;115:2,8, 9,10,11,18;116:5,6,7,8, 12,20,22,23;117:4,18; 118:20,22;119:17,20, 21,24;120:1,1,4;121:1, 3,17;122:14,18;123:22, 25;124:3;125:2;130:4; 132:4;158:11;162:6,7, 11;165:2,11,16,18,21, 22;166:1,3;167:4,21; 168:2,4,5,12,18;169:2, 16;170:2,14;171:12,17, 18;172:2;175:14; 188:4;213:25;214:12; 215:13,21;216:11,12, 13,18;220:11;222:1; 229:12;230:17;265:22; 274:13;292:2,4,6; 302:20;303:4;308:16; 330:11,16;338:10,20; 339:3,23;341:16 stations (13) 116:16;119:18; 124:5;215:19,22; 229:11;230:15;302:19; 312:8,14;326:10,11,22 statistical (7) 89:16;90:1;91:20; 93:13;94:1;194:10; 210:22 statistically (4) 90:16;91:2;102:2; 211:2</p>	<p>statisticians (2) 91:6,7 Statland (4) 8:17;355:1,21; 357:12 status (4) 101:13,14;227:10; 247:21 statute (8) 43:17;44:1,2,8;46:6, 9;344:2;348:9 statutory (2) 145:24;348:18 stay (6) 50:23,24;129:8,22; 352:19;358:18 staying (1) 352:22 stays (1) 58:22 step (2) 289:13,18 Stephen (14) 131:20;132:12; 133:11;151:10;167:5; 171:4,16;172:8,11; 175:20;308:4;338:25; 339:5;341:3 stepped (2) 53:7,10 steps (2) 77:24;289:23 Steubenville (1) 268:25 stick (5) 218:8;282:19,19,22; 352:2 still (30) 38:14;40:22;70:23; 81:3;89:9;90:20,23,25; 91:21;100:13;110:21, 21;111:2,3;117:1; 121:2,5,6;125:4; 148:21;191:10;269:6; 276:24;288:9,9; 290:12;294:10;333:21; 334:6;349:24 stir (2) 290:5,6 stood (1) 67:7 Stop (11) 6:12;76:9;113:2; 138:24;165:14;225:7; 234:4;253:1;272:9; 278:18;317:3 stopped (1) 170:2 story (1) 110:5 stove (2) 237:12;239:8 stoves (1)</p>
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240:6 straightforward (1) 83:2 strange (1) 209:17 strangely (1) 241:19 strategy (2) 142:4;149:4 Street (2) 49:25;81:2 streets (3) 74:13,15;329:18 strength (1) 223:13 strengths (1) 56:22 stricken (4) 344:16,17,18,19 strictly (2) 348:13,18 strictures (1) 249:10 strong (6) 86:16,18;94:8;127:6; 147:3;329:1 strongly (1) 212:13 structure (1) 288:18 student (2) 96:7;132:11 students (8) 54:1;63:15;65:9,18; 87:14;96:2;314:8; 338:25 studied (6) 218:25;223:20; 230:20;241:2;262:15; 326:12 studies (159) 54:19,20,22;56:5; 60:24;61:1,5,9,16;62:1, 11;63:25;69:8,13; 71:17;72:2,19;73:14; 75:9;76:13;77:2;78:3, 18,25;79:8,11,17,24; 80:5,6,12,13;81:5,17, 24;82:3,10,21,25;83:1, 15;84:8,23;85:22; 86:13;87:12,13;88:13, 13;91:1;92:4;95:1; 100:19;102:5,6,10; 103:6;104:19;105:17; 109:5,9;124:15,19; 125:6,24;126:16; 127:1,9;133:16; 138:13,14,15,16,22,23; 139:2,18;141:22; 144:18,23;146:6,8,11, 13,18,20;147:25;149:8, 9,10,13,17,18;157:9; 162:17;168:14;188:14;	197:3;199:2,4,10,22; 200:4;204:19,21; 205:4,8,9,13;206:5; 218:20;219:6;220:17; 231:9;234:20;235:19; 236:12;238:21;245:6; 246:14;251:22,22; 252:3,15,18,19;253:4, 14,16,25;254:8,9,9,23; 255:3,8,10,15;256:25; 257:2,13;258:2,3; 262:17;265:10;268:23; 270:10;272:7;273:8,9; 274:15,16,16,21;275:4; 292:2;314:3;320:3; 336:14 studies/larger (1) 92:6 study (131) 51:2;69:15,17,20; 70:4;72:24;73:2,4,9; 74:22;75:7,20;79:2; 81:8;82:1,9,16;86:14, 21,23,24;87:1,6,16,19, 20;88:9,15,17,18;89:7, 8,9,21;90:22,23,23; 92:2,2,8,10,14;98:3; 99:9;100:22;101:1,10, 11,15,23;102:1;105:3; 110:13;138:25;168:8, 8;177:8;178:2,6; 180:17;182:6;199:24; 200:4,12;202:17,18; 203:3;204:1,3,4,20; 205:2,20;208:3,6; 212:19,23;213:6,8,9; 218:8,10,25;219:1; 222:2;223:21;231:7; 235:22;236:4,4,13,14, 17;238:2;239:13,17; 241:23,24;242:15; 243:17;245:2,2; 246:12,25;247:2; 251:5,8;256:20,23; 257:1;258:16;259:6; 260:5,25;262:25; 263:15,16;264:9,24,24, 25;265:16;267:1; 268:9,14,21,22;269:16, 22;270:4,7 studying (3) 110:10;239:15; 266:22 study's (1) 86:16 stuff (14) 58:11;59:6;70:7; 85:25;87:14;96:5; 126:14;181:3;299:8; 313:1;314:3,20; 339:16;341:9 subject (6) 5:8;7:20;67:14;	179:1;193:24;284:7 subjects (2) 80:8;213:8 submission (6) 17:9;28:20;34:20; 35:24,25;76:3 submissions (1) 24:14 submit (13) 18:9,13,23;23:22; 24:8;25:15,16;32:8; 35:17;43:9;45:17; 46:12,15 submits (1) 28:25 submitted (8) 7:24;17:20;33:9,15; 40:24;41:1;44:3;297:4 submitting (7) 7:10,13;23:19;40:5; 43:23,24;356:19 subpoena (3) 11:13;12:1,18 subsets (1) 62:2 substances (5) 67:17;79:3;100:21; 121:17;127:20 substantial (2) 118:15;228:20 substantive (1) 78:23 subtitle (1) 202:8 success (2) 110:5;345:16 successful (1) 68:15 suddenly (1) 36:21 sued (1) 60:5 sues (1) 135:11 suffer (1) 288:9 suffering (1) 250:19 sufficient (5) 76:15;195:12,22; 268:2;282:12 sufficiently (1) 273:10 suggest (23) 32:17;33:20;125:24; 131:18;134:12;143:1; 146:18;173:1,3; 182:17;188:11;190:10; 192:18;199:22;244:24; 249:11;270:10;271:7; 274:14,17,22;275:4; 296:19 suggested (19)	10:19;17:10;20:19; 23:17;28:18,19,25; 33:10;44:24;93:4; 168:1;171:18;183:22; 184:17;185:14;190:6; 225:8;310:24;311:22 suggesting (14) 44:6;129:25;149:25; 150:22;160:24;161:18; 167:2,3,15;225:12; 