

# **Exhibit 2**

1 UNITED STATES DISTRICT COURT  
2 NORTHERN DISTRICT OF CALIFORNIA

3 -----X  
4 IN RE: ROUNDUP PRODUCTS MDL No. 2741  
5 LIABILITY LITIGATION Case No.  
6 16-md-02741-VC

7 -----x  
8 This document relates to:  
9 ALL ACTIONS

10 -----x  
11  
12 DEPOSITION OF ALFRED I. NEUGUT, M.D. Ph.D.  
13 New York, New York  
14 January 3, 2018

15  
16  
17 Reported by:  
18 MARY F. BOWMAN, RPR, CRR  
19 JOB NO. 135741  
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22  
23  
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Page 2

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4                    January 3, 2018  
5                    10:09 a.m.  
6  
7  
8                    Deposition of ALFRED I. NEUGUT,  
9                    M.D. Ph.D., Columbia Medical School, 722  
10                    West 168th St., New York, New York, before  
11                    Mary F. Bowman, a Registered Professional  
12                    Reporter, Certified Realtime Reporter, and  
13                    Notary Public of the State of New Jersey.  
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Page 3

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2  
3                    ANDRUS WAGSTAFF ATTORNEYS AT LAW  
4                    Attorneys for Plaintiffs  
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7                    BY: AIMEE WAGSTAFF, ESQ.  
8                    KATHRYN FORGIE, ESQ. (By Telephone)  
9                    DAVID WOOL, ESQ. (By Telephone)  
10                    -and-  
11                    THE MILLER FIRM  
12                    108 Railroad Avenue  
13                    Orange, Virginia 22960  
14                    BY: JEFFREY TRAVERS, ESQ.  
15  
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6                    Washington, DC 20005  
7                    BY: ERIC LASKER, ESQ.  
8                    GRANT HOLLINGSWORTH, ESQ.  
9  
10  
11                    Also Present:  
12                    Robin Greenwald, Esq. (By Telephone)  
13                    Weitz & Luxenberg  
14                    Michael Baum, Esq. (By telephone)  
15                    Baum Hedlund  
16                    Manuel Garcia, Videographer  
17  
18  
19  
20  
21  
22  
23  
24  
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1                    INDEX:  
2                    WITNESS            EXAM BY:            PAGE:  
3                    A. Neugut            Mr. Lasker            9  
4                                               Ms. Wagstaff            129  
5  
6                    EXHIBIT INDEX:  
7                    NUMBER            DESCRIPTION            PAGE:  
8                    Exhibit 26-1 Document entitled "Glyphosate            15  
9                                               Use and Cancer Incidence in  
10                                               the Agricultural Health Study"  
11                    Exhibit 26-2 Excerpt from "Oxford            17  
12                                               Academic"  
13                    Exhibit 26-3 Deposition Transcript of            25  
14                                               Alfred Neugut dated    March  
15                                               12, 2013  
16                    Exhibit 26-4 Supplemental Expert Report of            42  
17                                               Alfred Neugut  
18                    Exhibit 26-5 Supplemental Expert Report of            46  
19                                               Lorelei Mucci  
20                    Exhibit 26-6 Document entitled, "Accuracy            73  
21                                               of Self-reported Pesticide Use  
22                                               Duration Information from  
23                                               Licensed Pesticide Applicators  
24                                               in the Agricultural Health  
25                                               Study"

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1	EXHIBIT INDEX:	
2	NUMBER DESCRIPTION	PAGE:
3	Exhibit 26-7 document entitled	79
4	"Reliability of Reporting on	
5	Lifestyle and Agricultural	
6	Factors by Sample of	
7	Participants in the	
8	Agricultural Health Study from	
9	Iowa"	
10	Exhibit 26-8 Document entitled, "Assessing	95
11	the Potential for Bias from	
12	Nonresponsive to a Study	
13	Follow-Up Interview"	
14	Exhibit 26-9 Document entitled "Effects of	100
15	Self-reported Health	
16	Conditions and Pesticide	
17	Exposures on a Probability of	
18	Follow-up in a Prospective	
19	Cohort Study"	
20	Exhibit 26-10 Document entitled, "Using	108
21	Multiple Imputation to Assign	
22	Pesticide Use for	
23	Nonresponders in the Follow-Up	
24	Questionnaire"	
25		

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1

2 THE VIDEOGRAPHER: This the start

3 of video number up with of Dr. Alfred

4 Neugut, In re RoundUp Products

5 Liability Litigation on January 3,

6 2018, at approximately 10:09 a.m.

7 My name is Manuel Garcia. I'm

8 the legal video specialist for TSG

9 Reporting Inc. The court reporter is

10 Mary Bowman, in association with TSG

11 Reporting.

12 Counsel, please introduce

13 yourselves.

14 (Whereupon, counsel placed their

15 appearances on the audio record)

16 THE VIDEOGRAPHER: Will the court

17 reporter please swear in the witness.

18 ALFRED I. NEUGUT, M.D. Ph.D.,

19 called as a witness by the defendants,

20 having been duly affirmed, testified as

21 follows:

22 MS. WAGSTAFF: This is Aimee

23 Wagstaff on behalf of the plaintiffs.

24 On November 11, 2017, MDL Judge

25 Chhabria entered PTO 34, which ordered

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1 that any expert wishing to testify

2 about the study published on

3 November 9, 2017, in the Journal of the

4 National Cancer Institute is to submit

5 a supplemental report and submit to a

6 deposition not to exceed 2.5 hours.

7 Today, Dr. Neugut is appearing

8 pursuant to PTO 34.

9 On December 21, 2017, Monsanto

10 issued a Notice of Deposition with 12

11 requests for production of documents.

12 It is my understanding you have

13 received the documents that are

14 responsive to that Notice of

15 Deposition.

16 Did you receive documents from

17 Mr. Travers?

18 MR. HOLLINGSWORTH: Yes.

19 MS. WAGSTAFF: Those are the only

20 responsive documents to that Notice of

21 Deposition.

22 Nonetheless, plaintiffs object to

23 the scope of number 7, 8, 9, 10, 11, 1

24 and partially 2 based on the fact that

25 they are beyond the scope of PTO 34.

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1 MR. LASKER: OK, I don't remember

2 what those numbers are, but I take

3 your --

4 MS. WAGSTAFF: You haven't

5 memorized them?

6 MR. LASKER: I will take your

7 objection under consideration, but

8 since, as I understand it, no documents

9 were withheld on those grounds, it is a

10 moot point, I guess.

11 EXAMINATION BY

12 MR. LASKER:

13 Q. Good morning, Dr. Neugut. I know

14 you have been before this before and we

15 have been before this before together. So

16 I am just going to jump right in if that's

17 OK with you.

18 A. Sure.

19 Q. Dr. Neugut, would you agree it is

20 standard scientific methodology, when new

21 scientific evidence emerges, to consider

22 whether and how that new evidence impacts

23 the scientific knowledge ab initio?

24 A. Yes.

25 Q. The evolution of knowledge

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1 through new research and study is, in fact,  
 2 integral to the scientific process,  
 3 correct?  
 4 A. Yes.  
 5 Q. Since we last met for your first  
 6 deposition, there has been a new  
 7 epidemiologic study published that looks at  
 8 whether there is an association between  
 9 glyphosate product exposure and  
 10 Non-Hodgkins lymphoma, correct?  
 11 A. Yes.  
 12 Q. And that is the study in -- and  
 13 we'll mark this as the first exhibit in  
 14 line.  
 15 MR. LASKER: And I don't know if  
 16 it makes sense -- I didn't think about  
 17 this beforehand, how we are going to  
 18 formulate this because we have two  
 19 different depositions. Let's make  
 20 this --  
 21 MS. WAGSTAFF: Haven't we been  
 22 doing them numbered 1, 2, 3?  
 23 MR. LASKER: Right, I know --  
 24 MS. WAGSTAFF: Let's make this --  
 25 MR. LASKER: I didn't know which

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1 numbers we were at. Let's -- let's go  
 2 off the record on second I'm sorry.  
 3 THE VIDEOGRAPHER: The time is  
 4 10:13. We are going off the record.  
 5 (Recess)  
 6 THE VIDEOGRAPHER: The time is  
 7 10:16. We are back on the record.  
 8 (Exhibit 26-1, document entitled  
 9 "Glyphosate Use and Cancer Incidence in  
 10 the Agricultural Health Study" marked  
 11 for identification, as of this date.)  
 12 Q. So back on the record.  
 13 I have just marked as Deposition  
 14 Exhibit 26-1 the new study from -- that we  
 15 are discussing that had lead-off author of  
 16 Dr. Andreotti, correct?  
 17 A. Yes.  
 18 Q. And this paper was authored by 12  
 19 scientists, if I count this correctly, who  
 20 have affiliations in one way or another  
 21 with the National Institutes of Health,  
 22 correct?  
 23 A. Some of them do. Some of them  
 24 have other affiliations, but wherever.  
 25 Q. And the publication is entitled,

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1 "Glyphosate Use and Cancer Institute {sic}  
 2 in the Agricultural Health Study had been  
 3 published online, but it will be published  
 4 in the national -- the Journal for the  
 5 National Cancer Institute in this coming  
 6 year of 2018, correct?  
 7 A. Yes.  
 8 Q. You have served as a peer  
 9 reviewer for the Journal of National Cancer  
 10 Institute, correct?  
 11 A. Yes.  
 12 Q. How many peer reviewers does the  
 13 NCI Journal typically use to review  
 14 manuscripts before it is accepted for  
 15 publication?  
 16 A. Two or three.  
 17 Q. The Journal of the National  
 18 Cancer Institute is a highly respected  
 19 scientific journal, correct?  
 20 A. Yes.  
 21 Q. The Journal of the National  
 22 Cancer Institute, in fact, is one of the  
 23 most highly respected journals in the  
 24 world, correct?  
 25 A. It is highly respected, yes.

Page 13

1 Q. You are familiar with the rating  
 2 scheme that ranks scientific journals based  
 3 on their impact factor, correct?  
 4 A. Yes.  
 5 Q. What is an impact factor?  
 6 A. An impact factor is a measure of  
 7 how often the papers that are published in  
 8 the journal are cited by another in other  
 9 publications.  
 10 Q. That would be other scientists  
 11 who are citing to the publication, correct?  
 12 A. Correct.  
 13 Q. And let me show you and we will  
 14 mark this as Exhibit 26-2.  
 15 (Exhibit 26-2, excerpt from  
 16 "Oxford Academic" marked for  
 17 identification, as of this date.)  
 18 Q. This is something that comes from  
 19 the website for of the Journal of the  
 20 National Cancer Institute and on the third  
 21 page, you will see a listing of the  
 22 journal's impact factors going back from  
 23 between 2006 and 2016, correct?  
 24 A. Yes.  
 25 Q. The Journal of the National

Page 14

1 Cancer Institute routinely ranks among the  
 2 top 5 percent of all oncology journals in  
 3 the world, correct?  
 4 A. Yes.  
 5 Q. The 2018 National Cancer  
 6 Institute journal study that we have been  
 7 talking about that has been marked as  
 8 Exhibit 26-1 provides updated data for the  
 9 agricultural study cohort based upon  
 10 additional years of follow-up of 54,251  
 11 pesticide applicators, correct?  
 12 A. Yes.  
 13 Q. The study updated, and I think  
 14 they say this in the abstract, the study  
 15 updated the previous evaluation of the AHS  
 16 cohort, previous evaluation of glyphosate  
 17 with Cancer Institute incidence from  
 18 residency linkage through 2012 for North  
 19 Carolina and for 2013 in Iowa, correct?  
 20 A. Yes.  
 21 Q. The 2018 NCI Study, thus, had  
 22 cancer institute for these 54,251 pesticide  
 23 applicators extending nearly 40 years after  
 24 the introduction of glyphosate on to the  
 25 market, correct?

Page 15

1 A. Yes.  
 2 MS. WAGSTAFF: Objection to form.  
 3 Q. There are in total 575 cases of  
 4 Non-Hodgkins lymphoma among these pesticide  
 5 applicators, some of whom have been exposed  
 6 to glyphosate-based herbicides and some of  
 7 whom have not been, correct?  
 8 A. Yes.  
 9 Q. The prior publication analyzed an  
 10 AHS cohort which is the DeRoos 2005 study  
 11 was based on 92 NHL cases, correct?  
 12 A. I don't recall.  
 13 MR. LASKER: Let's pull out  
 14 Dr. Neugut's initial expert report.  
 15 MS. WAGSTAFF: Counsel, I'll let  
 16 you ask a couple questions on this, but  
 17 this deposition was not designed nor  
 18 allowed to revisit his initial report  
 19 and so he is prepared nor ready to talk  
 20 about his initial report right now. So  
 21 depending on how deep you go into his  
 22 initial report, I may instruct him not  
 23 to answer.  
 24 MR. LASKER: Not going very deep  
 25 at all. Just a number of things.

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1 MS. WAGSTAFF: All right.  
 2 Q. It is fair to say, Dr. Neugut,  
 3 that the 2018 NCI study is significantly  
 4 more powerful in looking to an association  
 5 between glyphosate-based herbicides and  
 6 Non-Hodgkins lymphoma than DeRoos 2005,  
 7 correct?  
 8 MS. WAGSTAFF: Object to form.  
 9 A. Powerful in what sense?  
 10 Q. In the ability to detect  
 11 statistical significance of an association?  
 12 A. Yes.  
 13 Q. With -- there are, in fact,  
 14 significantly more -- let me just show you,  
 15 Dr. Neugut, your initial expert report, and  
 16 this is on page 12. We have a copy for you  
 17 if you just want to look it. I won't mark  
 18 it as an exhibit.  
 19 MS. WAGSTAFF: You can read as  
 20 much as you want of the report.  
 21 Q. I am going to ask you to confirm  
 22 the number --  
 23 A. What is this document?  
 24 Q. So this is your initial expert  
 25 report?

Page 17

1 MS. WAGSTAFF: Can I have a copy  
 2 please?  
 3 A. You mean from some months ago?  
 4 Q. Yeah. And the only information  
 5 on here is just to confirm your  
 6 recollection, you're talking about the  
 7 DeRoos 2005 study and there is -- you have  
 8 indicated the number of NHL cases for  
 9 Non-Hodgkins lymphoma and it is about  
 10 midway through the first paragraph as being  
 11 92 cases of Non-Hodgkins lymphoma in the  
 12 2005 DeRoos study, correct?  
 13 MS. WAGSTAFF: Doctor, if you  
 14 need to read the whole part about  
 15 DeRoos 2005 to get your bearings, you  
 16 certain can and I renew my previous  
 17 objection.  
 18 Are you marking this as an  
 19 exhibit?  
 20 A. I'm not seeing where -- I see,  
 21 OK. Yes, it says 92 cases. Is that what  
 22 you are referring to?  
 23 Q. Yes.  
 24 A. Um-hm, yes.  
 25 Q. So the 2018 NCI study with

Page 18

1 respect to Non-Hodgkins lymphoma has  
 2 roughly six times the number of NHL cases  
 3 as the 2005 DeRoos study, correct?  
 4 MS. WAGSTAFF: Object to form.  
 5 A. That's correct.  
 6 MS. WAGSTAFF: You keep calling  
 7 it the 2018 study. I don't know if you  
 8 mean to be doing that.  
 9 MR. LASKER: It's going to be  
 10 published in 2018, so.  
 11 Q. There are, in fact, significantly  
 12 more NHL cases with exposure to glyphosate  
 13 in the 2018 NCI study than there are in all  
 14 of the case control studies of glyphosate  
 15 in Non-Hodgkins lymphoma combined, correct?  
 16 A. I wouldn't know.  
 17 Q. Well, let's again, just to  
 18 refresh your recollection and continue with  
 19 your expert report, look at, for example,  
 20 the DeRoos -- I'm sorry, the McDuffie  
 21 study -- and that's on page 14 of your  
 22 initial report. You can turn to page 14.  
 23 A. 14?  
 24 Q. The McDuffie paper, if you look,  
 25 starting at line 5 of your description of

Page 19

1 that report with respect to Non-Hodgkins  
 2 lymphoma, McDuffie, the McDuffie study  
 3 looked at 51 exposed cases with  
 4 Non-Hodgkins lymphoma, correct?  
 5 A. Yes.  
 6 Q. And you would agree -- let me  
 7 strike that.  
 8 For the 2018 NCI study, there  
 9 were 440 cases of Non-Hodgkins lymphoma  
 10 with exposures to glyphosate, correct?  
 11 A. You are talking about in the  
 12 ever/never --  
 13 Q. Sure, if you can look on desk --  
 14 look at the 2018 study and particularly it  
 15 at table 2, which is on page 5. There is  
 16 the breakdown of Non-Hodgkins lymphoma for  
 17 never exposure and the four quadrants of  
 18 exposure, correct?  
 19 A. Yes.  
 20 Q. And we have 135 cases of  
 21 Non-Hodgkins lymphoma out of the 575 that  
 22 had no exposure, correct?  
 23 A. Yes.  
 24 Q. Which means we have 440 cases of  
 25 Non-Hodgkins lymphoma with exposure to

Page 20

1 glyphosate-based herbicides in that study,  
 2 correct?  
 3 A. Yes.  
 4 Q. And you would agree that 440  
 5 exposed NHL cases provides enough power to  
 6 address statistically the question whether  
 7 glyphosate-based herbicide exposure is  
 8 associated with Non-Hodgkins lymphoma,  
 9 correct?  
 10 A. Can you state that question  
 11 again?  
 12 Q. Sure. You would agree that with  
 13 440 exposed NHL cases, the 2018 NCI study  
 14 has enough power, statistically, to address  
 15 the question whether glyphosate exposure is  
 16 associated with Non-Hodgkins lymphoma,  
 17 correct?  
 18 A. I would not be able to know  
 19 without doing a power analysis as to  
 20 whether it could exclude a risk ratio of  
 21 1.3 or 1.4. So I don't have any sense of  
 22 that.  
 23 Q. OK. Let's mark as 26-3, this is  
 24 testimony that you provided in connection  
 25 with the Actos litigation and I'll direct

Page 21

1 to you certain page.  
 2 (Exhibit 26-3, Deposition  
 3 Transcript of Alfred Neugut dated  
 4 March 12, 2013 marked for  
 5 identification, as of this date.).  
 6 Q. And if you look at the first page  
 7 of this transcript, you will see this is  
 8 testimony that you provided in court during  
 9 the trial of Jack Cooper. Do you see that?  
 10 A. Yes.  
 11 Q. And on page 46, --  
 12 A. 41?  
 13 Q. 46. So there is four pages on a  
 14 page, so it's actually on the top right of  
 15 each of the four squares, you will see the  
 16 number.  
 17 So if you go to page 46 of that  
 18 testimony.  
 19 A. Yes.  
 20 Q. Here, you are answering questions  
 21 from plaintiff's counsel who is also  
 22 plaintiff's counsel in this litigation,  
 23 Mr. Miller, correct?  
 24 A. Yes.  
 25 Q. And you are looking, talking

Page 22

1 about a study, a cohort study that in this  
 2 case was looking at bladder cancer and  
 3 exposure to Actos, correct?  
 4 A. Yes. Yes.  
 5 Q. In that case you were talking  
 6 about a study with 470 people with bladder  
 7 cancer. And that, I take it, was either  
 8 who had exposure to Actos or who did not,  
 9 correct?  
 10 A. I don't recollect, but I assume  
 11 it was talking about exposure to Actos,  
 12 yes.  
 13 MS. WAGSTAFF: I will object to  
 14 taking snippet of testimony out of  
 15 context of the entire litigation.  
 16 Q. And with respect to the Actos  
 17 litigation, in response to a question by  
 18 plaintiff's counsel, you testified that 470  
 19 exposed cases gave you a reasonable shot of  
 20 having statistical power to really address  
 21 the question that we are all interested in,  
 22 correct?  
 23 A. There, we were talking about -- I  
 24 don't know what the risk ratios were that  
 25 were being discussed in my recollection at

Page 23

1 this time at the time.  
 2 I mean, if one wants to know how  
 3 much statistical power there is, one has to  
 4 do a formal -- or one should do a formal  
 5 statistical analysis to be able to  
 6 determine that. The size of the cohort is  
 7 really not the issue. 115,000 people is  
 8 really irrelevant or whether it is 50,000  
 9 people.  
 10 You're correct in talking about  
 11 the number of exposed cases. It's the end  
 12 number of end points. But again, I can't  
 13 ascertain -- and it also depends on the  
 14 exposure -- on how many are -- how many  
 15 unexposed there are, et cetera.  
 16 So I have no idea if we are  
 17 talking about risk ratios of 1.3 or 1.4 or  
 18 1.5, I have no idea how many cases one  
 19 would need to have enough statistical power  
 20 to address the issue and whether the study  
 21 was large enough to ascertain that.  
 22 Q. You had not done any analysis  
 23 then to determine whether or not the 440  
 24 exposed NHL cases in the 2018 NCI Study  
 25 provides power sufficient to detect a rate

Page 24

1 ratio of 1.3, or 1.4?  
 2 A. So I did not do it up front and I  
 3 don't know if the -- I don't know if the  
 4 investigators did it either. I don't  
 5 recall seeing it in the -- I don't recall  
 6 seeing it in the publication. It's not  
 7 mentioned, to my recollection.  
 8 You could look through the paper  
 9 and see. I don't recall seeing it in --  
 10 usually it is put in the methods section if  
 11 it's done and I don't recall seeing it in  
 12 the methods section either.  
 13 Q. Have you done any power analyses  
 14 for glyphosate epidemiology to determine  
 15 the relative strength of studies with  
 16 respect to power to detect increased or --  
 17 association?  
 18 A. Sure. And usually the -- OK.  
 19 I'll let it go then.  
 20 Q. The -- I think, as you mentioned,  
 21 the issue that you look at is the number of  
 22 exposed cases with Non-Hodgkins lymphoma?  
 23 A. As compared to the controls. I  
 24 mean both numbers are relevant.  
 25 Q. Now, the 12 investigators that

Page 25

1 published the 2018 NCI study, in their  
 2 abstract of the paper, conclude, in their  
 3 conclusion statement, "In this large  
 4 prospective cohort study, no association  
 5 was apparent between glyphosate and any  
 6 solid tumors or lymphoid malignancies  
 7 overall including NHL and its subtypes."  
 8 Did I read that correctly?  
 9 A. Yes.  
 10 Q. And in the conclusion section in  
 11 the text of their study, on page 712, the  
 12 investigators state, "Again, in our study,  
 13 we observe no associations between  
 14 glyphosate use and NHL overall or any of  
 15 its subtypes."  
 16 Correct?  
 17 A. I'm not seeing where you're  
 18 reading, I'm sorry.  
 19 Q. It's up on the screen as well,  
 20 but it's on page 7 and it is the first  
 21 column. And the 12 investigators --  
 22 A. Oh, I see.  
 23 Q. -- in this paper state, "In our  
 24 study, we observed no associations between  
 25 glyphosate use and Non-Hodgkins lymphoma



1 overall or any of its subtypes." Correct?  
 2 A. Yes.  
 3 Q. They further state that this lack  
 4 of association was consistent for both  
 5 exposure metrics -- and that's intensity  
 6 weighted, cumulative days of exposure, and  
 7 separately, cumulative days of exposure,  
 8 correct?  
 9 A. Yes.  
 10 Q. The lack of association was also  
 11 consistent for unlagged and lagged analyses  
 12 looking at different periods of time of  
 13 exposure, correct?  
 14 A. Yes.  
 15 Q. And it was -- the lack of  
 16 association was also consistent after --  
 17 consistent after further adjustments for  
 18 pesticides linked to NHL in previous  
 19 analyses, correct?  
 20 A. Yes.  
 21 Q. And the lack of association was  
 22 also found when they excluded multiple  
 23 myeloma from the Non-Hodgkins lymphoma  
 24 grouping, correct?  
 25 A. Yes.

1 MS. WAGSTAFF: Objection, asked  
 2 and answered.  
 3 A. Yes.  
 4 Q. Let's look at the rate ratios  
 5 that were reported in the study for  
 6 Non-Hodgkins lymphoma and we will look back  
 7 again to table 2, and this is on page 5.  
 8 We can go down a little bit and look at  
 9 this one a little closer.  
 10 Table 2 is setting forth a  
 11 finding -- are you OK?  
 12 A. Sorry.  
 13 Q. Table 2 sets forth the findings  
 14 from the 2018 NCI Study based upon  
 15 intensity weighted cumulative days of  
 16 exposure, correct?  
 17 A. Yes.  
 18 Q. And as you mentioned earlier, the  
 19 first category, the "none" in this table  
 20 would be "never" exposure, correct? For --  
 21 and we will look specifically -- there is a  
 22 number of different cancers here, but let's  
 23 look at Non-Hodgkins lymphoma.  
 24 So we have 135 cases which would  
 25 be in the never exposure category, correct?

1 Q. This statement by the  
 2 investigators accurately reports the  
 3 reported findings of the 2018 NCI study  
 4 with respect to glyphosate and Non-Hodgkins  
 5 lymphoma, correct?  
 6 MS. WAGSTAFF: Object to form.  
 7 A. It reports what they reported.  
 8 Q. And this statement of the study  
 9 findings was accepted by the Journal of  
 10 National Cancer Institute after independent  
 11 peer review, correct?  
 12 A. It's what was published. I don't  
 13 believe the Journal of the National Cancer  
 14 Institute would claim infallibility or that  
 15 every study it publishes is totally  
 16 accurate or correct.  
 17 Q. I understand. But the statement  
 18 of the study's findings that there was no  
 19 association between glyphosate-based  
 20 herbicides and Non-Hodgkins lymphoma,  
 21 looking at it from all these different  
 22 angles, that statement was accepted by the  
 23 Journal of National Cancer Institute to be  
 24 published in its journal after independent  
 25 peer review, correct?

1 A. Um-hm, yes.  
 2 Q. And then we have four categories  
 3 that would make up in aggregate those  
 4 people who had exposure or were considered  
 5 "ever" exposure to glyphosate, correct?  
 6 A. Yes.  
 7 Q. And the never/ever rate ratio for  
 8 Non-Hodgkins lymphoma and glyphosate  
 9 exposure in the 2018 study, NCI Study would  
 10 be approximately 0.85, correct?  
 11 A. In that ballpark. I don't recall  
 12 the exact number, but it was around that.  
 13 Q. The -- when we talk about  
 14 intensity weighted exposure, let's define  
 15 that or let's let the investigators of --  
 16 the NIH investigators explain clearly what  
 17 that means.  
 18 On page 2 of the Andreotti study,  
 19 they explained, and it is on the second  
 20 column towards the top, they explain how  
 21 the intensity score was derived for the  
 22 purposes of their analysis, correct?  
 23 A. We are now on page 2 on the top  
 24 of the second column?  
 25 Q. Yes, and you can see on the

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1 screen where I'm pointing.  
 2 A. OK. Yes.  
 3 Q. And the intensity score was  
 4 derived from an algorithm first based on  
 5 literature-based measurement --  
 6 literature-based measurements, correct?  
 7 A. Yes.  
 8 Q. And also on information provided  
 9 by the applicator, specifically whether the  
 10 participant mixed or applied pesticides,  
 11 correct?  
 12 A. Yes.  
 13 Q. Whether the applicator repaired  
 14 pesticide-related equipment, correct?  
 15 A. Yes.  
 16 Q. Whether the applicator used  
 17 personal protective equipment, correct?  
 18 A. Yes.  
 19 Q. And what application method was  
 20 used by the applicator, correct?  
 21 A. Yes.  
 22 Q. And going back now to table 2, on  
 23 page 5, and the findings for Non-Hodgkins  
 24 lymphoma are in the 2018 NCI Study, the NIH  
 25 scientists reported that there was a lower

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1 incidence of Non-Hodgkins lymphoma in each  
 2 of the four different levels of glyphosate  
 3 exposure groups as compared to no exposure,  
 4 correct?  
 5 MS. WAGSTAFF: Object to form.  
 6 A. Not a low incidence.  
 7 Q. I didn't say -- a lower  
 8 incidence. Let me repeat the question.  
 9 The NHL scientists reported there  
 10 was a lower incidence of Non-Hodgkins  
 11 lymphoma in each of the glyphosate-exposed  
 12 groups than there was in the group with no  
 13 glyphosate exposure, correct?  
 14 A. Yes.  
 15 Q. Based upon -- OK. And the NCI  
 16 Study also found no evidence of a dose  
 17 response for glyphosate intensity-weighted  
 18 days of exposure for Non-Hodgkins lymphoma  
 19 or any Non-Hodgkins lymphoma subtype,  
 20 correct?  
 21 A. Correct.  
 22 Q. The 2018 study also found no  
 23 evidence of a dose response and this is in  
 24 one of the supplemental tables, table 2, --  
 25 I'm sorry, table 1. So if we go to the

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1 first supplemental table, it's in your --  
 2 A. Do I have that?  
 3 Q. Yes, keep turning the pages,  
 4 you'll get past the references and then  
 5 there will be a first supplemental table,  
 6 table 1. Do you see that?  
 7 A. Yes.  
 8 Q. This is the second exposure  
 9 method, correct? Cumulative days? This is  
 10 measuring for cumulative days, correct?  
 11 A. Yes.  
 12 Q. And if you look at the dose  
 13 response analysis for Non-Hodgkins lymphoma  
 14 by the separate exposure metrics, again,  
 15 there is no evidence of a dose response for  
 16 glyphosate-based herbicide exposure and  
 17 Non-Hodgkins lymphoma or any of its  
 18 subtypes, correct?  
 19 MS. WAGSTAFF: Object to form.  
 20 A. Correct.  
 21 Q. And the 2018 NCI Study also found  
 22 no evidence of an association between  
 23 exposure to glyphosate-based herbicides and  
 24 Non-Hodgkins lymphoma when they limited  
 25 their analysis to different periods of time

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1 of exposure, correct?  
 2 MS. WAGSTAFF: Object to form.  
 3 A. Can you clarify that?  
 4 Q. So -- sure. The NCI, the 2018  
 5 NCI Study conducted various lag analyses  
 6 looking at exposures in different periods  
 7 of time to glyphosate-based herbicides,  
 8 correct?  
 9 A. Yes.  
 10 Q. And each of those time periods  
 11 that they looked at for exposure, they did  
 12 not find evidence of an association between  
 13 glyphosate-based herbicides and  
 14 Non-Hodgkins lymphoma, right?  
 15 A. Right.  
 16 MS. WAGSTAFF: Object to form.  
 17 Q. Some of these -- for example, the  
 18 12 NIH investigators looked to see whether  
 19 there was any association between  
 20 glyphosate-based herbicides and  
 21 Non-Hodgkins lymphoma if they limited their  
 22 analyses to exposures that occurred either  
 23 15 years before or 20 years before their  
 24 diagnosis with Non-Hodgkins lymphoma,  
 25 correct?

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1 A. Can you repeat that question. I  
 2 am sorry.  
 3 Q. Sure. The NIH scientists who  
 4 conducted the 2018 NCI study looked to see  
 5 if there was any association between  
 6 glyphosate-based herbicides and  
 7 Non-Hodgkins lymphoma if they limited their  
 8 analyses to exposures that took place  
 9 either 15 years before or 20 years before  
 10 either the end of the follow-up period or  
 11 the date of diagnosis, correct?  
 12 A. Yes.  
 13 Q. So each of those analyses look at  
 14 exposures to glyphosate that date back  
 15 before the introduction of RoundUp Ready  
 16 crops, correct?  
 17 MS. WAGSTAFF: Object to form.  
 18 Answer if you know.  
 19 A. So the lagging took out the cases  
 20 that occurred during specific time frames  
 21 after the exposure was measured.  
 22 Q. So the lagging, if I understand  
 23 correctly, and correct me if I am wrong,  
 24 for the 15-year lag -- let's start the  
 25 20-year lag. It's easier math.

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1 The 20-year lag, you are looking  
 2 at the exposure that took place at least 20  
 3 years prior to the end of the follow-up  
 4 period which is 2012 or 2013, correct?  
 5 A. I haven't thought about it in  
 6 that way before, but let me think about it  
 7 for a moment.  
 8 Yes.  
 9 Q. And then when the 2018 NCI Study  
 10 looked at exposures dating back to that  
 11 period prior to the introduction of RoundUp  
 12 Ready crops, there was no evidence of an  
 13 association from that glyphosate-based  
 14 exposure and nonHodgkins lymphoma, correct?  
 15 MS. WAGSTAFF: Object to form.  
 16 Answer if you know.  
 17 A. Correct.  
 18 Q. The NIH scientists also looked to  
 19 see if there was any association between  
 20 glyphosate-based herbicides and  
 21 Non-Hodgkins lymphoma if they included  
 22 exposures that occurred either within five  
 23 years or within ten years of the end of the  
 24 study period of 2012, 2013, correct?  
 25 A. Yes.

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1 Q. That analysis would then look at  
 2 glyphosate-based herbicide exposure  
 3 following the introduction of RoundUp Ready  
 4 crops, correct?  
 5 A. Yes.  
 6 Q. There was no evidence, in the  
 7 2018 NCI Study, of an association between  
 8 Non-Hodgkins lymphoma and glyphosate-based  
 9 herbicide exposure subsequent to the  
 10 introduction of RoundUp Ready crops,  
 11 correct?  
 12 MS. WAGSTAFF: Object to form.  
 13 A. Yes.  
 14 Q. In fact, the rate ratios for  
 15 Non-Hodgkins lymphoma for the highest dose  
 16 of exposure were even lower when they  
 17 included exposures that occurred during the  
 18 period after the introduction of RoundUp  
 19 Ready crops, correct?  
 20 A. I don't know offhand.  
 21 Q. If you look at, again, table --  
 22 why don't we look at table 3 in this  
 23 analysis, and this is on page 6. You've  
 24 reviewed all these tables, of course,  
 25 before today, right?

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1 A. Of course.  
 2 Q. So table 3 in the 2018 NCI Study  
 3 has lag analyses that look at those two  
 4 time periods, five-year lag, which would  
 5 include exposures after the introduction of  
 6 RoundUp Ready crops, and the 20-year lag,  
 7 which would be limited to exposures prior  
 8 to the introduction of RoundUp Ready crops  
 9 and for Non-Hodgkins lymphoma, the  
 10 incidence of glyphosate -- I'm sorry, the  
 11 incidence of Non-Hodgkins lymphoma, the  
 12 highest exposure level after the  
 13 introduction of RoundUp Ready crops was  
 14 even lower than it was prior to the  
 15 introduction of RoundUp Ready crops,  
 16 correct?  
 17 A. Which number are you referring  
 18 to?  
 19 Q. So the highest exposure would be  
 20 quadrant 4, correct?  
 21 A. You are talking about 0.87?  
 22 Q. 0.87, correct?  
 23 A. Yeah.  
 24 Q. In your supplemental expert  
 25 report, you state that there is -- this is

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1 at -- I guess we should mark this. We  
 2 didn't mark this yet.  
 3 MS. WAGSTAFF: What table is that  
 4 there?  
 5 MR. LASKER: Table 3.  
 6 MS. WAGSTAFF: Oh, from the  
 7 supplemental.  
 8 Q. So let's mark your supplemental  
 9 expert report as 26-4.  
 10 (Exhibit 26-4, Supplemental  
 11 Expert Report of Alfred Neugut marked  
 12 for identification, as of this date.)  
 13 Q. Dr. Neugut, at page 11 in your  
 14 supplemental expert report, you discuss a  
 15 relative risk, what you describe as a --  
 16 this is the bottom of the page, a modest  
 17 relative risk of 1.3 to 1.4 for ever/never  
 18 use of glyphosate. Do you see that?  
 19 A. Yes.  
 20 Q. And this modest relative risk of  
 21 1.3 to 1.4 is the number that you obtained  
 22 from the metaanalyses that were conducted of  
 23 the glyphosate epidemiologic literature  
 24 back in 2015, correct?  
 25 A. Yes.