271:1;292:25;301:21; 339:15 suggestion (3) 126:23;167:24;337:1 suggestions (2) 185:5;244:19 suggests (17) 120:22;125:14; 142:12;167:16;172:3; 188:3;189:4;200:4; 206:20;221:22;247:17; 292:11,19;312:3,4; 329:1;339:11 Sullivan (36) 13:11;37:6,7,8;38:9; 42:9;157:2;168:8; 179:22;181:20;185:6; 193:3,22;219:1; 274:10;294:14;311:4; 314:16;315:13;316:12; 323:7;326:7;332:1,7; 333:13,17,19,20,23; 339:7;344:24;345:4; 358:23;359:7,11,14 Sullivan's (20) 36:15;40:13;119:9; 152:25;157:1;158:15; 179:11;182:20;187:20; 192:20;193:4;218:13; 309:19,23;312:17; 313:8;323:3;331:7; 340:22;345:3 sum (6) 26:8;84:11;85:2; 123:20;267:3;278:1 summaries (3) 313:7,10,11 summarize (4) 147:16;250:14; 252:8,14 summarized (1) 40:17 summarizes (1) 251:21 summarizing (2) 37:1;45:21 summary (19) 7:16,16;32:24;36:6, 11,19,22;39:6,13; 40:13,19;41:11;231:6, 22;232:10,18;254:5, 19;297:2 summation (3)	24:16;31:16;291:25 summer (2) 102:23;239:4 sums (1) 89:12 superseded (1) 159:15 supervisor (1) 13:2 supervisors (1) 11:23 supplies (1) 52:18 supply (1) 52:25 support (3) 69:19;147:4;298:4 supported (1) 147:19 supports (2) 129:20;299:6 suppose (2) 28:3;254:6 supposed (8) 13:18;130:22; 131:13;143:24;248:21; 327:20;328:13,19 sure (72) 9:18;13:23;19:16,17; 35:10,13;43:10;44:23; 45:6;48:3;49:5;71:25; 83:1;92:6;95:14;100:6, 9;104:16;106:14; 107:3,8,17;108:15; 113:14;120:15,16,21; 121:25;123:8;131:3; 136:14;137:6;145:6; 146:8;151:18;159:24; 160:19;161:11;165:17; 167:13,17;169:21; 182:21;186:11;188:23; 197:24;209:8,19; 234:11;290:7;291:12, 12;296:11;297:13; 301:10;305:16;323:17, 18,20;324:12;328:13; 333:4;340:5,14;341:7; 342:14;352:7,17; 353:22;356:21;359:25; 361:14 surprised (1) 326:20 susceptibilities (3) 131:9;133:15;287:13 susceptibility (3) 131:3,5;132:22 susceptible (10) 130:24;131:1,3; 132:24;176:6,8,10; 268:2,3;286:10 suspect (4) 77:4;85:16;176:5; 245:16
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<p>sustain (2) 133:6;285:21</p> <p>sustainability (1) 77:16</p> <p>swimming (3) 308:6;311:14,15</p> <p>sworn (1) 49:14</p> <p>symptom (1) 238:8</p> <p>symptomatic (1) 282:11</p> <p>symptomatology (1) 169:16</p> <p>symptoms (11) 101:17,20;197:2; 236:5;238:3,13,19; 239:23;256:10;261:5; 327:8</p> <p>synergism (2) 85:15,16</p> <p>synergistic (2) 86:8;336:9</p> <p>synergy (1) 85:1</p> <p>system (4) 58:25;86:4,5;224:7</p> <p>systemic (1) 86:4</p>	<p>46:10;92:24;104:12; 106:5;113:19;136:15; 157:10;162:18;163:3; 167:5;171:15;184:13; 193:16;198:20;200:12; 203:12;205:11,13; 218:16,19;219:10; 239:21;240:21;248:16; 251:19;253:25;258:6; 259:15;266:6;272:12; 276:2;280:17;282:2; 289:9,11,12;306:7; 307:16;316:17;320:4; 321:20;322:3;323:17, 24;324:4;329:17; 331:20;349:6</p> <p>talks (5) 137:10;206:12,12; 250:16;251:2</p> <p>tally (1) 68:24</p> <p>tank (2) 58:1;300:22</p> <p>target (1) 143:3</p> <p>targets (1) 144:13</p> <p>task (3) 337:3;351:9,10</p> <p>taught (1) 65:20</p> <p>teach (2) 65:22;85:9</p> <p>team (1) 325:7</p> <p>tease (3) 74:12;75:17;199:11</p> <p>teasing (2) 75:10;83:7</p> <p>technical (1) 31:13</p> <p>technically (1) 157:22</p> <p>techniques (1) 93:14</p> <p>technology (1) 235:2</p> <p>telephone (2) 362:20,23</p> <p>telling (3) 17:1;86:15;130:6</p> <p>tells (3) 98:1;256:20;257:25</p> <p>temperature (1) 64:18</p> <p>temperatures (1) 64:20</p> <p>tempting (1) 298:12</p> <p>Ten (1) 228:23</p> <p>tend (2) 284:9,10</p>	<p>tended (1) 242:4</p> <p>tendency (1) 315:10</p> <p>tentative (2) 10:19;33:22</p> <p>term (11) 89:15,16;115:4,12, 13,14;121:6;210:23; 219:11;234:22;340:4</p> <p>terminal (1) 349:25</p> <p>terminology (1) 89:11</p> <p>terms (98) 10:10;26:1;30:20; 36:2;37:5;39:2;44:21; 46:3;52:25;60:7;62:25; 66:22;78:23;82:5;86:8; 89:6,12;92:3;95:10; 100:24;103:24;106:8; 115:15,25;116:5; 117:8;119:6;120:2; 125:18;126:8;132:22; 135:12;138:11;139:6; 140:14;141:12;144:11; 153:2;158:1;164:16; 168:4,16;173:11,12; 175:12,18;176:6,7; 177:6,18;178:2;182:6; 183:8;187:25;188:24; 189:18;192:4,24; 194:7,22;196:10; 199:7;218:7,10;219:4, 9;225:10;228:24; 234:8;235:8;236:16, 18;239:19;242:3,12; 251:23;252:23;254:20; 255:9;266:11;273:16; 278:13;280:17;285:7, 18;286:4;289:7;292:7; 296:15;310:4,6;312:7; 318:24;321:4;342:15; 345:15,16;347:15</p> <p>terrible (1) 9:25</p> <p>territory (1) 217:13</p> <p>test (1) 166:24</p> <p>testified (24) 47:11,12;59:19,20; 60:9;62:14;63:10; 94:17,17;129:5;130:3; 177:20;183:24;216:17; 247:7;282:7;285:25; 300:8;309:25;317:22; 326:9;333:24;335:5; 343:18</p> <p>testifies (3) 22:2;186:1;296:7</p> <p>testify (11) 8:1;13:18;35:6;40:7; 43:22;44:9;45:11;46:7; 186:8;279:9;343:12</p> <p>testifying (4) 13:25;44:12;296:21; 300:24</p> <p>testimonies (1) 335:21</p> <p>testimony (53) 6:17;7:8,17,22;8:3, 19;13:10;22:19;34:7; 36:18;37:9,22;38:19, 