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1 Q. You would agree that an updated  
 2 metaanalysis of the current body of  
 3 epidemiologic data on glyphosate and  
 4 Non-Hodgkins lymphoma would result in a  
 5 lower relative risk, correct?  
 6 MS. WAGSTAFF: Object to form.  
 7 A. No.  
 8 Q. The 2015 metaanalysis included the  
 9 DeRoos 2005 analysis of the Agricultural  
 10 Health Study cohort, correct?  
 11 A. Yes.  
 12 Q. And that analysis, which was, as  
 13 we already discussed, with a smaller number  
 14 of cases reported an ever/never rate ratio  
 15 of 1.1, correct?  
 16 A. I don't recall the figure, but  
 17 I'll take your word for it.  
 18 Q. An updated metaanalysis, if it  
 19 were to include the 2018 NCI journal study,  
 20 would substitute the 2005 analysis with a  
 21 larger study that has a lower ever/never  
 22 rate ratio, correct?  
 23 MS. WAGSTAFF: Object to form.  
 24 A. I wouldn't necessarily concur  
 25 that the JNCI study should be amalgamated

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1 into a metaanalysis.  
 2 Q. I understand that. Let me ask  
 3 the question this way: If the 2018 NCI  
 4 Journal of National Cancer Institute study  
 5 was included in the metaanalysis -- when  
 6 we've discussed previously how that  
 7 metaanalysis -- the methodology that was  
 8 used for that metaanalysis, if the 2018  
 9 Journal of National Cancer Institute study  
 10 was included in the metaanalysis, the  
 11 relative risk would be lower than reported  
 12 in the 2015 metaanalyses, correct?  
 13 MS. WAGSTAFF: Objection. The  
 14 witness has stated that he does not  
 15 believe it should be included.  
 16 A. So I mean, again, if -- the I  
 17 mean, the first part in doing a metaanalysis  
 18 is to evaluate the quality of the study,  
 19 and if I don't think the quality of the  
 20 study merits inclusion, I wouldn't concur  
 21 that it should be included.  
 22 If you want to include a study  
 23 that I don't think should be included and  
 24 get a result that I don't think is  
 25 accurate, then you can get any conclusion

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1 you like.  
 2 Q. I understand that. I want to  
 3 separate this out though to make sure I  
 4 understand the math.  
 5 If the 2018 NCI Study results are  
 6 included in the metaanalysis, that would  
 7 result in a lower relative risk than is  
 8 reported in the metaanalyses that you rely  
 9 upon, correct?  
 10 MS. WAGSTAFF: Objection, asked  
 11 and answered three times.  
 12 THE WITNESS: Am I supposed to  
 13 answer?  
 14 Q. Yes.  
 15 A. I wouldn't really know.  
 16 Q. So is it my understanding then  
 17 that you cannot determine whether replacing  
 18 a study that reported a 1.1 rate ratio with  
 19 92 cases with a study with 0.85 rate ratio  
 20 with 575 cases, you're not able to  
 21 determine, sitting here, whether that would  
 22 lower the meta-relative risk?  
 23 MS. WAGSTAFF: Objection, asked  
 24 and answered, and the doctor has said  
 25 he does not believe it should be

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1 included which is why he doesn't know.  
 2 Q. It is still a fairly simple  
 3 mathematical issue thought, isn't it,  
 4 Dr. Neugut?  
 5 MS. WAGSTAFF: Objection,  
 6 argumentative.  
 7 Q. This is not complicated math, is  
 8 it?  
 9 A. Clearly, if it were included,  
 10 incorrectly included, it would give you an  
 11 incorrect -- it would incorrectly obviate  
 12 the elevated risk.  
 13 Q. The meta-relative risk would be  
 14 lower, correct?  
 15 A. Yes.  
 16 Q. Let me show you an expert report  
 17 that has been prepared by Monsanto's  
 18 experts, supplemental report by Dr. Mucci.  
 19 MS. WAGSTAFF: Are you marking it  
 20 as exhibit?  
 21 MR. LASKER: Yes.  
 22 MS. WAGSTAFF: So I think it is  
 23 26-5.  
 24 (Exhibit 26-5, Supplemental  
 25 Expert Report of Lorelei Mucci marked

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1 for identification, as of this date.)  
 2 Q. Dr. Mucci, in her expert report,  
 3 provides her calculations of a  
 4 meta-relative risk based on the current  
 5 available epidemiologic data of  
 6 glyphosate-based herbicides and  
 7 Non-Hodgkins lymphoma.  
 8 Now, I understand that you have  
 9 disagreements to which studies you would  
 10 include in a metanalysis. But let me ask  
 11 you first, Dr. Mucci, in her metanalysis of  
 12 the epidemiologic literature, which  
 13 includes the 2018 NCI Study, the North  
 14 American Pooled Project, the Eriksson study  
 15 and Orsi study, she calculates a  
 16 meta-relative risk for glyphosate-based  
 17 herbicide and Non-Hodgkins lymphoma of 0.9.  
 18 Did I read that correctly?  
 19 A. Yes.  
 20 Q. Do you have any reason to believe  
 21 that Dr. Mucci, using the studies that she  
 22 used, calculated this meta-relative risk  
 23 figure 0.9 incorrectly?  
 24 A. I don't know Dr. Mucci, so I  
 25 don't have any reason to believe or not

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1 believe her.  
 2 Q. OK, well, you're looking at the  
 3 data though. It is not really an issue of  
 4 Dr. Mucci itself or herself or what you  
 5 know about her.  
 6 But looking at Dr. Mucci's  
 7 analyses, and again, do you have any reason  
 8 to believe that the calculation of the  
 9 meta-relative risk, the mathematical  
 10 calculation of 0.9 is incorrect?  
 11 MS. WAGSTAFF: Objection,  
 12 Dr. Neugut has already testified that  
 13 he doesn't believe that the 2017 AHS  
 14 study should be included in  
 15 metanalysis?  
 16 A. I mean, actually, based on her  
 17 analysis, we should all be taking RoundUp  
 18 to protect us against Non-Hodgkins  
 19 lymphoma.  
 20 Q. Is it your determination she  
 21 decided there was a statistically  
 22 significant decreased risk of Non-Hodgkins  
 23 lymphoma?  
 24 MS. WAGSTAFF: Objection --  
 25 A. Just missing it.

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1 Q. So do you have any reason to  
 2 believe, looking at the numbers that  
 3 Dr. Mucci reports for the four  
 4 epidemiological studies that she used in  
 5 her analysis -- again, the 2018NCI study,  
 6 the North American Pooled Project study,  
 7 the Eriksson study and the Orsi study -- do  
 8 you have any reason to believe that her  
 9 calculation of a meta-relative risk of 0.9  
 10 is incorrect?  
 11 A. No.  
 12 MS. WAGSTAFF: Objection, also,  
 13 Dr. Neugut testified in his first  
 14 deposition that he wasn't relying on  
 15 the NAPP study.  
 16 MR. LASKER: OK. I'm going to  
 17 give you some leeway with your  
 18 objections, but these are not  
 19 objections now. These are just  
 20 testimony and that is not proper.  
 21 You can object to form,  
 22 certainly, but objections that include  
 23 substantive information is not  
 24 appropriate for an objection.  
 25 MS. WAGSTAFF: I will remind

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1 counsel that plaintiffs actually tried  
 2 to get an order where we limited  
 3 objections to form that was strenuously  
 4 objected to by Monsanto. So -- and  
 5 applied by the court so I will take  
 6 heed to your request, and I think that  
 7 everything I've said is completely  
 8 appropriate.  
 9 Q. OK. Dr. Neugut --  
 10 A. I would say that I don't know the  
 11 NAPP study. So if that's a significant  
 12 part of this, I'm not testifying on the  
 13 NAPP study or its inclusion or  
 14 noninclusion. So if that's playing a  
 15 significant role here, I'm not prepared  
 16 or -- to talk about that.  
 17 Q. And I was going to get to this  
 18 question later, but I'll ask you now, but I  
 19 think it is clear from the record, am I  
 20 correct in my understanding that you still  
 21 have not reviewed the NAPP study?  
 22 A. It's not a peer-reviewed  
 23 publication.  
 24 Q. OK, I need the record -- an  
 25 answer for the record. Am I correct in my

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1 understanding that you have not reviewed  
 2 the NAPP study?  
 3 A. Correct.  
 4 Q. Dr. Neugut, do you believe that  
 5 the 2018 NCI Study strengthens or weakens  
 6 the epidemiological evidence in support of  
 7 your opinion of an association between  
 8 glyphosate-based herbicides and  
 9 Non-Hodgkins lymphoma?  
 10 A. I think it is noncontributory.  
 11 Q. So am I correct in my  
 12 understanding that you do not believe that  
 13 the 2018 NCI Study provides evidence at all  
 14 with respect to with whether there is an  
 15 association between glyphosate-based  
 16 herbicides and Non-Hodgkins lymphoma?  
 17 A. Yes.  
 18 Q. Now, in your initial report, --  
 19 and this is discussing the AHS cohort, so  
 20 it is still part of this, the same cohort  
 21 that we are studying, but I want to make  
 22 sure I understand which of your opinions  
 23 extend to the 2018 NCI Study. So let's  
 24 look back -- we -- you still have a copy of  
 25 your original expert report, correct?

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1 A. I'm sorry, which exhibit?  
 2 Q. Your initial expert report. I  
 3 don't know if we have marked it. We can if  
 4 you want.  
 5 A. We are talking about my original  
 6 report from way back when?  
 7 Q. Right.  
 8 A. Yup.  
 9 Q. So at page 12 of your initial  
 10 expert report, you're talking about  
 11 criticisms that you had of the previous  
 12 published analysis of the AHS cohort which  
 13 was the 2005 DeRoos publication, correct?  
 14 A. Yes.  
 15 Q. The first criticism you had of  
 16 the DeRoos 2005 study which is, again, on  
 17 page 12 of your initial expert report, you  
 18 stated that the investigators would need to  
 19 follow the AHS cohort for a much longer  
 20 period of time in order to adequately  
 21 evaluate cancer and specifically NHL risk  
 22 from glyphosate exposure, correct?  
 23 A. Yes.  
 24 Q. The 2018 NCI Study includes  
 25 either 11 or 12 more years of follow-up of

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1 cancer outcomes in the AHS cohort, correct?  
 2 A. Yes.  
 3 Q. The second criticism that you  
 4 made of the DeRoos 2005 study in your  
 5 initial expert report was for its alleged  
 6 failure to look at different dates of  
 7 exposure to assess the disease latency  
 8 period for Non-Hodgkins lymphoma, correct?  
 9 A. Yes.  
 10 Q. And as you have already  
 11 testified -- as you have already testified  
 12 today, the 2018 NCI Study does conduct  
 13 analyses and provide rate ratios for  
 14 different time periods or lagged periods of  
 15 exposure to assess disease latency,  
 16 correct?  
 17 A. Yes.  
 18 Q. The third criticism that you had  
 19 of the 2005 AHS study dealt with the issue  
 20 of potential confounding from other  
 21 pesticides. And I -- I'm -- I think your  
 22 testimony on that was pretty clear from the  
 23 first deposition, so I'm going to jump over  
 24 that one for now and talk about --  
 25 MS. WAGSTAFF: Object to form.

1 Q. The fourth criticism you had  
2 which is nondifferential exposure and  
3 misclassification, correct?

4 A. OK.

5 Q. That is the issue that you focus  
6 on in connection with your analysis also of  
7 the 2018 NCI Study, correct?

8 A. Yes.

9 Q. So let's talk about those  
10 criticisms and you can put away your old --  
11 your prior expert report.

12 If I understand correctly, the  
13 focus of your criticisms of the 2018  
14 National Cancer Institute is a possibility  
15 of misclassification of exposures, correct?

16 MS. WAGSTAFF: Object to form.

17 A. Yes.

18 Q. And you note in your supplemental  
19 expert report that the NIH investigators  
20 who conducted the 2018 NCI Study also note  
21 the possibility of exposure,  
22 misclassification bias in their  
23 publication, correct?

24 A. In which publication?

25 Q. In the 2018 NCI Study?

1 A. Actually, I reread it and I'm not  
2 sure that they do.

3 Q. Well, let's look at what you have  
4 stated in your expert report. And this, I  
5 believe, is on page 7 of your supplemental  
6 expert report.

7 A. My supplemental report?

8 Q. Yes. What is that, 26-4?

9 A. What page are we on?

10 Q. Page 7. And at the top of page 7  
11 of your supplemental report, you quote --  
12 and this is an accurate quote from the 2018  
13 NCI journal article, "Despite the specific  
14 information provided by the applicators  
15 about use of glyphosate, some  
16 misclassification of exposure undoubtedly  
17 occurred." Correct?

18 A. Yes.

19 Q. And the NIH investigators further  
20 state, "Given the prospective design,  
21 however, any misclassification should be  
22 nondifferential and lead to attenuated risk  
23 estimates."

24 Correct?

25 A. Yes.

1 Q. And you, in your expert report,  
2 raise a number of criticisms of the study  
3 design that you believe could have led to  
4 such nondifferential exposure,  
5 misclassification and attenuation of risk  
6 estimates correct?

7 A. I think I misread the discussion.

8 Q. Yes.

9 A. I misread this quotation.

10 Q. I'm not sure I understand your  
11 answer then. In your expert report --

12 A. I put it in here and I --  
13 rereading the paper, I think I misread what  
14 was -- what the paper says.

15 Q. So let me ask you --

16 A. So I --

17 Q. -- separate from the paper?

18 A. I think this quote -- I think my  
19 interpretation of this quote is in error.

20 Q. Let me ask you separate from the  
21 quote. In your expert report elsewhere,  
22 you talk about misclassification of  
23 exposure leading to attenuating risk  
24 estimates, correct?

25 A. Yes.

1 Q. And you would also agree that  
2 because the 2018 NCI Study is a cohort  
3 study in which exposure information was  
4 obtained prior to any disease outcome, that  
5 any potential exposure misclassification  
6 would be nondifferential with respect to  
7 disease outcome, correct?

8 A. So if by that you mean that it is  
9 unbiased, the answer is no, I wouldn't  
10 necessarily agree.

11 Q. No, that wasn't my question. Let  
12 me ask my question again. Because the 2018  
13 NCI study --

14 A. Right, OK, it's nondifferential  
15 with regard to disease outcome. Certainly  
16 when the -- if by that you mean that when  
17 the exposure measurement was made, no one  
18 knew if they were going to get lymphoma --

19 Q. Right?

20 A. -- sure.

21 Q. So just so the record is clear,  
22 because I'm reading the question and  
23 answer, it's not quite.

24 Am I correct then that the 2018  
25 NCI Study, the exposure classification or

1 any misclassification would be  
2 nondifferential with respect to disease  
3 outcome?

4 MS. WAGSTAFF: Objection, asked  
5 and answered.

6 A. I don't know what that means.

7 Q. OK.

8 A. That's a phrase that has no  
9 meaning to me.

10 Q. OK. So let me try and rephrase  
11 to make sure that you can -- that you  
12 understand the question.

13 In the 2018 NCI Study, to the  
14 extent that there was any exposure  
15 misclassification in that study, given the  
16 fact that exposure information was obtained  
17 prior to knowledge of disease outcome, that  
18 misclassification would be nondifferential  
19 with respect to disease outcome, correct?

20 A. You just repeated the question.  
21 Again, I don't know what that phrase means.

22 Q. There is -- do you have any basis  
23 to believe that there was any difference in  
24 exposure misclassification to the extent  
25 that there was exposure misclassification

1 Q. Let me start off, explore this  
2 and make sure that we can understand each  
3 other.

4 When we talk about, for example,  
5 recall bias in a case control study, that  
6 is --

7 A. I -- different.

8 Q. -- a situation where you have a  
9 potential misclassification that would lead  
10 to a -- that is associated both with  
11 exposure information and disease outcome.  
12 And that's what we referred to ultimately  
13 as a bias that would be differential; it  
14 would be pointed in one direction, correct?

15 A. Well, either direction, but yes.

16 Q. And that's because we have a  
17 situation where the exposure information is  
18 tied to the knowledge of the disease and  
19 the disease outcome, correct?

20 A. If it exists, if -- I mean, it  
21 doesn't always occur, but when it occurs,  
22 yes.

23 Q. In a cohort study -- and one of  
24 the strengths of a cohort study, and I  
25 think you mentioned this previously --

1 that was also associated with whether or  
2 not the individual would subsequently get  
3 Non-Hodgkins lymphoma?

4 A. So I will agree that to the  
5 degree that when the farmers -- the  
6 applicators were answering the questions  
7 with regard to their exposures, that  
8 whatever biases or whatever errors they  
9 were making in terms of -- or whatever  
10 answers they were giving in terms of their  
11 exposures were independent or unbiased by  
12 their knowledge of whether they would  
13 subsequently develop cancer or lymphoma or  
14 whatever, that's the nature of a cohort  
15 study.

16 But that doesn't mean that their  
17 answers were unbiased. Their answers --  
18 their exposure measurements would have  
19 been -- could have been and were likely  
20 biased anyway in other ways which would  
21 have then subsequently affected how the  
22 subsequent associations would have been  
23 determined with regard to their subsequent  
24 association with the outcomes.

25 I don't know if that makes sense.

1 because the -- these subjects of the study  
2 do not know whether they're going to get  
3 Non-Hodgkins lymphoma downward or not,  
4 there is no basis for a -- if there is a  
5 misclassification of exposure, if there is  
6 an error, that's not going to be linked to  
7 whether or not those individuals also  
8 sometime in the future get Non-Hodgkins  
9 lymphoma, correct?

10 MS. WAGSTAFF: Object to form.

11 A. So you don't have recall bias if  
12 that's what you're asking, but you have  
13 other biases.

14 Q. Is there any information that you  
15 can identify from the 2018 study whereby  
16 any misclassification of exposure to  
17 glyphosate-based herbicides would be  
18 associated with whether or not that  
19 individual in the future gets or does not  
20 get Non-Hodgkins lymphoma?

21 A. Repeat the question.

22 Q. Is there any information that you  
23 can identify from the 2018 NCI Study  
24 whereby any of the misclassifications of  
25 exposure that you discuss would be



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1 associated with whether or not that  
 2 individual in the future gets or does not  
 3 get Non-Hodgkins Lymphoma?  
 4 A. So you don't need -- there is  
 5 undoubtedly misclassification error. Blair  
 6 reported that at least for other  
 7 pesticides. No one ever measured -- no one  
 8 ever seriously measured it. So the fact  
 9 that the investigators, the 12  
 10 investigators from NIH didn't measure it,  
 11 or report it, is a limitation.  
 12 But it's -- there is no such  
 13 thing as having exposure classification  
 14 without having misclassification error and  
 15 almost always, misclassification error is  
 16 going to be biased by the nature of the  
 17 beast.  
 18 When you ask someone how much  
 19 broccoli do you eat, they give you the  
 20 wrong answer in how much broccoli they eat.  
 21 Everyone gives you the wrong answer in how  
 22 much broccoli they eat.  
 23 When you ask 50,000 people how  
 24 much broccoli they eat, you are going to  
 25 get an error in the end of the day in the

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1 measurement of broccoli and it's not going  
 2 to be -- it's not going to average out to  
 3 the correct answer. It's going to average  
 4 out in one direction or the other. There  
 5 will be a bias at the end of the day in  
 6 broccoli. Maybe everyone will  
 7 over-estimate how much broccoli they eat  
 8 because they want to look healthy or there  
 9 will be a bias one way or the other.  
 10 You don't need much bias -- you  
 11 don't need much bias to obviate a modest  
 12 risk ratio which is what we are talking  
 13 about here. That's the problem when we are  
 14 talking about glyphosate and NHL.  
 15 I don't need to know how it  
 16 relates specifically to NHL because the  
 17 risk -- the problem is you have a  
 18 negative -- you have a null association.  
 19 So when you have a null association, you  
 20 can't assume -- if you had a positive  
 21 association of 2 or 3, I mean, we live --  
 22 in epidemiology, we live in a world of  
 23 error. We are very tolerant of error. We  
 24 love error -- we don't love error. But we  
 25 are comfortable with error. We live in a

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1 world of error. But there is a limit to  
 2 how much error you can tolerate when you're  
 3 in a world of modest risk ratios, and even  
 4 a small amount of misclassification error  
 5 or modest or bias in misclassification  
 6 error is going to eliminate a small risk  
 7 ratio.  
 8 So when you get a null result,  
 9 you have to be very skeptical of what you  
 10 find. And that's where we are finding  
 11 ourselves here. You have to be very  
 12 skeptical of a null finding.  
 13 If you had a -- in fact, most of  
 14 this Andreotti paper is actually totally  
 15 focused on the one positive finding. I  
 16 mean, half of the discussion or more is  
 17 talking about the one positive finding that  
 18 they have. Because that's where they are  
 19 really comfortable talking about it.  
 20 But when you have a null finding,  
 21 you have to assume that the -- even the  
 22 smaller errors eliminated it. And that  
 23 it's really due to the smaller errors. And  
 24 all the manipulations in the world, all the  
 25 sensitivity analyses and this and that

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1 aren't going to make up for the error --  
 2 for the smaller errors, even the 10  
 3 percent, 15 percent errors, and that's what  
 4 I think fundamentally is a problem in the  
 5 AHS study, on top of all the other  
 6 problems -- the AHS study has a lot of  
 7 problems in it. Each one of which is  
 8 tolerable.  
 9 Q. Dr. Neugut, we are way beyond any  
 10 question and you actually haven't answered  
 11 my question so I'm going to ask it again.  
 12 A. Please.  
 13 Q. The question I asked -- I don't  
 14 know if you can turn to the question I  
 15 asked -- was with respect to the exposure  
 16 misclassification that you believe occurred  
 17 in the 2018 NCI study, given the fact that  
 18 that exposure information was obtained  
 19 prior to the date in which any of the  
 20 members of the cohort contracted  
 21 Non-Hodgkins lymphoma or did not, whether  
 22 or not there was misclassification is not  
 23 associated with disease outcome, correct?  
 24 MS. WAGSTAFF: Objection, asked  
 25 and answered.

1 A. It wasn't biased by their  
2 knowledge of whether they were going to get  
3 the disease or not, if that's what your  
4 question is.

5 Q. No, my question was any  
6 misclassification that occurred for  
7 exposure was nondifferential with respect  
8 to disease outcome, correct?

9 A. No.

10 MS. WAGSTAFF: Objection.

11 Q. Is there any reason to believe  
12 that individuals who claim that they had  
13 exposure to glyphosate were -- or  
14 incorrectly claimed that they had exposure  
15 to glyphosate were more likely or less  
16 likely to get Non-Hodgkins lymphoma than  
17 individuals who correctly answered the  
18 exposure question?

19 A. A bias that would have been  
20 introduced with regard to exposure  
21 classification would have led to some  
22 errors in how the association would have  
23 subsequently been observed with regard to  
24 an outcome.

25 If that's what you're asking,

1 direction.

2 A. So I don't specifically know the  
3 biases that were operating in the  
4 agricultural workers when they gave their  
5 responses in terms of exposure of their  
6 exposure.

7 So I can't specifically say how  
8 the errors that occurred in their exposure  
9 classification or in their exposure  
10 measurement would have affected the  
11 measurement of the association with NHL.

12 But biases could either attenuate  
13 towards the null, they could attenuate away  
14 from the null, or they could attenuate  
15 below the null.

16 Q. Can you identify or can you  
17 describe any hypothetical scenario, based  
18 upon your review of the 2018 NCI Study, how  
19 the exposure misclassification that you  
20 opine may have occurred could have biased  
21 the reported rate ratios away from the  
22 null?

23 MS. WAGSTAFF: Objection, calls  
24 for a hypothetical.

25 A. Can you define --

1 then the answer is it would have been -- it  
2 would have led to an error in the  
3 assessment of the association with NHL.

4 Q. You understand -- and we talked  
5 about this, you talked about this in your  
6 expert report -- the issue of these  
7 misclassifications biasing and attenuating  
8 risk estimates towards the null?

9 A. I am sorry, you have to --

10 Q. You have discussed, in your  
11 expert report, the possibility of these  
12 type of misclassification errors biasing  
13 rate ratios towards the null. Correct?

14 A. Or beyond the null.

15 Q. Is there any exposure  
16 misclassification you believe occurred that  
17 you can explain would have resulted in a  
18 bias of the rate ratio away from the null?  
19 And if so, if you can explain how.

20 A. Beyond the null, you mean?

21 Q. No, away from null. More distant  
22 from the null.

23 A. You mean to make the rate ratio  
24 greater than 1?

25 Q. Farther from the null in either

1 Q. Farther away from 1?

2 A. Made it greater than 1?

3 Q. Made it more distant from 1 in  
4 either direction.

5 A. So when you have the  
6 nonresponders, I don't know how the biases  
7 in nonresponders might -- who are not  
8 appropriately assessed might have biased  
9 it. So there that would have been -- that  
10 might have been associated with the  
11 occurrence of NHL and I don't know how that  
12 might have affected the risk, made it away  
13 from the null. But since here we are  
14 seeing -- I'm -- I'm assuming here the most  
15 of the errors biased towards the null or --  
16 for the most part.

17 Q. OK.

18 In your expert report, your first  
19 criticism of the study was that the NCI  
20 Study obtained exposure information through  
21 self-reported answers on questionnaires,  
22 correct?

23 A. I'm sorry?

24 Q. Your first criticism of the NCI  
25 Study was in your supplemental expert

1 report and this is at page 6 in your  
2 report. Is that the NCI Study used --  
3 obtained exposure information through  
4 self-reported questionnaires, correct?

5 A. Yes.

6 Q. Self-reported questionnaires or  
7 obtaining exposure information through  
8 self-reported questionnaires is a standard  
9 methodology in epidemiological research,  
10 correct?

11 A. Yes.

12 Q. And you agree that self-report  
13 can be reliable depending on the variable  
14 which is being evaluated, correct?

15 A. "Reliable" is a word that has  
16 a -- has -- varies in terms of how reliable  
17 reliable is.

18 As we were saying earlier, if  
19 you're 90 percent valid, you're 10 percent  
20 in error and how tolerable -- how tolerable  
21 we are to reliability is a question of --  
22 is the whole issue in what we are talking  
23 about here.

24 Q. I'm sorry, Dr. Neugut. I was  
25 just quoting your expert report so I

1 believed that that was a reliable basis for  
2 exposure information, correct?

3 MS. WAGSTAFF: Object to form.

4 A. Again, everything depends on the  
5 context.

6 Q. You have used questionnaire data  
7 to examine associations between various  
8 dietary factors in cancer, correct?

9 A. Yes.

10 Q. And you have published those  
11 studies in the peer-reviewed literature,  
12 correct?

13 A. Yes.

14 Q. And in publishing those studies,  
15 you believed that the self-reported data on  
16 dietary factors was sufficiently reliable  
17 for peer-reviewed publication for potential  
18 associations between those factors and  
19 cancer, correct?

20 A. Yes.

21 Q. The NIH scientists who have been  
22 examining the Agricultural Health Study  
23 have published a number of independent  
24 validation studies that sought to measure  
25 the reliability of the exposure information

1 thought that would be an easy question.

2 MS. WAGSTAFF: Objection,  
3 argumentative.

4 Q. You state in the indented  
5 paragraph, "Self-report can be reliable  
6 depending on the variable which is being  
7 evaluated." Correct?

8 A. Yes.

9 Q. And you have used self-reported  
10 questionnaire exposure data in a large  
11 number of your own published studies,  
12 correct?

13 A. Yes.

14 Q. You have used questionnaire data  
15 to examine associations between smoking and  
16 various types of cancer, correct?

17 A. Yes.

18 Q. And you've used self-reported --  
19 strike that.

20 You believe that self-reported  
21 questionnaire data on smoking can be  
22 reliable for the purposes of epidemiologic  
23 research, correct?

24 A. It depends on the situation.

25 Q. Certainly for your studies, you

1 provided in the questionnaires by the AHS  
2 cohort, correct?

3 A. Yes.

4 Q. Let me show you --

5 MS. WAGSTAFF: We should -- it  
6 hung up.

7 THE VIDEOGRAPHER: The time is  
8 11:29, we are going off the record.

9 (Recess).

10 THE VIDEOGRAPHER: The time is  
11 11:31.

12 MR. LASKER: Let's mark the next  
13 document in line, Exhibit 26-6, and the  
14 reason we have changed to 26 is we have  
15 been informed during the break that  
16 that should be the proper numbering  
17 scheme. So all the prior exhibits that  
18 had a "25" prefix should be changed to  
19 "26."

20 MS. WAGSTAFF: Yes, and we have  
21 asked the court reporter to go back to  
22 the record in the final transcript to  
23 reflect 26-1 through 5.

24 (Exhibit 26-6, document entitled,  
25 "Accuracy of Self-reported Pesticide

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1 Use Duration Information from Licensed  
 2 Pesticide Applicators in the  
 3 Agricultural Health Study" marked for  
 4 identification, as of this date.)  
 5 Q. Dr. Neugut, I have handed you as  
 6 Exhibit 26-6, an article with the lead  
 7 author of Jane Hoppin of the National  
 8 Institute of Environmental Health Studies,  
 9 entitled Accuracy of Self-reported  
 10 Pesticide Use Duration Information from  
 11 Licensed Pesticide Applicators in the  
 12 Agricultural Health Study."  
 13 Have you seen this publication  
 14 before?  
 15 A. I don't have a recollection of  
 16 seeing this particular one, no.  
 17 Q. If I could direct you to page  
 18 2 -- I'm sorry, not page 2. Page 316,  
 19 table 2.  
 20 A. Table 2?  
 21 Q. Yes.  
 22 A. And in this analysis, the NIH  
 23 investigators looked at duration of use  
 24 information and decade of first use  
 25 information in the questionnaires for

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1 various pesticides.  
 2 And with respect to glyphosate,  
 3 which is separately listed on table 2, the  
 4 NIH investigators found that only one to  
 5 two percent of the AHS cohort respondents  
 6 gave inaccurate information on duration of  
 7 use or decade of first use of  
 8 glyphosate-based herbicides, correct?  
 9 MS. WAGSTAFF: Objection. The  
 10 witness has stated he doesn't remember  
 11 seeing this before. This is a  
 12 scientific article that he needs time  
 13 to read the entire thing to give an  
 14 accurate answer.  
 15 Q. Dr. Neugut, the NIH investigators  
 16 report that there was either a 1 percent or  
 17 a 2 percent error in the questionnaire  
 18 responses for glyphosate exposure for  
 19 duration of use or decade of first use  
 20 information, correct?  
 21 MS. WAGSTAFF: Same objection.  
 22 A. I don't know.  
 23 Q. You didn't come across this study  
 24 in your review of the literature?  
 25 A. I don't recall this one. I don't

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1 think I cite it.  
 2 Q. Let me show you the final  
 3 paragraph of this publication. It's on  
 4 page 317 of the paper. Dr. Neugut?  
 5 A. Which page?  
 6 Q. 317. And the last paragraph  
 7 starts, "The AHS cohort consists of  
 8 certified pesticide applicators and their  
 9 spouses. As certified pesticide  
 10 applicators, these subjects are trained  
 11 with regard to pesticide regulations and  
 12 are responsible for the purchase and  
 13 application of chemicals on their  
 14 property."  
 15 Did I read that correctly?  
 16 A. Um-hm, yes.  
 17 Q. The NIH investigators continue to  
 18 state, "This involvement with pesticide  
 19 selection and use makes farmers a  
 20 uniquely -- a unique occupationally-exposed  
 21 population and suggests why studies of  
 22 farmers' self-reports indicate the ability  
 23 to provide high quality data regarding  
 24 pesticide exposure."  
 25 Did I read that correctly?

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1 MS. WAGSTAFF: Object to form.  
 2 A. Yes.  
 3 Q. And this is now -- strike that.  
 4 If you have not -- and I think  
 5 we -- this publication also indicates that.  
 6 You have not reviewed all of the  
 7 publications that the NIH's investigators  
 8 have that look at potential accuracy or  
 9 potential errors in questionnaire responses  
 10 with respect to glyphosate exposure in that  
 11 cohort, correct?  
 12 MS. WAGSTAFF: Object to form.  
 13 This is a 2002 publication?  
 14 A. I guess I did not. I don't  
 15 know -- I can't tell you what I missed.  
 16 Q. Given that fact that you don't  
 17 know which of these publications and which  
 18 of these analyses you have reviewed, you  
 19 don't have a basis, sitting here today, to  
 20 dispute the statement that the NIH  
 21 investigators made with respect to their  
 22 conclusions from their analyses as far as  
 23 the accuracy of the exposure information  
 24 from the AHS cohort?  
 25 MS. WAGSTAFF: Object to form.

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1 A. I believe I cited in my report,  
 2 reports that I read which cited error rates  
 3 that I was familiar with or that I came  
 4 across in my readings and I imagine there  
 5 are other reports as well have shown  
 6 misclassification in terms of glyphosate  
 7 misrepresentation.  
 8 I mean, does it say -- that they  
 9 had 99 percent accuracy in the study is --  
 10 I would need to really read this paper to  
 11 believe that anyone seriously believes that  
 12 they had 99 percent validity of  
 13 measurement.  
 14 Q. Sitting here today, you're not in  
 15 a position to discuss the various analyses  
 16 that were conducted by the NHS  
 17 investigators in totality to determine the  
 18 accuracy of the questionnaire responses on  
 19 exposure to glyphosate, correct?  
 20 A. No, but --  
 21 MS. WAGSTAFF: Object to form.  
 22 A. I would be highly skeptical if  
 23 they're going to argue that the  
 24 self-exposure measurements of glyphosate  
 25 use was 99 percent accurate.