20;40:13,14,16,17; 47:14;48:12;59:23; 63:4;78:24;94:15;95:5; 117:5;132:3;133:9,20; 134:2,5;151:10; 171:11;187:20;190:9; 192:21;193:19;194:25; 247:6;282:4;297:3; 309:20,23;313:8,12; 325:14;334:5,8,11; 335:1,14;343:15,19</p> <p>Thanks (2) 145:23;236:22</p> <p>that'll (3) 18:6;20:23;213:18</p> <p>therefore (1) 25:9</p> <p>thereto (1) 61:1</p> <p>thesis (2) 87:15;96:8</p> <p>thinking (4) 28:7;90:18;136:15; 356:17</p> <p>third (3) 211:20;226:23,24</p> <p>third-hand (1) 356:9</p> <p>thirsty (1) 49:3</p> <p>Thirty (1) 31:11</p> <p>Thoracic (1) 69:18</p> <p>though (18) 35:1;45:9;46:12; 68:12;70:19;80:24; 91:1;108:19;120:18; 172:14;177:8;233:25; 237:12;239:22;248:23; 349:25;358:21;359:23</p> <p>thought (24) 10:16,22;12:10; 13:15;27:18;40:5,20; 60:7;72:15;87:7;98:5; 127:11;140:21;157:13; 184:6;247:7;266:13; 270:6;303:25;331:11; 343:3;348:1;360:9,14</p> <p>thousands (4) 31:14,14;254:12; 321:15</p>	<p>three (15) 11:7;29:23;30:22; 47:23;175:3,10; 181:14;200:18;218:7; 268:15;281:18;305:9; 307:6,15;308:21</p> <p>three-million-gallon (1) 120:1</p> <p>threshold (31) 67:9,16;104:2,9,14; 106:7,23;109:6,8,11; 110:17,19,25;111:6,24; 112:5;114:21,22; 123:21;142:24;144:4; 199:18,19;243:14,16, 18,23;247:18;270:22, 23;339:19</p> <p>thresholds (1) 216:9</p> <p>throughout (1) 126:18</p> <p>throughput (1) 307:12</p> <p>throw (1) 320:5</p> <p>thrown (1) 68:6</p> <p>thrust (1) 217:10</p> <p>thumb (1) 315:12</p> <p>Thursday (5) 5:15;10:6;16:7; 358:9,17</p> <p>thus (2) 8:16;212:23</p> <p>tightness (1) 238:5</p> <p>times (26) 5:13;87:11;93:15; 97:9,11,15,21,22; 102:24;183:13,16; 185:13,17;274:10; 280:3;281:18;282:15; 288:5;289:7;307:6,15; 321:15;330:5,5;334:2; 347:12</p> <p>timing (1) 10:13</p> <p>tiny (1) 234:4</p> <p>tissues (5) 72:16,16,17,21; 79:14</p> <p>TLV (1) 286:7</p> <p>TLVs (1) 67:17</p> <p>today (39) 5:14;6:23;8:14; 10:20;22:6,19,25;23:1; 27:5;40:5;45:15,17; 48:10;67:13;96:23;</p>	
T				
<p>Table (18) 221:21;222:6,12,14; 243:2;244:8;250:13; 251:15,17,19,20;252:4; 257:25;258:13;260:3; 261:12;262:11;341:1</p> <p>tables (3) 331:9,14,20</p> <p>tailpipe (1) 334:1</p> <p>tailpipes (1) 75:3</p> <p>talents (1) 39:8</p> <p>talk (15) 22:14;63:11;100:22; 194:12;239:19;264:23; 283:8;316:13;334:21; 339:20;341:11;350:5; 351:25;354:14,24</p> <p>talked (20) 35:12;59:7;67:14; 103:25;104:3,5; 111:21;128:5;175:19; 197:20;208:6;236:13; 255:2;303:7;308:18; 310:10;313:9;323:21; 330:17;350:18</p> <p>talking (54) 20:25;25:20;26:20; 27:18;36:21;37:25;</p>	<p>talks (5) 137:10;206:12,12; 250:16;251:2</p> <p>tally (1) 68:24</p> <p>tank (2) 58:1;300:22</p> <p>target (1) 143:3</p> <p>targets (1) 144:13</p> <p>task (3) 337:3;351:9,10</p> <p>taught (1) 65:20</p> <p>teach (2) 65:22;85:9</p> <p>team (1) 325:7</p> <p>tease (3) 74:12;75:17;199:11</p> <p>teasing (2) 75:10;83:7</p> <p>technical (1) 31:13</p> <p>technically (1) 157:22</p> <p>techniques (1) 93:14</p> <p>technology (1) 235:2</p> <p>telephone (2) 362:20,23</p> <p>telling (3) 17:1;86:15;130:6</p> <p>tells (3) 98:1;256:20;257:25</p> <p>temperature (1) 64:18</p> <p>temperatures (1) 64:20</p> <p>tempting (1) 298:12</p> <p>Ten (1) 228:23</p> <p>tend (2) 284:9,10</p>	<p>terrible (1) 9:25</p> <p>territory (1) 217:13</p> <p>test (1) 166:24</p> <p>testified (24) 47:11,12;59:19,20; 60:9;62:14;63:10; 94:17,17;129:5;130:3; 177:20;183:24;216:17; 247:7;282:7;285:25; 300:8;309:25;317:22; 326:9;333:24;335:5; 343:18</p> <p>testifies (3) 22:2;186:1;296:7</p> <p>testify (11) 8:1;13:18;35:6;40:7; 43:22;44:9;45:11;46:7; 186:8;279:9;343:12</p> <p>testifying (4) 13:25;44:12;296:21; 300:24</p> <p>testimonies (1) 335:21</p> <p>testimony (53) 6:17;7:8,17,22;8:3, 19;13:10;22:19;34:7; 36:18;37:9,22;38:19, 20;40:13,14,16,17; 47:14;48:12;59:23; 63:4;78:24;94:15;95:5; 117:5;132:3;133:9,20; 134:2,5;151:10; 171:11;187:20;190:9; 192:21;193:19;194:25; 247:6;282:4;297:3; 309:20,23;313:8,12; 325:14;334:5,8,11; 335:1,14;343:15,19</p> <p>Thanks (2) 145:23;236:22</p> <p>that'll (3) 18:6;20:23;213:18</p> <p>therefore (1) 25:9</p> <p>thereto (1) 61:1</p> <p>thesis (2) 87:15;96:8</p> <p>thinking (4) 28:7;90:18;136:15; 356:17</p> <p>third (3) 211:20;226:23,24</p> <p>third-hand (1) 356:9</p> <p>thirsty (1) 49:3</p> <p>Thirty (1) 31:11</p> <p>Thoracic (1) 69:18</p> <p>though (18) 35:1;45:9;46:12; 68:12;70:19;80:24; 91:1;108:19;120:18; 172:14;177:8;233:25; 237:12;239:22;248:23; 349:25;358:21;359:23</p> <p>thought (24) 10:16,22;12:10; 13:15;27:18;40:5,20; 60:7;72:15;87:7;98:5; 127:11;140:21;157:13; 184:6;247:7;266:13; 270:6;303:25;331:11; 343:3;348:1;360:9,14</p> <p>thousands (4) 31:14,14;254:12; 321:15</p>	<p>three (15) 11:7;29:23;30:22; 47:23;175:3,10; 181:14;200:18;218:7; 268:15;281:18;305:9; 