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1 Q. It's, in fact, one of the reasons  
 2 that the NIH investigators decided to use a  
 3 cohort of farmers and pesticide applicators  
 4 for the purposes of their analysis was  
 5 because of the information they had that  
 6 suggested that those individuals would be  
 7 more likely to have accurate recall of  
 8 pesticide exposures than individuals in the  
 9 general population, correct?  
 10 A. Yes.  
 11 MS. WAGSTAFF: Objection, calls  
 12 for speculation.  
 13 Q. Let me show you a different  
 14 publication. And we will mark this as  
 15 Exhibit 26-7.  
 16 (Exhibit 26-7 document entitled,  
 17 "Reliability of Reporting on Lifestyle  
 18 and Agricultural Factors by Sample of  
 19 Participants in the Agricultural Health  
 20 Study from Iowa" marked for  
 21 identification, as of this date.)  
 22 Q. And Dr. Neugut, for the record,  
 23 this is a publication, also in 2002 in the  
 24 peer-reviewed literature, lead author,  
 25 Dr. Blair, "Reliability of Reporting On

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1 Lifestyle and Agricultural Factors by a  
 2 Sample of Participants In the Agricultural  
 3 Health Study from Iowa," again published in  
 4 2002.  
 5 Are you familiar with this  
 6 publication?  
 7 A. I believe this one, I do know.  
 8 Q. And in this study, the  
 9 investigators compared information provided  
 10 by over 4,000 members of the AHS cohort who  
 11 provide exposure information in two  
 12 separate questionnaires, one year apart,  
 13 correct?  
 14 A. Yes.  
 15 Q. And the NIH investigators  
 16 measured the reliability of the  
 17 questionnaire responses for pesticide  
 18 exposures by comparing the agreement in the  
 19 answers from one questionnaire to the next.  
 20 Correct?  
 21 A. Yes.  
 22 Q. For glyphosate specifically --  
 23 and they list this on table 1 on the second  
 24 page of their publication. They found for  
 25 ever/never use, that there was a 82 percent

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1 correlation as far as accuracy or  
 2 consistency in glyphosate exposure  
 3 information, correct?  
 4 A. Yes.  
 5 Q. The investigators compared this  
 6 with the consistency of findings with  
 7 respect to responses concerning smoking,  
 8 correct?  
 9 A. I don't know that. But --  
 10 Q. Well, if you look at page 96 of  
 11 the publication, so it's the next page --  
 12 MS. WAGSTAFF: Dr. Neugut, if you  
 13 need to read the entire publication  
 14 please take the time to do so.  
 15 Q. If you look at the second column  
 16 on 96 the first paragraph, full paragraph,  
 17 "We also compared response to tobacco use"?  
 18 MS. WAGSTAFF: Do you need to  
 19 take time to read it?  
 20 A. Where are you looking.  
 21 Q. On the second column in the text  
 22 right next to table 2, there is the first  
 23 indented paragraph starting, "We also  
 24 compared responses..." Do you see that?  
 25 A. Yes.

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1 Q. So the NIH investigators compared  
 2 the consistency of response with respect to  
 3 glyphosate use with a consistency of  
 4 response with respect to tobacco use.  
 5 Correct?  
 6 A. Yes.  
 7 Q. And the investigators found that  
 8 that there was the information on  
 9 ever/never glyphosate use was more  
 10 consistent than the information on numbers  
 11 of cigarettes smoked per day in these  
 12 questionnaires, correct?  
 13 A. Yes.  
 14 Q. The investigators also found that  
 15 the answers in the AHS questionnaires on  
 16 ever/never use of glyphosate was more  
 17 reliable than the data on alcoholic drinks  
 18 per day, correct?  
 19 MS. WAGSTAFF: Objection,  
 20 relevance. There is biases between  
 21 reporting on cigarettes and alcohol.  
 22 MR. LASKER: There is no  
 23 objection to relevance in a deposition.  
 24 MS. WAGSTAFF: I just objected to  
 25 relevance, so actually there is

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1 apparently.  
 2 MR. LASKER: They aren't proper.  
 3 I should have stated that differently.  
 4 Q. Dr. Neugut, let me ask the  
 5 question again.  
 6 The investigators found that the  
 7 AHS questionnaire responses on ever/never  
 8 use of glyphosate were more consistent than  
 9 the answers provided with regard to  
 10 alcoholic drinks per day, correct?  
 11 A. Yes.  
 12 Q. The investigators have found that  
 13 the AHS questionnaire responses with  
 14 respect to ever/never glyphosate use was  
 15 almost twice as reliable as the data or the  
 16 questionnaire responses for vegetable  
 17 servings per day and fruit servings per  
 18 day, correct?  
 19 A. I don't know if I would  
 20 characterize it as twice, but it was more  
 21 reliable.  
 22 Q. There was for -- if you go down  
 23 to the bottom on page 96, with respect to  
 24 vegetable servings per day and fruit  
 25 servings per day, continue down that same

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1 paragraph, there was agreement of 35  
 2 percent for vegetable servings per day and  
 3 40 percent for fruit servings per day as  
 4 compared to 82 percent --  
 5 A. I'm sorry, I'm not seeing where  
 6 you're reading.  
 7 Q. Page 96, the very last line of  
 8 text in that page, second column, they  
 9 provide the reliability data for vegetable  
 10 servings per day and fruit servings per  
 11 day?  
 12 A. Um-hm. Yes.  
 13 Q. The reliability of questionnaire  
 14 responses with respect to vegetable  
 15 servings per day and fruit servings per  
 16 day, was less than half of the reliability  
 17 of the answers with respect the glyphosate  
 18 ever/never use, correct?  
 19 A. Yup.  
 20 Q. I'm sorry?  
 21 A. Yes.  
 22 Q. The two published analyses that  
 23 we have looked at of the accuracy of the  
 24 AHS cohort glyphosate exposure data was  
 25 looking at information that was obtained

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1 prior to the introduction of RoundUp Ready  
 2 crops, correct?  
 3 And if you can look back at the  
 4 abstract, this information is based on the  
 5 first questionnaire and then one year apart  
 6 from that. So again, the information on  
 7 reliability here is based upon information  
 8 provided prior to the introduction of  
 9 RoundUp Ready crops, correct?  
 10 A. Reliability and accuracy are not  
 11 the same thing.  
 12 Q. That -- my question is different.  
 13 The data that we have been  
 14 looking at with respect to reliability of  
 15 questionnaire responses was based upon  
 16 information in the first questionnaire,  
 17 provided in the first questionnaire prior  
 18 to the introduction of RoundUp Ready crops,  
 19 correct?  
 20 A. Yes.  
 21 Q. You would expect that the  
 22 accuracy of glyphosate exposure data in the  
 23 second AHS survey, after the introduction  
 24 of RoundUp Ready crops, would be even more  
 25 reliable, correct?

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1 MS. WAGSTAFF: Object to form.  
 2 A. I'm sorry, I didn't follow the  
 3 question.  
 4 Q. Once a farmer begins using  
 5 RoundUp Ready crops, their ability to  
 6 recall whether they use RoundUp is pretty  
 7 straightforward, right? If they use  
 8 RoundUp Ready crops, they know they use  
 9 RoundUp?  
 10 A. I really have no basis on which  
 11 to answer that question.  
 12 Q. Are you not aware of the fact  
 13 that RoundUp Ready crops, if you use  
 14 RoundUp Ready crops, you would need to use  
 15 glyphosate on the crops?  
 16 A. I understand the concept, but I  
 17 really have no knowledge of what a farmer  
 18 does or what a farmer doesn't do and  
 19 whether they -- what their knowledge or  
 20 what their behavior would be with regard to  
 21 knowing about glyphosate use or not. I  
 22 would have no basis on which to answer that  
 23 question.  
 24 Q. Do you have any knowledge with  
 25 respect to the weed management guidelines

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1 that farmers use if they're using --  
 2 growing RoundUp Ready crops?  
 3 A. No.  
 4 Q. Do you know whether, in fact,  
 5 farmers who farm using RoundUp Ready crops  
 6 follow guidelines that specify certain  
 7 times in the year and numbers of times of  
 8 the year that they should apply RoundUp?  
 9 A. I grew up in Brooklyn.  
 10 Q. You have no information on that  
 11 one way or the other?  
 12 A. No.  
 13 Q. So you do not have any basis to  
 14 know one way or the other whether  
 15 individuals who -- farmers who grow RoundUp  
 16 Ready crops would have more reliable recall  
 17 with respect to whether they use RoundUp or  
 18 how they use RoundUp than individuals who  
 19 don't use RoundUp Ready crops?  
 20 A. I don't have any basis on which  
 21 to -- I would assume that they're -- I mean  
 22 my assumptions in my report have been  
 23 simply that the glyphosate usage was  
 24 altered subsequent to the introduction of  
 25 these glyphosate-resistant crops.

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1 But exactly what impact that  
 2 would have had specifically on farmer  
 3 practices or what that means in terms of  
 4 agricultural practices specifically or how  
 5 farmers react to that or what their  
 6 psychological behavior is, I have no -- I  
 7 would have no basis for knowing that or  
 8 understanding that or appreciating that.  
 9 Q. Starting at the bottom of page 7  
 10 of your supplemental expert report and  
 11 continuing through page 11 of your report,  
 12 you're criticizing the 2018 NCI Study for  
 13 what you believe is an exposure  
 14 misclassification issue that arose with  
 15 respect to the phase 2 questionnaire,  
 16 correct?  
 17 A. You're here -- you're where?  
 18 Q. In your supplemental expert  
 19 report, starting page 7, we are moving  
 20 forward in your report now, on page 7 to  
 21 page 11, you're discussing the issues of  
 22 exposure misclassification that you believe  
 23 may have occurred in connection with the  
 24 second phase questionnaire. Correct?  
 25 A. Correct.

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1 Q. And you raise two issues that you  
 2 believe could lead to exposure  
 3 misclassification during this period; the  
 4 increase in glyphosate use after the  
 5 introduction of RoundUp Ready crops and  
 6 then the use of an imputation method to  
 7 derive exposure information during this  
 8 period for AHS participants who did not  
 9 respond to the second survey, correct?  
 10 A. Yes.  
 11 Q. Are there any other issues that  
 12 you believe led to exposure  
 13 misclassification during this period?  
 14 A. Well, this is on top of the  
 15 original sin?  
 16 Q. We already talked about your  
 17 views of the questionnaire responses. But  
 18 with respect to the issues beyond what we  
 19 just discussed, dealing with the  
 20 reliability of questionnaire data  
 21 generally, are there any other issues  
 22 besides the increase in glyphosate use  
 23 after the introduction of RoundUp Ready  
 24 crops and the use of the imputation method  
 25 that you believe led to the exposure

1 misclassification and --

2 A. Off the top of my head, I'm not  
3 thinking of any.

4 Q. And you agree that for -- that  
5 there were 63 percent of the AHS cohort who  
6 provided information on glyphosate exposure  
7 both in the Phase 1 questionnaire and in  
8 the follow-up questionnaire, second phase  
9 questionnaire, correct?

10 A. Yes.

11 Q. And aside from the issues that  
12 you've raised generally that we've  
13 discussed with respect to questionnaires  
14 generally, you do not raise any issue with  
15 exposure misclassification for that 63  
16 percent of the cohort, correct?

17 A. Again, you will have measured  
18 now -- the misclarification error that you  
19 had in the baseline questionnaire, you will  
20 now have duplicated in the second  
21 questionnaire.

22 Q. I understand and we have talked  
23 about the issue of questionnaires  
24 generally, but specific to --

25 A. No.

1 A. Yes.

2 Q. There was no association in the  
3 2018 NCI Study between exposure to  
4 glyphosate-based herbicide and Non-Hodgkins  
5 lymphoma in those 34,000 members of the  
6 cohort, correct?

7 A. Correct.

8 Q. And, in fact, for the highest  
9 exposure group, for -- that was 34,700  
10 individuals, for glyphosate-based  
11 herbicides and Non-Hodgkins lymphoma, there  
12 was a rate ratio as compared to no exposure  
13 below 1.0 at 0.9, correct?

14 A. I don't know offhand, but  
15 again --

16 Q. If we can look, I don't want you  
17 to be guessing here, page 4, we will put  
18 that up, 4.

19 A. Right now, in the Andreotti  
20 study?

21 Q. Yes, the paper in the Journal of  
22 the National Cancer Institute, 2018, and if  
23 we are looking at page 4, they provide data  
24 for -- if we limit the analysis to 34,698  
25 participants who completed both

1 Q. -- your criticisms of the 2018  
2 NCI Study --

3 A. Right.

4 Q. -- you agree that you don't have  
5 any concerns of exposure misclassification  
6 with respect to that 63 percent of the  
7 cohort, correct?

8 A. Correct.

9 Q. And the 2018 NCI Study separately  
10 analyzed the risk of Non-Hodgkins lymphoma  
11 and glyphosate exposure solely for the  
12 34,700 cohort members who answered both the  
13 Phase 1 and Phase 2 survey, correct?

14 A. Yes.

15 Q. And that separate analysis still  
16 included 306 cases of Non-Hodgkins  
17 lymphoma, correct?

18 A. I don't know the number off the  
19 top of my head, but I believe you.

20 Q. And with 306 NHL cases, that  
21 analysis would have more than four times  
22 the number of NHL cases that were in the  
23 2005 DeRoos publication, correct?

24 A. You mean the original 2005 --

25 Q. Yes.

1 questionnaires reducing the total number of  
2 cancer cases to 4,699.

3 A. Which table are you in?

4 Q. We are in the text on page 4.

5 A. Yeah.

6 Q. If you look up, you will see  
7 where I am. Towards the bottom of the  
8 column.

9 A. Oh, I'm sorry, OK. So --

10 Q. Right next to "testicular" on the  
11 chart. If you go over and look at the  
12 text.

13 The sentence begins, "To evaluate  
14 the impact of using imputed exposure data  
15 for participants who did not complete the  
16 follow-up questionnaire..." do you see  
17 that?

18 A. Yes.

19 Q. "We limited the analysis to  
20 34,698 participants who completed both  
21 questionnaires reducing the total number of  
22 cancer cases to 4,699. Do you see that?"

23 A. I didn't see the last part.

24 Q. "We limited the analysis to  
25 34,698 participants who completed both



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1 questionnaires" --  
 2 A. Yes.  
 3 Q. -- "reducing the total number of  
 4 cancer cases to 4,699." Correct?  
 5 A. Reducing total to 4,699. Right,  
 6 go ahead.  
 7 Q. Glyphosate use was not associated  
 8 with Non-Hodgkins lymphoma, with 306 total  
 9 cases and a rate ratio of 0.9 for the  
 10 highest quartile, quartile 4, correct?  
 11 A. Yes.  
 12 Q. In your supplemental report at  
 13 page 10, you discuss two publications that  
 14 you rely upon as addressing differences  
 15 between responders and nonresponders in the  
 16 Phase 1 and Phase 2 survey, one by  
 17 Montgomery and one by Dr. Rinsky and this  
 18 is in your supplemental expert report at  
 19 page 10.  
 20 A. Yes.  
 21 Q. And in fact, the Rinsky study  
 22 does not address Phase 2 responders and  
 23 nonresponders at all, does it?  
 24 A. What does it address?  
 25 Q. You read the publications. Is it

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1 your understanding that the Rinsky paper  
 2 addressed Phase 2 survey responses?  
 3 MS. WAGSTAFF: Do you have a copy  
 4 of the article you can let him refresh  
 5 his memory with?  
 6 MR. LASKER: After he answers the  
 7 question, sure.  
 8 A. It was my impression that it did.  
 9 So --  
 10 Q. Let's take a look at it. We will  
 11 mark this as Exhibit 26-8.  
 12 (Exhibit 26-8, document entitled,  
 13 "Assessing the Potential for Bias from  
 14 Nonresponsive to a Study Follow-Up  
 15 Interview" marked for identification,  
 16 as of this date.)  
 17 Q. Dr. Neugut, if you look at the  
 18 abstract, right up front, of the Rinsky  
 19 publication, they very clearly state that  
 20 they are looking at information or  
 21 responses to questionnaires provided in the  
 22 Phase 3 of the study between 2005 and 2010.  
 23 Correct?  
 24 A. OK. True.  
 25 Q. This publication is irrelevant to

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1 the 2018 NCI Study because it did not use  
 2 Phase 3 questionnaire responses, correct?  
 3 MS. WAGSTAFF: Object to form.  
 4 A. I would not say it's irrelevant.  
 5 I would say that while it doesn't directly  
 6 relate to the 37 percent who didn't respond  
 7 to the second interview, but the  
 8 characterization of those who are  
 9 nonresponders as compared to responders is  
 10 still applicable.  
 11 Q. The data that you cite in your  
 12 expert report with respect to differences  
 13 in Phase 1, Phase 2 study responses from  
 14 Rinsky is inaccurate, correct?  
 15 A. Is what?  
 16 Q. Is inaccurate?  
 17 MS. WAGSTAFF: Object to form.  
 18 Q. Your characterization of that  
 19 data?  
 20 A. Made a mistake, I made a mistake.  
 21 But the information is directly relevant to  
 22 characterizing responders to questionnaires  
 23 within the AHS study as compared to  
 24 nonresponders.  
 25 While you're correct that I made

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1 a mistake in -- it is really a third  
 2 interview, but -- or third -- but the  
 3 characterization of who responds and who  
 4 doesn't respond is still going to be  
 5 germane and I'm not -- I'm not directly  
 6 making any statements or trying to make any  
 7 points with regard to the specifics of who  
 8 is a responder and whose not a responder.  
 9 I'm only giving information with  
 10 regard to what are the characteristics of  
 11 those who respond versus those who don't  
 12 respond and how that may influence the  
 13 associations that are subsequently  
 14 observed.  
 15 Q. In the Rinsky publication, when  
 16 they deal with the Phase 3 survey, at page  
 17 8 and I -- the NIH investigators who  
 18 published this paper stated again in the  
 19 second column of page 8 that applying  
 20 pesticides at enrollment was not strongly  
 21 associated with responses to the 2005, 2010  
 22 interview. That's your understanding of  
 23 that paper result as well, correct?  
 24 A. Yes.  
 25 Q. And with respect to disease

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1 outcomes, that would not be immediately  
 2 apparent at the time of questionnaire  
 3 responses, such as cancer, the NIH  
 4 investigators also were of the view that  
 5 those disease outcomes would not be  
 6 associated with response or nonresponse to  
 7 the questionnaire. Correct?  
 8 A. I'm -- I'm not -- I didn't follow  
 9 that last point.  
 10 Q. OK. Page 8, the investigators,  
 11 page 8 of the study, Rinsky and the other  
 12 NIH investigators concluded that  
 13 outcomes -- and this is in the second  
 14 column of the text -- the findings reported  
 15 here, the first paragraph, about two-thirds  
 16 of the way down --  
 17 MS. WAGSTAFF: What page are you  
 18 on?  
 19 MR. LASKER: Page 8.  
 20 Q. The investigators concluded that  
 21 outcomes that did not have high rates of  
 22 rapid mortality or disability soon after  
 23 diagnosis also should not be strongly  
 24 associated with whether or not there was a  
 25 response or nonresponse to the

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1 questionnaire. Correct?  
 2 A. Yes, but that's not germane to  
 3 our situation.  
 4 Q. So is it your testimony that  
 5 Non-Hodgkins lymphoma has a high rate of  
 6 mortality and disability soon after  
 7 diagnosis?  
 8 A. What?  
 9 Q. Is it your opinion that  
 10 Non-Hodgkins lymphoma has a high rate of  
 11 rapid mortality or disability soon after  
 12 diagnosis?  
 13 A. No, but they're looking at lung  
 14 cancer and bladder cancer where the risk  
 15 ratios are like 2 and 3 and 4. We are  
 16 talking about risk ratios of 1.3 and 1.4.  
 17 So --  
 18 Q. I'm not even sure I'm following  
 19 what you're saying. But that is not  
 20 germane to my question.  
 21 A. If they're saying that the degree  
 22 of bias that's introduced by the  
 23 nonresponses in this context are not going  
 24 to have a major influence on the risk  
 25 ratios, but they're looking at risk ratios

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1 that are high, not risk ratios that are  
 2 small.  
 3 Q. The Rinsky -- the NIH  
 4 investigators in their statement, without  
 5 mention of the issues that you just  
 6 discussed, because it is not mentioned in  
 7 their publication, state that selection  
 8 bias should not strongly influence  
 9 estimates of the association between  
 10 farming exposures and many of the  
 11 self-reported outcomes when analysis was  
 12 limited to the 2005-2010 interview  
 13 respondents, correct?  
 14 A. Yes.  
 15 Q. Now, let's look at the Montgomery  
 16 paper.  
 17 (Exhibit 26-9, document entitled  
 18 "Effects of Self-reported Health  
 19 Conditions and Pesticide Exposures on a  
 20 Probability of Follow-up in a  
 21 Prospective Cohort Study" marked for  
 22 identification, as of this date.)  
 23 Q. This is the second --  
 24 MS. WAGSTAFF: What's the time?  
 25 Q. Dr. Neugut, this is second

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1 article that you cite in your supplemental  
 2 expert report, correct?  
 3 This is the paper you cite in  
 4 your expert report?  
 5 Is this the paper that you cite  
 6 in your expert report, the Montgomery  
 7 paper?  
 8 A. Oh, yes.  
 9 Q. In the abstract in their paper,  
 10 the Montgomery paper, the NIH investigators  
 11 in this peer-reviewed publication, state  
 12 the, "Differences between nonparticipants  
 13 and participants in the follow-up  
 14 interviews, the second phase interview were  
 15 generally small."  
 16 Did I read that correctly?  
 17 A. Yes.  
 18 Q. And the NIH investigators further  
 19 state that, "We did not find significant  
 20 evidence of selection bias." Correct?  
 21 A. Yes.  
 22 Q. And in your expert report --  
 23 MS. WAGSTAFF: Objection to  
 24 completeness. There is another  
 25 sentence in the conclusion.

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1 Q. -- you disagree with the NIH  
 2 investigators in their analysis of their  
 3 findings in the Montgomery paper, correct?  
 4 A. Do I?  
 5 Q. That's my question. Let me ask  
 6 you this: Do you disagree with the  
 7 conclusions of the NIH investigators that  
 8 differences between nonparticipants and  
 9 participants in the follow-up second phase  
 10 interview were generally small and that  
 11 there was not -- they did not find  
 12 significant evidence of selection bias?  
 13 MS. WAGSTAFF: Objection, there  
 14 is another sentence in the conclusion  
 15 that should be read for completeness  
 16 into the record please.  
 17 MR. LASKER: If you want to read  
 18 that in your redirect, that's fine.  
 19 I'm asking a question about this  
 20 sentence in the conclusion.  
 21 A. I would have to take a look at  
 22 this for a moment to reorient myself to the  
 23 paper. I haven't seen it in a while.  
 24 MS. WAGSTAFF: I would request  
 25 that the full conclusion be read, if

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1 you are going to ask questions about  
 2 piecemeal to get sound bites.  
 3 Q. Dr. Neugut, the record will  
 4 reflect that you have been looking at the  
 5 Montgomery paper now that you cite in your  
 6 expert report as evidence of what you state  
 7 are differences in Phase 1 and Phase 2  
 8 responses, that you have been reading that  
 9 paper now for three minutes or actually  
 10 more than that, four minutes of the  
 11 deposition time. I asked a simple  
 12 question.  
 13 A. I would say that --  
 14 MS. WAGSTAFF: Objection to  
 15 asking a simple question.  
 16 A. -- explicitly mixing or applying  
 17 pesticides was significantly associated  
 18 with participation at follow-up with an OR  
 19 of 0.52. And it says explicitly,  
 20 "Characteristics associated with follow-up  
 21 among applicators." That's, it lists here  
 22 those things that were associated with  
 23 response and nonresponse which is what I  
 24 alluded to now --  
 25 Q. I will reask my question, because

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1 I still don't have an answer to that.  
 2 A. What is your question?  
 3 Q. My question is the investigators,  
 4 the NIH investigators who conducted this  
 5 analysis, they stated in their conclusions  
 6 that differences between nonparticipants  
 7 and participants in the follow-up  
 8 interview, "The second phase AHS interview  
 9 were generally small and we did not general  
 10 significant evidence of selection bias."  
 11 My question to you is whether you  
 12 agree or disagree with the NIH  
 13 investigators?  
 14 A. I think --  
 15 MS. WAGSTAFF: Object to form.  
 16 A. For the associations that they  
 17 looked at, that is correct. But they did  
 18 not look at glyphosate and NHL.  
 19 Q. Then, Dr. Montgomery and his  
 20 associates, if you look at page 492 of the  
 21 paper, in the text in the first column, the  
 22 bottom of the page, states that the  
 23 incident cancers cases -- that is, cancer  
 24 cases that developed subsequent to  
 25 questionnaire responses -- were not

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1 significantly different from noncancer  
 2 cases in their probability of follow-up at  
 3 interview, correct?  
 4 A. Yes.  
 5 Q. And again, we discussed that  
 6 before, but that again indicates that there  
 7 is no bias with respect to responding or  
 8 nonresponding to the questionnaire that  
 9 would be associated with cancer outcomes,  
 10 correct?  
 11 A. That is only for what they  
 12 specifically looked at in this paper, not  
 13 with regard to either glyphosate and NHL  
 14 and not specifically in the context of  
 15 small risk ratios.  
 16 Q. Again, that's not really the  
 17 question I was asking about. The issue  
 18 that they raise is that there was no  
 19 difference with respect to whether a cohort  
 20 member would respond or not respond to  
 21 Phase 2 based upon whether or not that  
 22 individual developed cancer, correct?  
 23 A. Yes.  
 24 Q. So the question of any  
 25 differences between whether you respond or

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1 not respond was not associated with cancer  
 2 outcomes, correct?  
 3 A. Yes.  
 4 Q. In fact, if you talk about  
 5 glyphosate-based herbicide exposure and  
 6 Non-Hodgkins lymphoma, we know from the  
 7 analysis we just looked at in the 2018 --  
 8 A. I am sorry, you have to talk  
 9 louder.  
 10 Q. We know from the analysis we just  
 11 looked at in the 2018 NCI Study, only  
 12 looking at the individuals who responded to  
 13 Phase 2 and Phase 1, if you recall, they  
 14 had a 0.9 rate ratio for highest exposure  
 15 for glyphosate-based herbicides and  
 16 Non-Hodgkins lymphoma, correct?  
 17 A. Yes.  
 18 Q. And so we know from that analysis  
 19 in the 2018 NCI Study, that there was no  
 20 difference in the rate ratio for  
 21 Non-Hodgkins lymphoma if we look at  
 22 individuals who responded to the Phase 2  
 23 questionnaire versus individuals who did  
 24 not respond to the Phase 2 questionnaire,  
 25 correct?

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1 MS. WAGSTAFF: Objection,  
 2 misstates.  
 3 A. I don't know that I would  
 4 characterize it that way.  
 5 Q. There was no difference in the  
 6 findings when they looked at individuals  
 7 who responded to both Phase 1 and Phase 2  
 8 as compared to when they looked at the  
 9 total cohort, correct?  
 10 MS. WAGSTAFF: Same objection.  
 11 A. You get the same risk ratio.  
 12 Q. In your supplemental expert  
 13 report at page 10, if you raise the  
 14 possibility of a cohort member who begins  
 15 using glyphosate after responding to the  
 16 first question -- this is the first full  
 17 paragraph on page 10, you raise the  
 18 possibility of a cohort member who begins  
 19 using glyphosate after responding to the  
 20 first questionnaire and does not respond to  
 21 the second questionnaire and then develops  
 22 Non-Hodgkins lymphoma, correct? You  
 23 discussed that hypothetical situation?  
 24 A. Yes.  
 25 Q. And you state that this

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1 individual would be considered an unexposed  
 2 Non-Hodgkins lymphoma case in the 2018 NCI  
 3 Study, correct?  
 4 A. Yes.  
 5 Q. That's not correct, is it?  
 6 A. Because --  
 7 Q. The NIH investigators actually  
 8 used an imputation methodology to determine  
 9 exposure for -- in Phase 2 nonresponders,  
 10 didn't they?  
 11 A. How would they know that he used  
 12 it?  
 13 Q. Let's take a look at the Heltshe  
 14 publication, and this is Exhibit 26-10.  
 15 (Exhibit 26-10, document  
 16 entitled, "Using Multiple Imputation to  
 17 Assign Pesticide Use for Nonresponders  
 18 in the Follow-Up Questionnaire" marked  
 19 for identification, as of this date.)  
 20 Q. And you cited the Heltshe  
 21 publication in your supplemental expert  
 22 report, correct?  
 23 A. Yes.  
 24 Q. You're familiar with this paper?  
 25 A. Yes.

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1 Q. If you look at page 410, the  
 2 second page of the publication. The first  
 3 full paragraph on the left, column  
 4 starting, "When using pesticide exposure in  
 5 an analysis, there are several ways to  
 6 handle missing Phase 2 information."  
 7 Do you see that?  
 8 A. Yes.  
 9 Q. And they talk about the  
 10 possibility of ignoring nonresponse in  
 11 Phase 2 and implicitly assuming zero  
 12 pesticide exposure after Phase 1 which  
 13 would be erroneous for most participants  
 14 who did not complete the Phase 2  
 15 questionnaire, correct?  
 16 A. Yes.  
 17 Q. And that's the scenario, the  
 18 hypothetical that you were raising in your  
 19 expert report, correct?  
 20 A. Yes.  
 21 Q. The whole reason that the NIH  
 22 investigators instead, using an imputation  
 23 methodology, was to avoid that outcome,  
 24 correct?  
 25 A. Yes.

1 Q. And you agree that in using the  
2 imputation methodology, there was -- strike  
3 that.

4 You agree, and I think you state  
5 this in your supplemental report -- you do,  
6 at page 11 -- that imputation is frequently  
7 used in epidemiologic research for dealing  
8 precisely with this same problem in similar  
9 circumstances, correct?

10 A. Yes.

11 MS. WAGSTAFF: Object to form.

12 Q. And when -- just to explain how  
13 this imputation works, the NIH  
14 investigators analyze a wide array of  
15 demographic and lifestyle and occupational  
16 factors collected in the first  
17 questionnaire and they determined which of  
18 those factors were associated with  
19 glyphosate use during the later time period  
20 among the 34,700 cohort members who  
21 responded to the second questionnaire.  
22 Correct?

23 A. Yes.

24 Q. And they then looked at those  
25 same variables, demographic, lifestyle and

1 occupation in the first questionnaire  
2 responses for those individuals who did not  
3 respond to Phase 2, correct?

4 A. I'm sorry, say the last question  
5 again.

6 Q. The NIH investigators then looked  
7 at those same variables, demographic,  
8 lifestyle and occupational in the Phase 1  
9 questionnaire responses for the individuals  
10 who did not respond to Phase 2, correct?

11 A. Yes.

12 Q. And that is the method of  
13 imputation is that they use all the  
14 information that they actually obtained in  
15 the Phase 1 questionnaires and in the Phase  
16 2 questionnaires that responded to be able  
17 to derive information as to whether or not  
18 the nonresponders did or did not use  
19 glyphosate during that time period,  
20 correct?

21 A. Yes.

22 Q. There would, through that  
23 imputation process for -- for example,  
24 individuals -- I'm sorry, strike that.

25 In the individuals who responded

1 to Phase 1 and Phase 2, that 34,700 members  
2 of the cohort, there were individuals who  
3 had not used glyphosate in Phase 1 who  
4 began using glyphosate in Phase 2, correct?

5 A. Yes.

6 Q. And through the imputation  
7 methodology, the NIH investigators were  
8 able to analyze all the various demographic  
9 factors that was related with that change  
10 in use pattern, correct?

11 MS. WAGSTAFF: Object to form.

12 A. Yes.

13 Q. And they used that imputation  
14 method also with respect to the  
15 nonresponders so that a nonresponder who  
16 did not use glyphosate during the Phase 1  
17 period but had the similar demographic and  
18 lifestyle and occupational variables would  
19 be imputed to have used glyphosate in Phase  
20 2, correct?

21 A. Yes.

22 Q. And in the Heltshe study, the  
23 investigators in the very beginning at page  
24 409, in the left-hand column, state, and  
25 I'm quoting, starting about ten lines down

1 from the top, Introduction, "Multiple  
2 imputation was been widely accepted and  
3 used to account for missing data in large  
4 national surveys and studies including  
5 NHANES III, National Assessment of  
6 Educational Progress, Children's Mental  
7 Health Initiative and the Framingham Heart  
8 Study, correct?

9 A. Yes.

10 Q. And you agree with that, correct?

11 A. Yes.

12 Q. The Heltshe validation study at  
13 page 414, in the text in this 2012  
14 publication, if you look at the second  
15 column in the text about halfway down that  
16 column, you see there referencing the  
17 Montgomery paper, correct?

18 A. Yes.

19 Q. And that's the Montgomery paper  
20 we were just discussing, correct?

21 A. Yes.

22 MS. WAGSTAFF: Where are you --

23 Q. Halfway down --

24 MS. WAGSTAFF: Got it.

25 Q. And the NIH investigators in the

<p style="text-align: right;">Page 110</p> <p>1 Heltshe paper state that Montgomery, et 2 al., show there is little evidence for 3 selection bias in Phase 2 of the AHS, 4 correct? 5 A. Yes. 6 MS. WAGSTAFF: Objection. Can 7 you read the rest of the sentence 8 please. 9 MR. LASKER: You can read that in 10 your -- 11 MS. WAGSTAFF: "However, missing 12 at random is an untestable assumption 13 without additional data." 14 Q. Well, let me ask you that 15 question. Are you aware of any 16 information, any data that you can point 17 to, that states that any miss -- any of the 18 information in the -- with respect to 19 nonresponse in Phase 2 was missing not at 20 random? 21 A. Was what? 22 Q. Missing not at random? 23 A. Missing -- 24 Q. Not at random? 25 MS. WAGSTAFF: While he is</p>	<p style="text-align: right;">Page 112</p> <p>1 Actually, let's look at the very 2 end of the paper, page 415, the conclusion. 3 The last sentence of the publication, 4 Heltshe publication, "The NIH investigators 5 conclude that this multiple imputation will 6 allow for bias reduction and improved 7 efficiency in future analyses of the AHS 8 cohort." Correct? 9 A. Yes. 10 Q. And you agree with that, correct? 11 A. Yes. 12 MS. WAGSTAFF: Can you tell me 13 where you were reading that? 14 MR. LASKER: Sorry, the last 15 sentence of the paper. 16 Q. The NIH investigators also found 17 from their analysis in the Heltshe paper -- 18 and just to explain, the way that the 19 Heltshe paper worked is they took the 20 individuals who responded to the first 21 phase questionnaire and then they pulled 22 out 20 percent of those individuals, sort 23 of pretended they hadn't responded, used 24 the imputation methodology to predict what 25 the answers should be, and then compared it</p>
<p style="text-align: right;">Page 111</p> <p>1 thinking about that, I would like to 2 read the rest of the sentence. 3 MR. LASKER: No, no, he can 4 answer the question and then you can do 5 whatever you want. 6 A. How could there possibly be such 7 evidence? I mean, since it's not 8 collected. 9 Q. Are you -- can you point to any 10 information that says if there is any data 11 that's -- with respect to the Phase 2 12 questionnaire nonresponse that's not 13 missing at random? 14 A. No. 15 MS. WAGSTAFF: I would like, for 16 the completeness of the record, it 17 says, "Thus, it is possible that 18 nonresponders differed from responders 19 in variables we have not yet measured." 20 Q. The NIH investigators state -- 21 and I believe this is, again, in the 22 abstract of the front of the paper, that 23 the last line -- well, let me see here for 24 a second. I don't want to direct you to -- 25 OK.</p>	<p style="text-align: right;">Page 113</p> <p>1 to their actual responses, correct? 2 A. Yes. 3 Q. And the NIH investigators found 4 when they did this analysis, that the 5 observed and imputed prevalence of 6 pesticide use in the hold-out data set were 7 85.7 percent and 85.3 percent respectfully 8 {sic}, correct? 9 A. Do I have that written in my 10 report? 11 Q. I don't think you do, but it is 12 mentioned in the abstract of the Heltshe 13 paper that you are relying upon. It's 14 right in the abstract. If you look at the 15 front of the paper or you can try and find 16 it in the paper, but it's in the body of 17 the abstract. 18 A. They have all sorts of different 19 numbers in the paper itself. So -- 20 Q. Are you aware of, sitting here 21 today, whether or not, in fact, the Heltshe 22 investigators found that their observed 23 imputed prevalence of pesticide use in the 24 hold-out data set was 85.7 percent and 85.3 25 percent respectfully -- respectively?</p>

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1 A. I didn't -- no, I'm seeing it  
 2 now.  
 3 Q. OK. So I'm not sure I understand  
 4 now. Am I correct that the NIH -- strike  
 5 that.  
 6 The NIH investigators concluded  
 7 that the observed and imputed prevalence of  
 8 pesticide use in the hold-out data set were  
 9 85.7 percent and 85.3 percent respectfully,  
 10 correct -- respectfully?  
 11 A. Yes.  
 12 MS. WAGSTAFF: Are you talking  
 13 about glyphosate or mixed load?  
 14 MR. LASKER: I'm talking about  
 15 pesticide and it's right in the  
 16 abstract. I'll ask the question again.  
 17 A. That's for any pesticide use,  
 18 right.  
 19 Q. Just so we are clear, when the  
 20 investigators use their imputation  
 21 methodology, they calculated 85.3 percent  
 22 use of pesticides and then when they looked  
 23 back at the actual responses in the  
 24 hold-out set, they found the actual number  
 25 was 85.7 percent, correct?