307:6,15;308:21</p> <p>three-million-gallon (1) 120:1</p> <p>threshold (31) 67:9,16;104:2,9,14; 106:7,23;109:6,8,11; 110:17,19,25;111:6,24; 112:5;114:21,22; 123:21;142:24;144:4; 199:18,19;243:14,16, 18,23;247:18;270:22, 23;339:19</p> <p>thresholds (1) 216:9</p> <p>throughout (1) 126:18</p> <p>throughput (1) 307:12</p> <p>throw (1) 320:5</p> <p>thrown (1) 68:6</p> <p>thrust (1) 217:10</p> <p>thumb (1) 315:12</p> <p>Thursday (5) 5:15;10:6;16:7; 358:9,17</p> <p>thus (2) 8:16;212:23</p> <p>tightness (1) 238:5</p> <p>times (26) 5:13;87:11;93:15; 97:9,11,15,21,22; 102:24;183:13,16; 185:13,17;274:10; 280:3;281:18;282:15; 288:5;289:7;307:6,15; 321:15;330:5,5;334:2; 347:12</p> <p>timing (1) 10:13</p> <p>tiny (1) 234:4</p> <p>tissues (5) 72:16,16,17,21; 79:14</p> <p>TLV (1) 286:7</p> <p>TLVs (1) 67:17</p> <p>today (39) 5:14;6:23;8:14; 10:20;22:6,19,25;23:1; 27:5;40:5;45:15,17; 48:10;67:13;96:23;</p>	

<p>101:6;110:11;120:14, 23;139:5;152:19; 178:25;213:13;296:7; 297:3;304:17;308:18; 313:15;314:4;323:21; 324:2;336:5,11; 337:19;348:3;354:24; 355:4,9,12 together (19) 17:17;18:8;37:8,21; 38:8,16,21;85:5;86:8; 97:19;154:23;170:23; 232:8;262:4;279:1; 281:11;285:12;292:3; 325:7 token (1) 244:7 told (5) 117:18;155:18; 214:3;318:17;356:22 toll (9) 224:7,15;225:5,11; 227:17,20,23,25; 228:11 tonight (1) 356:21 tons (1) 142:2 took (10) 65:18;120:8;142:6; 143:16;165:1;182:20; 192:22;223:21;232:23; 316:16 tool (1) 288:11 tools (1) 52:1 top (15) 86:1;97:5;153:18; 154:7,7;162:5;173:7; 175:3;181:4;212:10; 220:25;318:22,23; 319:2;345:22 Topeka (1) 268:25 topic (3) 39:10;55:24;61:18 total (2) 223:8;225:19 totally (1) 133:24 touch (4) 23:5;300:5;302:9; 308:23 towards (5) 83:10;154:7;158:11; 320:20;339:5 town (1) 15:7 toxic (1) 271:5 toxicity (2) 271:1;286:9</p>	<p>toxicological (1) 79:7 toxins (1) 67:17 track (2) 82:17;139:24 tract (3) 85:18,23;140:20 trade-off (1) 124:5 traditionally (1) 25:4 traffic (25) 62:25;63:1,5;74:12, 15,21,23;75:1;126:7; 184:7;212:24;214:12, 12;223:25;224:4,16; 283:13;330:23,23,24; 338:15,19,24;339:3,4 traffic-combined (1) 214:10 traffic-driven (1) 73:25 traffic-related (18) 71:7;74:4;75:14; 84:4;125:25;126:3,13, 24;127:16;204:5,8; 212:15;213:11;215:14; 218:22;223:14;226:4; 240:9 traffic-specific (1) 74:9 trained (1) 51:15 training (9) 44:22;50:24;51:19; 52:20;63:12;65:14,17; 94:16;287:17 transcript (3) 36:22;134:4,5 transcripts (4) 36:25;309:11,14,16 translate (3) 191:8;234:25;240:19 translates (3) 162:14,21,23 translations (1) 155:20 trap (6) 98:13;99:14,21,25; 100:4,13 treat (3) 118:22;143:10; 332:14 treated (3) 165:7;332:3;333:5 treatment (1) 53:1 trend (1) 110:7 trial (1) 80:11 trial-like (1)</p>	<p>81:20 tried (7) 13:21;68:8;265:2; 281:17;303:3;309:7; 348:9 tries (1) 32:1 trip (1) 349:21 TRP (1) 223:15 truck (1) 63:1 trucks (1) 62:25 true (10) 16:13;28:14;74:1; 90:21;191:3;222:2; 242:10,11;327:20; 333:16 truly (2) 33:17;96:6 truth (6) 100:16;182:14; 194:11;314:11;316:11; 321:3 try (31) 11:10;29:20;38:2,18; 48:2;55:7;61:18;81:14; 84:8;112:1;131:6; 181:6;185:7;198:7; 220:15;233:2;251:6; 262:3;290:18,24,24; 291:10;296:17;297:13; 298:12;327:23;341:15; 353:13,16,18;362:17 trying (77) 16:9;18:21;26:7; 28:10,12;35:20,22; 37:20;38:3,16;64:10, 18;65:1,4;74:10;82:16; 83:9;84:15;85:19;86:6, 14;92:22;100:23; 103:10;114:3;117:14, 15;122:4;130:9,11; 164:24;168:2;175:7; 180:17,20;181:2,3; 183:21;184:16;185:3, 8;186:6,10,11;191:11; 199:2;214:16;216:8, 20;250:10,14;252:16; 254:15,18;257:13,15; 259:2,4;261:14;269:4; 276:17;279:11,23; 280:9;281:19,19; 286:1,4,12;287:4; 289:3,4;296:5;302:12; 318:10;328:3;352:4 Tuesday (2) 16:22;145:15 turn (14) 7:3;14:3;32:23; 57:23;98:23;152:11;</p>	<p>154:6;174:1;187:10, 10;219:15;237:7; 274:6;294:11 Turning (5) 100:19;124:13; 275:15;329:16;345:3 turns (1) 35:23 twice (2) 50:13;121:3 two (58) 9:10,11;11:7;23:21, 25;28:8;29:10,13;35:2; 40:22;43:7;44:14; 48:10;52:21,22;54:8; 62:2;72:18;85:15; 90:13;102:23;119:8, 23;141:15,16;147:1, 17;148:5;157:22; 178:21;187:21;193:8, 10,23;194:6;196:11; 199:13;208:19;225:11; 235:19,19,23;236:12; 246:5;261:18;263:17; 276:14;278:25;297:4; 305:3;326:16;330:5,5; 354:7;356:2,15; 357:15;362:12 twofold (2) 87:24;88:1 two-hour (12) 358:8;359:15;360:4, 11,13,21,21;361:5,21, 24;362:5,10 two-hour-delay (1) 362:15 type (13) 32:8;46:2;80:12; 87:20;246:24;286:12; 287:16;292:8;299:20; 300:18;322:17;329:17; 359:22 types (3) 59:10;255:20;330:2 typical (11) 101:11;116:5; 119:20,20;121:3; 238:7;299:18,22,23,25; 338:6 typically (4) 26:7;207:1;258:5; 299:16</p>	<p>uncertain (3) 96:14;259:18;319:12 uncertainties (1) 97:1 uncertainty (14) 94:4,8;96:13,25; 97:2;179:5;180:22; 230:21;310:17;314:21, 22,25;315:8;319:16 uncommon (2) 53:23;57:18 undeniable (1) 293:6 under (22) 