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1 A. Yes, for pesticides, correct.  
 2 Q. And based upon, if you can look  
 3 at page 412. On the left-hand column --  
 4 A. 412?  
 5 Q. 412. And this is how -- under  
 6 results, imputation assessment, and  
 7 roughly --  
 8 A. I'm sorry, we are in the first  
 9 column.  
 10 Q. First column. They discuss the  
 11 fact that in their view, the total  
 12 pesticide and the reference is total  
 13 pesticide imputation results indicates that  
 14 the logistic regression model underpinning  
 15 the multiple imputation procedure did  
 16 indeed preserve essential features of the  
 17 data, correct?  
 18 A. I'm not seeing where you're  
 19 reading.  
 20 Q. If you look under imputation  
 21 assessment, and about eight lines down they  
 22 state --  
 23 A. "This indicates..."  
 24 Q. "This indicates that the logistic  
 25 regression model underpinning the multiple

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1 imputation feature, did, indeed, preserve  
 2 essential features of the data."  
 3 I read that correctly?  
 4 A. Um-hm. Yes.  
 5 Q. And the N -- if you go back to  
 6 the abstract, in the front of the paper,  
 7 right after the discussion of total  
 8 pesticide use of 85.7 and 85.3 percent  
 9 respectfully -- respectively, the NIH  
 10 investigators further state that the  
 11 distribution of prevalence and days per  
 12 year of use for specific pesticides were  
 13 similar across observed and imputed in the  
 14 hold-out sample, correct?  
 15 A. Yes.  
 16 Q. And then the investigators in  
 17 this paper calculated a relative error for  
 18 the imputed ever/never use of 38 specific  
 19 pesticides, correct?  
 20 A. Well, I don't know how many  
 21 pesticides there were, but many pesticides.  
 22 Q. Going back to page 412, in the  
 23 right column, right above the very bottom  
 24 of the right column, right above, "Days per  
 25 year use of specific pesticides." They

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1 state that for only a few -- you see where  
 2 I am, about five lines up from the bottom?  
 3 A. Yes.  
 4 Q. "For only a few of the rare  
 5 pesticides used in Phase 2, does the  
 6 imputed prevalence differ from the true  
 7 prevalence by more than 20 percent?"  
 8 And they identify some pesticides  
 9 that belong to that category, correct?  
 10 A. Yes.  
 11 Q. And glyphosate did not differ by  
 12 more than 20 percent, correct?  
 13 A. No.  
 14 Q. And then they present that data  
 15 in figure 2 of their paper which is on page  
 16 414, and this lists all of the different  
 17 pesticides that we looked at, correct?  
 18 A. Yes.  
 19 Q. And the relative error, whether  
 20 it's more than 20 percent or less than 20  
 21 percent for all the different pesticides,  
 22 correct?  
 23 A. Yes.  
 24 Q. And there are some five  
 25 pesticides that overstated exposure by

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1 maybe four of them by over 20 percent,  
 2 correct?  
 3 A. Yes.  
 4 Q. And with respect to glyphosate,  
 5 and the accuracy of the imputation  
 6 methodology, glyphosate fell basically in  
 7 the middle of the pack with respect to how  
 8 well the imputation methodology worked for  
 9 individual pesticides, correct?  
 10 MS. WAGSTAFF: Object to form,  
 11 characterization of evidence.  
 12 A. I don't know. I don't know if  
 13 it's in the middle of the pack. It is  
 14 where it is.  
 15 Q. Well, there were roughly as many  
 16 pesticides that had a larger relative error  
 17 for the imputation methodology as there  
 18 were pesticides that had a lower relative  
 19 error, correct?  
 20 MS. WAGSTAFF: Same objection.  
 21 A. I don't know.  
 22 Q. Well, you are looking at the  
 23 table here.  
 24 All the pesticides below  
 25 glyphosate have a greater relative risk,

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1 correct?  
 2 A. Which is about I'd say about 10.  
 3 Q. And the pesticides, again, in the  
 4 top had a higher relative risk or higher --  
 5 I'm sorry, relative error than glyphosate,  
 6 correct?  
 7 A. Had a better relative error.  
 8 Q. No, they were off by more because  
 9 they are now going in the other direction  
 10 but the error is greater, correct?  
 11 A. I see. OK.  
 12 Q. So glyphosate fell about in the  
 13 middle of the pack with respect to the  
 14 accuracy of the imputation methodology for  
 15 individual pesticides, correct?  
 16 A. Yes.  
 17 Q. And the NIH investigators for the  
 18 Agricultural Health Study have used the  
 19 same imputation methodology for every paper  
 20 that they published that has included data  
 21 for the Phase 2 questionnaire, correct?  
 22 A. Yes.  
 23 MS. WAGSTAFF: Object to form.  
 24 Q. And there have been -- using the  
 25 same imputation methodology used in the

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1 2018 NCI study -- maybe a dozen or more  
 2 studies in a peer-reviewed publication --  
 3 peer-reviewed literature coming out of the  
 4 Agricultural Health Study, correct?  
 5 A. I don't know specifically, but I  
 6 wouldn't be surprised.  
 7 Q. And that same imputation  
 8 methodology has been used in other  
 9 peer-reviewed publications looking at  
 10 potential associations with pesticides for  
 11 which the imputation methodology resulted  
 12 in greater relative error than glyphosate,  
 13 correct?  
 14 A. I don't know.  
 15 Q. Well, for example, if you can  
 16 look at lindane, on figure 2. In the  
 17 Heltshe paper, lindane is the fourth  
 18 pesticide from the bottom in that figure?  
 19 A. Yes.  
 20 Q. So for lindane, there was a  
 21 greater error rate in the imputation  
 22 methodology than glyphosate, correct?  
 23 A. Yes.  
 24 Q. In your expert report, you cite  
 25 to the AHS findings in the 2014 paper that

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1 uses imputation methodology for lindane,  
 2 correct?  
 3 A. Yes.  
 4 Q. So we know at least one situation  
 5 where peer-reviewed literature has been  
 6 published using imputation methodology with  
 7 pesticides where the imputation methodology  
 8 did not work as well as it did for  
 9 glyphosate, correct?  
 10 MS. WAGSTAFF: Object to form.  
 11 A. Yes.  
 12 Q. Outside of this -- well, first of  
 13 all, are you aware of a single published  
 14 paper anywhere in the literature arguing  
 15 that the findings in all of these published  
 16 studies of the AHS cohort that have used  
 17 this imputation methodology are not  
 18 reliable because of their use of the  
 19 imputation methodology?  
 20 MS. WAGSTAFF: Objection. This  
 21 paper just came out five weeks ago, six  
 22 weeks ago.  
 23 Q. Strike that.  
 24 So it is clear we just talked  
 25 about a number of papers that used that



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1 imputation methodology, not just the 2017  
 2 NCI Study. We know the 2014 paper looking  
 3 at insecticides, fungicides used that same  
 4 imputation methodology, correct?  
 5 MS. WAGSTAFF: Same objection.  
 6 A. I'm sorry, repeat the question.  
 7 Q. You know that the 2014  
 8 publication that looked at insecticides and  
 9 fungicides for the AHS cohort for different  
 10 pesticides used the same imputation  
 11 methodology, correct?  
 12 A. Yes.  
 13 Q. Lots of other publications, as we  
 14 just discussed from the AHS, have been  
 15 using that same imputation methodology  
 16 that's used in the 2018 NCI paper?  
 17 A. Yes.  
 18 Q. So the 2018 paper is not new in  
 19 its use of the imputation methodology for  
 20 the AHS, correct?  
 21 A. Correct.  
 22 Q. Outside -- strike that.  
 23 Are you aware of a single  
 24 published paper anywhere in the literature  
 25 arguing that the findings in any of these

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1 studies of the AHS cohort, using this  
 2 imputation methodology, are not reliable  
 3 because of their use of the imputation  
 4 methodology?  
 5 A. No.  
 6 Q. Outside of this litigation, are  
 7 you aware of any anyone who has argued in  
 8 any forum that the use of this imputation  
 9 methodology makes the findings of these  
 10 Agricultural Health cohort studies  
 11 unreliable?  
 12 A. No.  
 13 MS. WAGSTAFF: Objection, again,  
 14 this paper came out five weeks ago, so  
 15 there may be some criticism in the  
 16 future of it.  
 17 MR. LASKER: The question and  
 18 answer will stand.  
 19 MS. WAGSTAFF: OK.  
 20 Q. In your expert report, you  
 21 suggest that differences in the responders  
 22 and nonresponders in the Phase 2  
 23 questionnaire could have concealed an  
 24 actual increased risk of Non-Hodgkins  
 25 lymphoma with glyphosate exposure in the

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1 2018 NCI study, correct?  
 2 A. Yes.  
 3 Q. In other words, you believe that  
 4 there were biases in the 2018 NCI study  
 5 that led to the reported rate ratio of  
 6 about 0.85 for ever/never use and -- but  
 7 without those biases, the 2018 NCI Study  
 8 would have reported a statistically  
 9 significant increased rate ratio above 1.0,  
 10 is that correct?  
 11 A. I don't know what it would have  
 12 reported. I mean, again, with the problems  
 13 that it has -- I don't know what the --  
 14 what it should have or could have or might  
 15 have reported.  
 16 Q. Could you point to any data that  
 17 would indicate that if those biases had not  
 18 occurred, that you state occurred or the  
 19 misclassifications had not occurred that  
 20 you state occurred, that the reported rate  
 21 ratio of 0.85 would have, in fact, been  
 22 increased to a statistically significant  
 23 rate ratio above 1.0?  
 24 MS. WAGSTAFF: Objection, same as  
 25 I said before.

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1 A. No, I just believe that the flaws  
 2 in the study make it impossible to  
 3 interpret the reported finding.  
 4 Q. And based upon the actual  
 5 exposure data from the Phase 1  
 6 questionnaire, you would agree that there  
 7 is no suggestion that the 20,000 cohort  
 8 members who did not respond to the second  
 9 questionnaire were at increased risk of NHL  
 10 based upon their glyphosate exposures prior  
 11 to 1997, correct?  
 12 A. I'm not able to answer that  
 13 question as I sit here.  
 14 Q. Let's look at page -- this will  
 15 be the last line of questions -- page 4,  
 16 again, of the 2018 NCI Study.  
 17 A. Which study am I looking at?  
 18 Q. 2018 NCI Study by Andreotti. If  
 19 you look at page 4, we are talking about  
 20 the study by Andreotti, the main study here  
 21 we are talking about.  
 22 Page 4 of that study, again, in  
 23 the column of text, halfway down, there is  
 24 a paragraph that starts, "In primary  
 25 analysis...", do you see that?

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1 A. Yes.  
 2 Q. And then about ten lines down,  
 3 they talk about an another analysis they  
 4 did when using only exposure information  
 5 reported at enrollment, correct?  
 6 A. Yes.  
 7 Q. So this is using the actual  
 8 questionnaire responses for the Phase 1  
 9 questionnaire, correct?  
 10 A. Yes.  
 11 Q. When using only exposure  
 12 information reported at enrollment, the  
 13 rate ratio and the highest exposure  
 14 quartile was 0.82 for Non-Hodgkins  
 15 lymphoma, correct?  
 16 A. Yes.  
 17 Q. And so based upon the actual  
 18 exposure data from the Phase 1  
 19 questionnaire, there is no suggestion that  
 20 the 20,000 cohort members who did not  
 21 respond to the second questionnaire were at  
 22 any increased risk of Non-Hodgkins lymphoma  
 23 based upon glyphosate exposures prior to  
 24 1997, correct?  
 25 A. The upper limit of the 95 percent

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1 confidence interval is 1.80. So I would  
 2 say that that easily encompasses the risk  
 3 ratios we have been talking about. So in  
 4 fact, you could encompass a much higher  
 5 relative risk.  
 6 Q. So am I understanding correctly  
 7 then, your analysis of the epidemiology in  
 8 determining whether or not there would be  
 9 an association between glyphosate-based  
 10 herbicide exposure pre 1997 and  
 11 Non-Hodgkins lymphoma, your methodology is  
 12 to look at the highest edge of the 95  
 13 percent confidence interval to determine  
 14 whether or not there may be an association?  
 15 MS. WAGSTAFF: Objection,  
 16 misstates testimony.  
 17 A. I'm saying when you have a null  
 18 association. You can't interpret or you  
 19 can't exclude what might be a positive  
 20 association and that further, in the  
 21 context of what we talked about earlier in  
 22 terms of misclassification error, again, we  
 23 talked earlier, our initial discussion was  
 24 about the misclassification error that was  
 25 even inherent in the original baseline,

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1 baseline interview, and even a  
 2 misclassification error in that baseline  
 3 interview, which I'm sure there was, would  
 4 have been enough to introduce enough error  
 5 so that it would have obviated the ability  
 6 to assess or might have eliminated a  
 7 positive association.  
 8 My whole point here has been when  
 9 you don't see a positive association, you  
 10 have to be very conservative and very  
 11 skeptical about the interpretation of a  
 12 null finding, particularly when you have  
 13 such a high upper limit. You can't -- you  
 14 can't be willy-nilly about it.  
 15 Q. Just so I understand, this is the  
 16 same issue you discussed, again, about the  
 17 nondifferential, misclassification error  
 18 that you believe could have biased the rate  
 19 ratio towards the null, is that correct?  
 20 A. Not just towards the null, but  
 21 even in this instance apparently possibly  
 22 below the null. I mean -- yes.  
 23 Q. And it's your understanding that  
 24 the nondifferential misclassification can  
 25 bias the rate ratio past the null in the

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1 other direction, is that correct?  
 2 A. Yes.  
 3 MR. LASKER: OK. No further  
 4 questions.  
 5 MS. WAGSTAFF: We -- we can go  
 6 off the record.  
 7 THE VIDEOGRAPHER: The time is  
 8 12:45. We are going off the record.  
 9 (Luncheon recess)  
 10 THE VIDEOGRAPHER: The time is  
 11 1:18. We are back on the record.  
 12 EXAMINATION BY  
 13 MS. WAGSTAFF:  
 14 Q. Dr. Neugut, I have a couple of  
 15 follow-up questions based on Mr. Lasker's  
 16 questioning of you this morning.  
 17 At the beginning of his questions  
 18 to you, there were a lot of questions that  
 19 related to the "power" -- "statistical  
 20 power" of certain studies. Do you remember  
 21 that line of questioning?  
 22 A. Yes.  
 23 Q. Is "power" a technical term used  
 24 in -- by epidemiologists?  
 25 A. Yes.