44:1;46:21;80:19; 108:6;163:14;168:21; 181:7;198:23;215:17; 247:21;254:19;255:15; 258:7,15,17,23;259:5; 261:18;284:2;288:25; 333:21;348:9 underexposed (1) 288:9 underpinning (2) 77:25;82:15 understood (9) 100:6,9;131:10; 161:13;229:11;230:16, 20;317:21;326:12 undertaken (1) 337:3 unfair (1) 344:22 unfortunately (7) 10:23;57:2;87:11; 138:18;213:17;326:19; 349:18 Union (1) 285:12 unique (3) 75:8;131:9;133:15 unit (3) 164:4;261:9;271:2 United (3) 54:18;286:4;337:5 units (2) 163:5,6 universities (1) 232:4 University (7) 6:20;49:25;50:20; 53:21,22;54:8;57:1 unknown (1) 131:9 unless (9) 8:11;9:14;14:14,15; 126:20;179:2;216:24; 330:12,17 unprecedented (5) 119:24;120:5,7,12, 16 unsafe (1) 120:4</p>
---	---	--	---	---

<p>unusual (3) 43:1;116:23;240:11</p> <p>unwilling (1) 217:13</p> <p>unwise (2) 214:6;216:6</p> <p>up (129) 8:6,20;9:21;13:19; 19:18;21:13,15;22:9; 26:8;37:13;43:2,22; 45:8;46:7;49:17;50:19; 58:24;61:10;65:25; 75:19;84:20,22;85:2; 87:23;88:9;89:12;93:3, 17;94:3;95:19,25; 96:17,22;97:1,15,19; 98:10;99:20,23,103:7; 109:3;110:4,8;119:3; 123:20;129:11;130:12; 138:16,22;139:21; 140:17;142:3;145:4; 151:18;161:5;162:1; 169:4;175:8;182:11; 198:20;199:2;204:15; 206:23;207:2,3;208:5, 5,13,21,24;209:1,9,14, 15;210:15;211:4,5; 214:17,24;215:1; 217:12;220:16;223:5, 13;235:15;237:8; 238:2,14;239:10; 243:10;244:4;245:25; 246:7,16;247:9; 251:14;255:13;257:3; 260:4;264:11;265:7; 266:10;267:3;271:11; 272:14;274:7;278:25; 279:2,12;282:2; 290:14;293:3;296:8; 301:13;305:23;310:11; 311:8,16;314:10; 319:18;321:1,10; 325:16,17,18;328:6; 350:8;358:4;360:12</p> <p>update (4) 67:20;139:3,8;269:4</p> <p>upon (2) 81:11;316:22</p> <p>upwards (1) 188:6</p> <p>Urban (16) 53:13;141:21; 176:23;177:17;179:11, 21,24;187:22;188:22; 192:21;193:6;246:15; 271:15;276:6;345:5,8</p> <p>use (39) 32:12;38:10,17;55:6; 77:20;89:15;93:14; 94:2,12;118:10; 126:18;166:23;177:17, 22,25;180:13;194:13; 197:10;199:24;200:6;</p>	<p>214:6;226:9;235:2; 237:5;242:17;249:1; 256:10;260:9;290:18; 307:7;310:18;311:10; 314:2;318:17;319:2; 321:24;343:7,9,22</p> <p>used (21) 52:19;61:9;67:13; 86:16;98:6;120:7; 151:12;156:2;170:1; 176:24;207:1;244:25; 271:16;274:10;283:3; 288:11;322:9;323:8; 325:24;340:4;343:13</p> <p>useful (1) 32:14</p> <p>using (23) 65:3,24;71:12;98:3; 175:18;177:9,16; 179:11,22;186:17; 187:22,22;195:7; 199:15;239:8;245:11; 251:8;253:25;271:13; 276:7;307:3;316:10; 345:5</p> <p>usual (2) 267:6;352:6</p> <p>usually (16) 9:22;16:1;33:7; 63:15;64:23;65:23; 79:11;82:2,15;97:7; 134:23;139:21;198:7; 247:16;360:2;362:8</p> <p style="text-align: center;">V</p> <p>valid (2) 186:4;267:1</p> <p>valuable (2) 81:25;86:23</p> <p>valuation (1) 44:17</p> <p>value (29) 39:12;86:14;90:17; 91:10,11,14,22;93:12; 95:14;142:8,18; 143:13;186:20;193:11; 207:1;210:2;211:1,3,8, 8;222:21;223:5,5; 259:24;274:2;320:20, 22,25;339:20</p> <p>values (17) 44:16;67:10,17;90:5; 93:10,14,23;96:18; 134:11;186:22;189:16; 206:24;210:1;235:10; 273:22;286:10;321:2</p> <p>vapor (2) 210:5;301:14</p> <p>variability (4) 92:18,21;97:17; 179:1</p> <p>variables (1)</p>	<p>236:17</p> <p>variation (2) 362:8,9</p> <p>varies (3) 87:25,25;102:14</p> <p>variety (8) 73:7;125:20;137:13; 176:10;186:25;232:3; 292:13;313:5</p> <p>Various (9) 7:18;10:23;13:22; 39:8;56:5;100:20; 156:20,25;222:18</p> <p>vary (6) 58:17;102:9,11,12; 239:24;276:13</p> <p>vast (3) 88:22;284:21,22</p> <p>vat (2) 290:5,7</p> <p>vehicle (5) 71:5;73:20;74:15,21; 331:4</p> <p>vehicles (2) 124:11,18</p> <p>vehicular (10) 55:25;60:23;61:15, 23;73:15,16,17;76:11, 18;78:16</p> <p>Veirs (1) 5:8</p> <p>Vent (1) 119:17</p> <p>venues (1) 56:8</p> <p>versa (1) 17:22</p> <p>version (5) 39:1;40:21,24;41:4; 233:14</p> <p>versus (22) 81:23;88:22,24; 91:10,23;116:6; 119:20,22;124:6; 137:20;147:10;176:23; 184:6,13;199:25; 200:1;212:16;225:14; 243:9;279:15;290:6; 319:12</p> <p>vertical (2) 207:6;257:7</p> <p>vice (1) 17:22</p> <p>view (17) 39:3;40:16;41:25; 92:13;116:23;120:2; 196:9;229:13;230:11, 18;286:20,24,25; 288:17;291:25;292:4; 341:16</p> <p>views (1) 123:22</p> <p>vigorous (1)</p>	<p>282:18</p> <p>violated (1) 314:16</p> <p>violation (2) 350:7,13</p> <p>visit (5) 239:2,3;265:3,19; 348:2</p> <p>Visits (3) 264:1;265:1,2</p> <p>vitae (2) 42:18;50:11</p> <p>VOC (1) 120:11</p> <p>VOCs (2) 121:12,25</p> <p>voir (1) 42:22</p> <p>volume (9) 61:17;70:18,20; 145:19;207:15,16; 211:21;212:1;261:25</p> <p>voluminous (1) 26:8</p> <p>volunteered (1) 361:15</p> <p>vulnerable (1) 132:16</p> <p style="text-align: center;">W</p> <p>Wait (5) 21:6,6;113:14; 235:14;348:1</p> <p>walk (1) 281:2</p> <p>walked (2) 313:15;331:6</p> <p>walking (1) 81:2</p> <p>walks (1) 280:25</p> <p>wants (7) 9:14;26:22;37:19; 146:21;149:12;326:3; 350:25</p> <p>warehouse (1) 171:12</p> <p>warm (1) 265:12</p> <p>wary (1) 16:10</p> <p>Washington (8) 50:18,19;54:22;58:1, 3;224:9;300:22;345:21</p> <p>waste (1) 59:10</p> <p>wastewater (2) 52:18;53:1</p> <p>water (7) 48:25;49:1,5;52:18, 25,25;78:6</p> <p>way (97)</p>	<p>15:17;25:8;34:16; 43:25;44:1;56:3;68:2; 77:7;83:11;86:6;87:18; 88:13;91:4;92:3,4,18; 93:21;96:25;101:21, 21;104:16;107:21; 108:25;109:25;112:23; 117:7,18;121:25; 122:8;127:10;129:17; 131:18;141:13;163:8; 171:14;174:25;176:19; 177:10;179:19;183:8; 190:23;192:18;193:7; 194:4;196:7,24; 215:16;238:10,21; 239:1;244:3,25; 245:22;250:15;261:9; 266:5;269:12;275:22; 276:8,19;277:14; 278:12,24;279:7,12,16; 281:2,12;283:23; 288:17;290:9;303:16; 310:25;311:24;316:3; 317:7;320:11;321:18; 325:21,23;326:6; 327:18;328:6;332:19; 333:22;339:18,18; 341:15,21;344:6; 351:2,21;353:12; 354:15,18;359:14; 360:15</p> <p>ways (8) 55:4,5;79:6;90:4,13; 94:2;181:14;328:12</p> <p>weaknesses (1) 56:22</p> <p>weather (9) 8:23;9:2,8,25;14:25; 294:20;295:12;359:5, 10</p> <p>weather-wise (1) 16:16</p> <p>website (2) 9:3;360:17</p> <p>wedded (1) 142:5</p> <p>Wednesday (2) 19:13;358:12</p> <p>Wednesdays (2) 19:14,21</p> <p>week (8) 11:8;13:18;18:9,22; 28:8;33:21,23;102:22</p> <p>weeklong (1) 235:3</p> <p>weeks (13) 23:20,21,25;28:8; 29:6,7,10,13,14,17,18, 23;102:23</p> <p>weigh (2) 115:18;214:18</p> <p>weight (5) 36:3;47:13;95:4;</p>
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178:18;225:11 weighting (1) 97:25 weight-of-evidence (1) 336:21 Welcome (3) 6:16,21;41:22 well-done (2) 86:22,24 well-known (1) 146:8 weren't (6) 68:11,12;73:16;77:4; 171:10;269:17 Westfield (1) 5:10 what's (77) 7:16;10:4;17:25,25; 23:11;30:14;31:21,25; 32:13,14;43:25;83:5,5, 5,24;88:21;95:15; 97:12;99:4;100:23; 112:17,18;113:23; 115:20;118:5,6; 128:17;138:2;149:8; 152:1;153:25;158:5; 171:13;182:8;187:11; 190:7,7;193:14;207:5, 21,21;212:8;220:1,11; 229:13,23;230:21; 247:21,25,25;251:3,17; 252:2;263:7;269:7; 271:21;272:6;274:18; 281:8;289:13,18; 299:22;312:6;317:12, 16,17,19;319:5;321:3, 9;327:10;337:15; 339:24;342:4,5; 356:14;358:16 Wheaton (2) 5:9,10 wheeze (11) 238:4,4,6;258:8,15, 17,18,20,23;259:5; 261:5 wheezing (2) 258:21,22 whenever (2) 46:8;357:21 whereas (1) 160:5 Whereupon (5) 123:15;198:14; 293:21;346:12;362:24 whichever (1) 27:9 whip (1) 361:18 White (1) 128:15 whole (15) 64:5;77:25;82:3; 85:20;102:21;142:10;	154:25;205:4,13; 215:14;230:25;276:15; 283:22;312:11;315:25 Wholesale (1) 5:3 Whoops (1) 324:8 who's (5) 37:25;38:4;51:14; 93:9;313:24 whose (1) 311:3 who've (1) 127:14 wide (2) 125:15,19 widely (1) 9:24 wider-ranging (1) 125:23 wife (3) 58:11;325:23;358:20 win (2) 352:23,25 wine (1) 49:6 winter (2) 102:23;265:14 wise (1) 217:14 wish (5) 17:15;25:14,14,15; 103:14 wishes (2) 17:21,23 withdrawn (1) 159:15 within (18) 93:23;95:14;96:21; 104:14;134:13,15; 135:3;164:15,23; 173:21;188:13;210:1; 217:14;225:11;235:9; 286:5;292:10;343:18 without (17) 15:16;43:22;45:1; 101:6,9;107:24; 124:22;130:6;166:2,3, 10;225:4;238:5; 270:22;315:8;330:16; 361:10 witness (239) 12:11;13:9;35:5; 42:20,23,23;48:22; 49:14;50:17;58:21; 62:19,22;63:14,20,22, 24;64:23;65:12,16; 66:4,8,15,21,25;67:2,6, 12,19;68:3,6,8,19,23; 69:4,11,15,25;70:3,6,9, 13,15,23;71:2,6,10,15; 72:11,18,21,23;73:19, 22;74:7;76:1,4,22,24;	77:6,15,18,23;78:21; 85:4,6;87:4,6,10; 99:14;100:11;104:6; 108:18;109:14;111:12; 114:16,25;115:7,23; 116:2;120:21;126:5; 130:3;135:14;143:6; 145:4,10;146:16; 150:18;151:7,13,20,23; 152:1,6;153:14;155:2; 165:19,21;166:2,6,16, 18,21;167:7,9,11; 170:3,5,8,16,21;171:2, 5,7,20;172:2;178:20; 180:6;183:13;186:7,8; 189:2,6,10,13,16,21,23, 25;190:2;191:3; 196:25;203:12;204:25; 207:7,10,14,19,23,25; 208:2;209:3,8,12; 210:17,21,25;211:7,12, 18,21,23,25;222:8,13, 24;226:8,10,12;227:9, 13;228:15;233:14; 236:23;237:13,15; 238:25;241:22;251:21; 252:8;256:1,6,15,18; 257:9,12,15;258:2,5, 20,23;260:21,25; 262:6;264:7;267:22; 268:6,9;274:21,24; 275:2;276:24;277:19; 279:18;280:5;281:17; 287:25;288:2,4,6; 289:19;290:16;296:21; 298:7,11,13,16,20; 301:9,20;302:3;306:6; 309:1;317:9;318:1,5, 11,15,21;319:3,9,25; 320:10,14;322:21; 323:17,20,23;324:1,9, 12;327:6;333:2; 334:16,21;335:14; 342:25;349:18;356:12 witnesses (21) 6:23;8:13;10:17; 11:11,11,12;12:12; 13:11,18;16:9;30:8; 34:9;42:10,11;43:19; 47:24;216:16;309:18; 354:8;355:3;357:16 witness's (2) 286:25;350:8 Wolfe (1) 49:25 woman (1) 267:9 wonder (1) 227:4 wondered (3) 168:10;191:5;262:2 wondering (3) 21:18;47:24;320:2	word (5) 77:15,17;170:1; 182:20;362:22 wording (1) 181:24 words (10) 27:11;161:8;164:1; 208:19;211:20;213:22; 260:20;286:25;305:1; 306:12 work (29) 14:10;20:13;47:25; 48:2;51:12;53:25;54:3; 56:12,19;57:22;58:23, 25;60:13;65:22;69:4,6; 121:25;122:1;140:6; 234:20;300:9,9,10,15; 301:5;309:9;310:7; 322:16;362:14 workable (1) 290:15 worked (2) 232:20;345:11 worker (3) 57:25;282:16;290:5 workers (7) 60:7;283:8;284:9; 286:12;287:17;301:3,5 workers' (1) 285:7 working (9) 29:16;54:12;65:21; 87:15;96:8;128:4; 283:13;337:12;347:20 workplace (9) 51:16,19,20,24;52:3, 24,24;67:4,12 workplaces (1) 78:8 works (8) 11:20;20:11;35:7; 56:7,11;77:1;299:21; 320:10 world (12) 54:18,23;81:16,23, 24;82:21;83:6;102:11; 237:25;291:13,14; 327:16 worried (3) 59:5;265:21;327:9 worry (2) 127:4;165:10 worrying (1) 356:6 worse (7) 55:15;83:24;84:14, 25;176:15;184:7; 317:19 worst (5) 96:8,10,11;347:1,4 worst-case (18) 98:15;316:21;317:6, 12,13,14,16,17;318:12, 14,25;319:1,4,11,18; 320:6,8;346:23 worst-case-scenario (1) 318:8 worth (3) 59:15;139:11;254:8 Wow (2) 11:1;198:4 write (3) 5:19;232:9,21 writing (3) 32:16;263:23;356:19 written (17) 23:15;25:2,3,17; 27:19,20,23;29:6,10; 30:20;43:13,13;44:2; 129:17;202:25;270:19; 322:22 wrong (11) 76:9;95:24;177:7; 179:3;180:22;314:13, 24;358:23;359:1,2,3 wrote (2) 92:17;134:25
Y			
Yakima (1) 54:22 yards (1) 307:23 yea (1) 358:18 year (16) 50:23;51:2;56:13; 64:3;67:20,21;69:7; 102:21;139:3,9;141:5; 219:21;232:20;297:24; 306:8;308:25 years (34) 53:7;54:13,14;56:2; 58:3;59:14;65:12; 67:22;80:9,18;82:12; 91:18;94:7,17;110:13; 128:4;129:9;136:8,10; 139:4,6,18;207:11; 239:16;247:16;269:2; 282:8;292:24;293:2,4; 298:17;300:20;301:25; 359:6 years' (2) 59:15;139:11 York (1) 125:24 young (2) 240:13,14 younger (1) 284:10			
Z			
zero (9) 131:12,13;208:13,			

19,20;209:24;211:17; 266:5,14 zone (1) 169:1 zoned (1) 5:10 Zoning (9) 5:5;46:10;59:21; 62:18;351:11;352:4,8; 353:14,19	225:12,18;240:16; 271:14,19;272:2,4,15, 20,22;346:1 10:00 (5) 360:6,25;361:1,6,22 10:30 (4) 360:6;361:24;362:2, 5 100 (53) 82:11;88:16,17,18, 20,21;131:7;134:18, 19;140:2,3;142:16,17, 21;143:10,22,24; 144:2;147:20;148:7,9, 14,18,19;149:1,6,24; 150:3,4,10,15,21,23; 151:2;155:2;157:21; 166:12;173:16;207:16, 21;239:3;307:6,10,17, 22,22,23,23;315:7; 319:22;330:9,9;334:6 10-day (4) 43:20;45:9;46:3; 296:9 10-minute (1) 356:12 10-part-per-billion (1) 238:20 10th (3) 10:15,20;12:10 11 (3) 71:10;241:4;245:11 11.2 (3) 271:20;272:16;274:8 11.22 (1) 272:20 11.8 (2) 225:12;240:17 11:30 (1) 359:16 110 (2) 191:1,8 11160 (1) 5:8 118 (1) 186:20 11963 (1) 49:11 11th (1) 263:4 12 (24) 95:21,23,23;111:17, 18;119:22;123:14; 140:3;175:24;219:18; 238:9;241:5;245:11, 25;246:1,2;247:12; 270:9;271:24;272:8; 273:10,13;306:7;307:4 12.1 (2) 271:16,23 12.8 (3) 223:1,4,8 12:00 (1)	123:13 12-Million-Gallon-A-Year (1) 119:17 12th (1) 263:4 13 (9) 5:15;7:24;8:22; 15:22,24;241:4;328:8, 11,15 13-12 (1) 5:4 13th (14) 10:15,20;14:25;15:4, 6;16:15,18;45:11; 48:10;294:19;295:19; 353:25;356:9;357:8 14 (4) 14:13;15:11,24; 246:17 14.4 (1) 241:11 14.9 (1) 221:15 140 (2) 163:1;315:4 145 (1) 164:15 14th (15) 10:16,20;13:4,13,25; 15:3,4;16:8,14,17,18; 294:17;295:17,22; 353:25 15 (17) 26:20;65:12;67:22; 71:15;94:17;110:12; 221:12,19;243:10; 247:9,18;265:24; 266:2;269:19;270:16; 328:8,15 15.1 (1) 241:11 15.4 (1) 246:8 150 (4) 166:12;174:19; 189:11,13 159 (1) 132:1 15-hour (1) 261:20 16 (3) 5:7;246:18;249:16 160 (15) 162:21;163:2,11,13, 18;174:19;188:6; 189:6,9;315:1,2,3,5,6; 319:21 168 (1) 192:22 16th (7) 133:8;134:3;159:2,3; 172:18;247:7;340:25 17 (4)	71:19;181:25;238:9, 13 170 (4) 173:2,3;188:6;315:5 174 (1) 119:10 175 (5) 160:5;162:1,14; 165:1;166:12 18 (4) 158:15;166:14; 207:11;225:17 18.6 (1) 260:10 180 (6) 55:21;162:22;163:2, 12,13,18 181 (1) 55:22 182 (1) 55:22 188 (1) 157:21 18-and-a-half (1) 246:8 18th (2) 153:3,18 19 (1) 274:24 190 (13) 157:20;160:6,9,16; 161:3,5,9;162:2; 192:23;193:11;194:6, 22,24 1968 (4) 284:16,18,20;285:4 197 (1) 247:7 1970 (1) 284:16 1970s (1) 51:17 1978 (1) 50:20 1980s (1) 119:18 1980s/early (1) 269:16 1985 (1) 120:24 1986 (1) 51:6 1987 (1) 120:1 1990s (2) 119:19;269:16 1993 (1) 265:1 1998 (1) 120:1	2 (13) 198:2;219:16,18; 221:1,21;222:6,12,14; 243:2;244:8;294:13; 307:3;341:1 2- (1) 235:8 2,000 (1) 88:19 2.9 (1) 236:25 2/24 (1) 296:1 2/25 (1) 296:1 2:10 (3) 198:9,10,13 20 (23) 25:22;30:2;38:18,19, 19;56:2,2;59:15; 110:12;118:16;176:2; 187:3;209:9;238:15; 240:21;257:23;260:22; 261:1,16;272:19; 274:24;275:19;276:7 20.4 (1) 222:20 200 (1) 188:5 200- (1) 235:8 2000 (1) 120:24 2002 (1) 138:7 2004 (5) 203:22;206:8,13; 218:8;265:1 2005 (2) 231:7,22 2006 (1) 137:11 2008 (5) 201:14;202:7; 204:16;236:4;239:14 2009 (2) 137:21;138:3 2010 (11) 140:10,15;145:15, 19;198:21;204:2,3; 218:9;221:22;258:16; 259:5 2011 (2) 231:7,22 2012 (18) 7:24;153:3,18; 155:25;158:15;159:5; 221:1;224:3,4,19; 232:19;268:14;303:8, 12,22,25;305:11;307:2 2013 (32) 5:12;119:18;138:7; 159:5;187:14;221:5,7,
0				
1				
2				

8;239:19;248:17; 249:17,23,25;250:2,6; 303:9,12,13,17;304:4, 7,16;305:12,13;306:19, 24;309:1,5;323:8; 324:7;333:15;341:1 2014 (8) 5:15;7:7,9,11,25;8:3, 5;16:22 2025 (1) 121:2 20-micrograms-per-cubic-meter (1) 261:3 20-part-per-billion (2) 244:10;261:19 20-parts-per-billion (2) 251:9;255:12 20-ppb (1) 238:11 20th (2) 282:5;333:24 21 (5) 72:3;275:16;276:3,3; 341:4 21.2 (1) 222:24 21057 (1) 49:11 21205 (1) 50:2 213 (1) 241:18 217 (1) 192:22 22 (6) 7:7;275:16;276:3,3; 303:17;305:12 22nd (4) 303:9,12,13;304:16 23 (1) 55:19 23.6 (1) 223:9 23.9 (1) 221:15 234 (1) 282:5 23rd (1) 308:23 24 (8) 18:14;33:24;34:3,20; 187:11;221:12,19; 295:12 24.5 (1) 221:16 240 (1) 205:17 24-hour (5) 140:5;251:8;257:11; 260:9;261:20 24th (14) 18:11,12,19;19:1,12; 20:19,20;21:20,21;	22:1;34:23;35:16; 294:4,10 25 (23) 16:19,21,23;18:2; 27:15;34:1,2;110:12; 209:6,8,16;241:8; 257:23;260:22;261:16, 20;301:25;304:3,6; 305:13;306:19,24; 341:25 250 (1) 315:7 255 (8) 174:9;187:13;189:3; 219:14;245:10;271:11; 274:7;324:3 255a (2) 340:6,23 25th (18) 5:2;10:14,20,25; 14:7,11;18:19;19:7; 20:6;21:10,12;222:25; 223:5;243:6;294:11; 305:16;309:1,5 26 (5) 5:12;16:19;145:19; 246:16;293:23 26th (10) 10:21;14:7;18:19; 19:12;20:7,15,17; 21:12,13;294:1 277 (4) 195:4,9,24;196:9 27th (3) 14:8,10;21:8 28 (11) 21:4;153:23;154:13; 156:2;163:20;164:1,2; 186:18;220:5;221:3,10 28th (1) 20:8 29 (4) 72:23;246:7,7; 271:12	175:2;319:22 3093 (1) 137:9 30-minute (1) 26:15 31 (4) 7:9,11;246:6,16 315 (3) 267:8,11,13 32 (2) 73:9;221:23 32.3 (2) 223:2,10 34 (2) 245:25;246:7 35 (5) 140:5;245:25;246:7; 266:10;282:8 3-56 (3) 201:18,19;206:11 3-57 (1) 212:10 3-59 (1) 206:4 3-60 (1) 212:18 3-62 (2) 201:18,19 37 (1) 74:8 372a (2) 229:8,25 38 (1) 75:23 388 (2) 175:4;283:20 390 (3) 238:24;239:2,4 394 (2) 236:25;237:2 3rd (4) 10:21;11:8;14:11; 35:2	260:3 4-172 (1) 263:9 4-173 (3) 263:12;264:6,15 42 (2) 272:16,18 424b (4) 105:2;106:3;139:13; 145:3 424f (1) 137:10 426 (2) 7:5,6 427 (1) 7:7 428 (1) 7:9 429 (1) 7:10 430 (1) 7:12 431 (1) 7:13 431a (1) 7:15 431b (3) 7:16;8:5;32:24 432 (2) 7:19,21 432a (1) 7:23 433 (1) 7:24 434 (1) 7:25 434a (1) 8:1 435 (1) 8:2 436 (1) 8:4 437 (2) 7:5;8:5 438 (3) 47:16,17;201:4 439 (1) 155:10 439a (3) 156:7,15;201:4 439b (3) 156:18;157:3;220:20 4-4 (1) 262:10 440 (5) 201:16;202:12,13; 204:22;205:17 441 (3) 202:18,24;203:24 442 (9) 203:23;204:9,12,13, 14;205:7,18;218:5; 222:7	443 (3) 223:17;224:20,21 444 (2) 231:18,23 445 (4) 235:23;236:3,9,21 446 (4) 235:24;236:6,9; 239:18 447 (7) 249:19,20,21;250:3; 255:24;262:14;264:19 448 (7) 263:20;264:3,10,12, 20,24;267:13 4-48 (1) 264:12 449 (3) 268:11,13,16 45 (7) 24:19;26:4,6;198:7; 221:4,4,11 45-minute (1) 26:14 46 (4) 220:4,8,10;221:15 4-7 (1) 257:25
				5
	3	4		5 (5) 56:23;58:14;303:22, 25;305:10 5/15/2013 (1) 236:8 5:30 (1) 349:24 5:37 (1) 362:24 50 (31) 134:17;143:2,4,7; 144:8;148:10,20; 149:23;150:7;151:4, 15,17,21,22;159:9; 162:22;167:24;189:22; 191:10,14;197:4; 243:11;250:23,24; 261:1,5;265:18,23; 266:2;337:20;341:25 50th (1) 320:24 51 (1) 133:22 512 (1) 137:20 52 (3) 133:24,25;134:1 52.4 (1) 260:12 53 (1) 139:24 54b (4)

<p>153:5;159:12,13; 166:14 559 (1) 137:20 56a (2) 159:8,10 58 (1) 191:9 59-G-2.06 (1) 5:6 5th (3) 303:8,12;307:2</p>	<p>241:11;340:11;341:1 8.0 (1) 241:13 8.3 (2) 241:10;243:6 8.7 (3) 221:23;223:2,9 8:00 (2) 360:2;361:22 8:30 (1) 360:2 80 (15)</p>	<p>95 (5) 90:18;96:20;162:16, 20;319:21 95-parts-per-billion (1) 163:17 95th (2) 266:6,22 96c (3) 306:20,22,23 98 (5) 164:1,3;174:13; 186:18;187:21</p>		
6		<p>98-micrograms-per-cubic-meter (1) 323:9</p>		
<p>6 (1) 56:23 6.3 (4) 153:15,17;159:2; 172:16 6.8 (1) 241:13 60 (1) 163:9 62 (1) 201:22 631 (1) 5:9 6474 (1) 145:20 6480 (1) 105:2 650 (1) 49:25 6500 (1) 106:2 6501 (3) 144:25;145:2;146:1</p>	<p>142:19;143:8;144:3; 164:20;166:12;167:25; 189:14,22;191:4; 206:24;207:1,11,21; 208:14;228:25 800 (1) 175:2 80c (1) 50:12 80th (1) 320:24 85 (8) 142:13,25;146:19; 147:7,23;148:4; 149:14;162:20 85- (1) 163:17 850 (8) 132:5;150:16;151:6, 11,22;168:5;171:16; 337:19 86 (1) 244:9 88a (3) 303:17;304:16; 305:12 88b (3) 303:25;305:11;307:3</p>	<p>98th (3) 142:7,10;147:5 99.7 (1) 119:17 9th (3) 145:15,19;203:22</p>		
7				
<p>7 (1) 70:14 70 (13) 151:21,23;163:9; 164:10,13,14,18;165:3, 9;173:2,18;330:5; 337:20 75 (23) 134:18,19;142:13, 19,25;143:8;144:3; 145:19;148:15,22; 149:23;150:7;163:9; 164:15,18;165:3; 173:15;191:10,14; 210:19;223:5;241:8; 320:18 75th (3) 222:25;243:7;320:22</p>	<p>88C (3) 50:7,12,15 89 (1) 211:8</p>			
8	9			
<p>8 (3)</p>	<p>9 (4) 188:22,24;190:23; 192:22 9/9/04 (1) 203:23 9:30 (3) 5:16;357:18,20 90 (4) 166:12;187:21; 275:21;280:15 900 (2) 254:7,8 91,000 (1) 265:2 94 (2) 146:19;162:23</p>			