<p style="text-align: right;">Page 130</p> <p>1 Q. Can you please describe for the 2 judge and jury your meaning as an 3 epidemiologist of the term "power"?</p> <p>4 A. Power is whether a study is large 5 enough or has enough subjects to be able to 6 detect a given relative risk basically, so 7 it depends on what you think the relative 8 risk is going to be for a given association 9 between an exposure and an outcome.</p> <p>10 So if you have a very large 11 relative risk, you can get by with a 12 smaller study. If you have a -- if you are 13 looking for a modest relative risk, you 14 need a larger sample, sample size. So 15 given that -- at least in our context with 16 glyphosate and NHL, we are talking about a 17 modest relative risk, so you would need a 18 fairly large study to be confident or to be 19 confident you would be able to, with a 20 given study, to be able to find the 21 relative risk, if it was there. If it's 22 truly there.</p> <p>23 Q. So is it fair to say that "power" 24 in the epidemiology world relates to the 25 size of the study?</p>	<p style="text-align: right;">Page 132</p> <p>1 A. Sure.</p> <p>2 MR. LASKER: Objection to form.</p> <p>3 Q. I believe I wrote down when 4 Mr. Lasker asked you a question about the 5 2018 AHS study, I believe that the words 6 that you used were that that 2018 AHS study 7 was not contributory to your expert opinion 8 in this matter. Is that the words that you 9 used?</p> <p>10 A. Yes.</p> <p>11 Q. Can you tell the judge and jury 12 what you mean by this study being 13 noncontributory to your opinion?</p> <p>14 A. So it my point was it was neither 15 positive nor negative or null. The study 16 had so many flaws in my view that the 17 results are just not reliable enough to 18 contribute in a meaningful way to either 19 deciding that AHS -- that glyphosate and 20 NHL are either associated or not 21 associated.</p> <p>22 Specifically, the discussion that 23 we had about misclassification error in the 24 first place about the way the 25 self-reporting was collected in the first</p>
<p style="text-align: right;">Page 131</p> <p>1 A. Yes.</p> <p>2 Q. Is it possible to have a study 3 that is so powerful that it overcomes 4 particular flaws?</p> <p>5 Stated another way, is power -- 6 is the power of the study the most 7 important aspect of the study?</p> <p>8 A. No. I mean, you can be 9 under-powered. I mean, so if you -- again, 10 if you were looking for a modest risk and 11 you had a small study, then you would be -- 12 you would have a poor study because you 13 wouldn't be able to find a small relative 14 risk.</p> <p>15 But the real issue in a study is 16 its quality. If a study sucks, it doesn't 17 matter how big the study is. It -- the 18 quality of the study is what's paramount.</p> <p>19 Even if the study is small, the 20 quality is what's most important in the 21 study.</p> <p>22 Q. So you could have a study that 23 had a million participants, but if it's 24 done poorly or the quality is bad, it's not 25 that helpful, is that correct?</p>	<p style="text-align: right;">Page 133</p> <p>1 place and then the problem of the change, 2 the dramatic change in exposure to 3 glyphosate that took place after the 4 initial cohort was collected, so that 5 exacerbated the problem of exposure 6 assessment and then when the cohort had to 7 be reassessed because of that, then the 8 extreme loss to follow-up in the 9 reassessment of the cohort, 37 percent loss 10 of follow-up in a cohort study is a very 11 dramatic loss to follow-up you don't see 12 very often nowadays in a major cohort 13 study. And that's a truly dramatic flaw in 14 the study.</p> <p>15 And then the fact that we are 16 dealing with a modest association in the 17 first place which makes all of this a 18 problem. If we were dealing with a 19 relative risk of 10, we could tolerate all 20 of these flaws and problems and all of 21 that.</p> <p>22 As I said in my discussion, 23 epidemiology is very tolerant of error, but 24 if you combine all these errors and with a 25 modest association, together, the</p>

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1 cumulative effect is really to make really  
 2 to make the study fatally flawed and really  
 3 irreparable and that's why I think the  
 4 combination of all of these problems  
 5 together really makes the study  
 6 uninterpretable, particularly because it's  
 7 null.  
 8 When you get a positive  
 9 association, then you can be more --  
 10 particularly a strong association, then you  
 11 can be more confident about what you're  
 12 finding. But a null finding is really very  
 13 much uninterpretable.  
 14 And that's why I think if you  
 15 actually read the paper, the authors are  
 16 totally focused on their one positive  
 17 finding, much more so, almost -- much more  
 18 so than on the null findings for all the  
 19 other cancers. They're almost exclusive --  
 20 to a large part the paper focuses on their  
 21 one positive finding which who even knows  
 22 if it is, but that's what they really talk  
 23 about mostly.  
 24 Q. So I think I just heard you say  
 25 that you -- it's your opinion that the

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1 flaws that you've identified, which I  
 2 believe what you just said were a modest  
 3 risk ratio, the loss to follow-up, coupled  
 4 with the imputation, the change in  
 5 glyphosate use, and the misclassification  
 6 renders, combined, this paper to be fatally  
 7 flawed, is that what you said?  
 8 MR. LASKER: Objection to form.  
 9 Objection to counsel giving testimony.  
 10 A. Right, I mean, again, I don't  
 11 have a problem with imputation. Imputation  
 12 is a way to -- is a common method of  
 13 dealing with loss to follow-up or other  
 14 problems of this sort. But again, it's a  
 15 means of repairing a problem which we use  
 16 all the time.  
 17 It's just in combination with all  
 18 the other problems, it doesn't fully  
 19 correct -- it can't fully correct a flawed  
 20 study, and while I'm sure the authors are  
 21 going to use it or do use it for multiple  
 22 and will use it for multiple studies and  
 23 should, in the particular instance of  
 24 glyphosate and NHL, it's not going to be --  
 25 it's not adequate to fully compensate for

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1 all the flaws that we just discussed.  
 2 Q. OK, and Mr. Lasker, throughout  
 3 your deposition this morning, asked you  
 4 questions about the different tables in  
 5 Exhibit 25.1 which is the 2008 AHS study.  
 6 MR. LASKER: I'm sorry, I made  
 7 a --  
 8 MS. WAGSTAFF: I'm not going to  
 9 ask him anything specific.  
 10 Q. Do you remember Mr. Lasker asking  
 11 you about the tables and the supplemental  
 12 tables that were printed online?  
 13 A. Yes.  
 14 Q. And the data in those tables, is  
 15 the data in those tables subject to the  
 16 same fatal flaws that you just described?  
 17 A. Of course.  
 18 Q. Mr. Lasker asked you if you would  
 19 turn to page 6 of your supplemental report.  
 20 Tell me when you're there.  
 21 MR. LASKER: I've got it.  
 22 Q. The bottom, the last sentence,  
 23 Mr. Lasker asked you about your cite to the  
 24 modest relative risk of 1.3 to 1.4 for  
 25 ever/never use. Do you remember that line

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1 of questioning by Mr. Lasker?  
 2 A. Yes. Yes.  
 3 Q. Is a relative risk ratio of 1.3  
 4 to 1.4 an important risk?  
 5 MR. LASKER: Objection to form.  
 6 A. It can be, yes.  
 7 Q. And in your scientific opinion,  
 8 does a relative risk of 1.3 to 1.4 support  
 9 a finding of causation?  
 10 MR. LASKER: Objection to form.  
 11 A. Yes.  
 12 MS. WAGSTAFF: What was wrong  
 13 with that question?  
 14 MR. LASKER: There is no  
 15 discussion of statistical significance,  
 16 confidence intervals, and it assumes  
 17 the relative risk of 1.3 to 1.4 that  
 18 doesn't exist.  
 19 MS. WAGSTAFF: So I'm fine with  
 20 that.  
 21 Q. Next, it talks about in that  
 22 sentence the ever/never use, do you see  
 23 that? In page 6, the last words, page 6.  
 24 And just so the judge and the jury  
 25 understand a little bit about what that

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1 means, when somebody does an ever/never  
 2 study, it the participants are grouped into  
 3 two categories, exposed and unexposed, is  
 4 that correct?  
 5 A. Yes.  
 6 Q. And am I correct in -- that  
 7 somebody who has been exposed for one day  
 8 to glyphosate is lumped in the same  
 9 category as someone who has been exposed  
 10 every single day, is that correct?  
 11 A. Yes.  
 12 Q. So the denominator in an  
 13 ever/never use for the exposed group  
 14 includes people that have been exposed one  
 15 day to glyphosate, is that right?  
 16 MR. LASKER: Objection to form.  
 17 A. I don't know if I used the word  
 18 "denominator," but the exposed group  
 19 includes people who have been exposed for  
 20 one day or more.  
 21 Q. And in theory, in theory, that  
 22 might dilute the exposed group's risk  
 23 ratio, is that right?  
 24 MR. LASKER: Objection to form.  
 25 A. It would, in theory, yes. It

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1 would do that, yes.  
 2 Q. And in fact, in an ever/never  
 3 analysis in the exposed group, due to this  
 4 dilution, one might miss an effect that is  
 5 truly there, is that correct?  
 6 MR. LASKER: Last objection to  
 7 form.  
 8 A. Theoretically, that's possible.  
 9 Q. Earlier today, Mr. Lasker asked a  
 10 series of questions where he said, "'There  
 11 was no evidence' of dose response," or "'No  
 12 evidence' of an association between  
 13 glyphosate-based herbicides and NHL with  
 14 respect to the 2018 AHS study."  
 15 Do you remember that line of  
 16 questioning?  
 17 A. Yes.  
 18 Q. And your response was based on  
 19 the 2018 article, correct?  
 20 MR. LASKER: Objection to form.  
 21 A. Yes.  
 22 Q. And the data contained within  
 23 that article, correct?  
 24 A. Sure.  
 25 Q. And we just described that the

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1 data in that article is subject to the same  
 2 fatal flaws that you have previously  
 3 testified to and that are in your report,  
 4 right?  
 5 MR. LASKER: Objection to form.  
 6 A. Correct.  
 7 Q. Let's bring up the last report,  
 8 last study that Mr. Lasker showed to you,  
 9 the Heltshe -- how do you pronounce that  
 10 name?  
 11 A. Heltshe.  
 12 Q. Heltshe, bring up the Heltshe  
 13 study.  
 14 And Monsanto's attorney spent a  
 15 lot of time on this journal, asking you  
 16 questions. Do you remember those  
 17 questions?  
 18 MR. LASKER: Objection to form.  
 19 A. Some of them.  
 20 Q. So if you turn to page 410, table  
 21 1, Monsanto asked you to -- about the  
 22 numbers of the "mixed any pesticides" at  
 23 the top of the table. Do you remember  
 24 that?  
 25 MR. LASKER: Objection to form.

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1 A. Yes.  
 2 MR. LASKER: OK. I didn't ask  
 3 about those numbers, but OK.  
 4 Q. The 8.-- 85.2 and the 82.82, do  
 5 you remember him asking you those  
 6 questions?  
 7 A. He actually asked about the  
 8 numbers in the abstract.  
 9 Q. OK. But what he didn't ask about  
 10 was the specific glyphosate numbers,  
 11 correct?  
 12 A. Correct.  
 13 MR. LASKER: Objection to form.  
 14 Q. And what are the specific --  
 15 actually, tell me the importance of looking  
 16 specifically at the glyphosate numbers with  
 17 respect to making a determination of  
 18 causation?  
 19 MR. LASKER: I will object to the  
 20 entire line of questions with respect  
 21 to table 1.  
 22 A. We are talking about glyphosate  
 23 and NHL. So obviously what we should be  
 24 addressing is glyphosate, not all  
 25 pesticides.

1 MS. WAGSTAFF: Why are you  
 2 objecting?  
 3 MR. LASKER: You are looking at  
 4 the wrong table.  
 5 MS. WAGSTAFF: I know, but you  
 6 brought this article in and asked him  
 7 questions, so why are you objecting?  
 8 MR. LASKER: I know. The  
 9 questions were premised on my  
 10 questioning regarding table 1. I  
 11 didn't ask any questions about table 1.  
 12 Q. So again, what is the importance  
 13 of when there is data available for  
 14 glyphosate specifically, what is the  
 15 importance of considering that glyphosate-  
 16 specific data versus data relating to all  
 17 pesticides?  
 18 A. Because we are talking about  
 19 glyphosate. So obviously what's --  
 20 glyphosate is what's relevant, not all  
 21 pesticides.  
 22 Q. So when you were asked questions  
 23 about the -- this article, you were not  
 24 asked about the glyphosate specific  
 25 numbers, is that correct?

1 uninterpretable study for the purposes of  
 2 this litigation.  
 3 Q. So I understand and the judge and  
 4 jury understands correctly as well, if you  
 5 look at page 410, Mr. Lasker mentioned that  
 6 63 percent of the participants responded to  
 7 the first and second questionnaires. Do  
 8 you remember that line of questioning?  
 9 A. I guess, yes.  
 10 Q. So said another way, 37 percent  
 11 did not respond. Is that --  
 12 A. Yes.  
 13 Q. And it looks like in the first  
 14 full paragraph on page 410 on the text on  
 15 the left, I've got it highlighted right  
 16 here if you want to just see where it is.  
 17 It states that 37 percent in this  
 18 particular study equates to 20,968 people.  
 19 Is that correct?  
 20 A. Yes.  
 21 Q. So the authors were making  
 22 educated guesses on almost 21,000 people,  
 23 is that correct?  
 24 MR. LASKER: Objection to form.  
 25 A. Yes.

1 A. Right.  
 2 MR. LASKER: Object to form.  
 3 Misstates the testimony.  
 4 Q. And just to be clear, you're not  
 5 attacking the use of self-reporting or  
 6 imputation in general; rather, it's  
 7 specific to the facts of this case. Do I  
 8 understand you correctly?  
 9 MR. LASKER: Objection to form.  
 10 A. Yes. As Mr. Lasker said, both  
 11 self-reported questionnaires and imputation  
 12 are standard methodologies that are used by  
 13 all epidemiologists including myself in  
 14 most studies, many studies in epidemiology.  
 15 It's just that they have their  
 16 limitations, and in the proper context, one  
 17 has to be careful with their use. And in  
 18 the particular context of this study, with  
 19 the, as I described earlier, with the  
 20 several flaws or problems here, the  
 21 problems become a cumulatively and  
 22 overwhelming issue and create what I  
 23 consider to be fatal flaws in our  
 24 interpretation of the outcomes of the  
 25 study. So as to make it a basically an

1 Q. And they were making those  
 2 guesses during a time in which the  
 3 glyphosate use changed dramatically, is  
 4 that correct?  
 5 MR. LASKER: Objection to form.  
 6 A. Yes.  
 7 Q. And has anything that you heard  
 8 today from Mr. Lasker changed your opinion  
 9 that you provided in your expert -- your  
 10 supplemental expert report?  
 11 A. No. I mean, the only thing I  
 12 would say is I did make an error in the  
 13 month -- my interpretation of the  
 14 Montgomery paper. I didn't realize it was  
 15 the Phase 3 interview rather than the Phase  
 16 2, but it doesn't change the substance of  
 17 my -- what I was trying to elicit from that  
 18 paper which was that -- what were the  
 19 factors that predicted response or  
 20 nonresponse.  
 21 They are basically -- what I was  
 22 trying to get at in the Montgomery paper  
 23 was just to describe some factors which  
 24 predict response or nonresponse and the  
 25 fact that they were described for a

1 subsequent interview or survey is not, to  
2 me, germane or critical.  
3 MS. WAGSTAFF: Thank you, Doctor.  
4 No more questions.  
5 THE WITNESS: Thank you.  
6 THE VIDEOGRAPHER: The time is  
7 1:38. This is the conclusion of  
8 today's deposition, January 3, 2018.

9  
10  
11 \_\_\_\_\_  
12 ALFRED I. NEUGUT

13 Subscribed and sworn to  
14 before me this day  
15 of , 2018.  
16  
17 \_\_\_\_\_  
18  
19  
20  
21  
22  
23  
24  
25

1 \*\*\*ERRATA SHEET\*\*\*  
2 NAME OF CASE: In Re: RoundUp  
3 DATE OF DEPOSITION: 1/3/18  
4 NAME OF WITNESS: ALFRED I. NEUGUT  
5 Reason codes:  
6 1. To clarify the record.  
7 2. To conform to the facts.  
8 3. To correct transcription errors.

9 Page \_\_\_\_ Line \_\_\_\_ Reason\_\_\_\_  
10 From \_\_\_\_\_ to \_\_\_\_\_

11 Page \_\_\_\_ Line \_\_\_\_ Reason\_\_\_\_  
12 From \_\_\_\_\_ to \_\_\_\_\_

13 Page \_\_\_\_ Line \_\_\_\_ Reason\_\_\_\_  
14 From \_\_\_\_\_ to \_\_\_\_\_

15 Page \_\_\_\_ Line \_\_\_\_ Reason\_\_\_\_  
16 From \_\_\_\_\_ to \_\_\_\_\_

17 Page \_\_\_\_ Line \_\_\_\_ Reason\_\_\_\_  
18 From \_\_\_\_\_ to \_\_\_\_\_

19 Page \_\_\_\_ Line \_\_\_\_ Reason\_\_\_\_  
20 From \_\_\_\_\_ to \_\_\_\_\_

21 Page \_\_\_\_ Line \_\_\_\_ Reason\_\_\_\_  
22 From \_\_\_\_\_ to \_\_\_\_\_

23 \_\_\_\_\_  
24 ALFRED I. NEUGUT  
25

1 CERTIFICATE  
2 STATE OF NEW JERSEY )  
3 )ss:  
4 COUNTY OF UNION )  
5 I, MARY F. BOWMAN, a Registered  
6 Professional Reporter, Certified  
7 Realtime Reporter, and Notary Public  
8 within and for the State of New Jersey,  
9 do hereby certify:

10 That ALFRED I. NEUGUT, the  
11 witness whose deposition is  
12 hereinbefore set forth, was duly sworn  
13 by me and that such deposition is a  
14 true record of the testimony given by  
15 such witness.

16 I further certify that I am not  
17 related to any of the parties to this  
18 action by blood or marriage and that I  
19 am in no way interested in the outcome  
20 of this matter.

21 In witness whereof, I have  
22 hereunto set my hand this 3rd day of  
23 January, 2018.

24 \_\_\_\_\_  
25 MARY F. BOWMAN, RPR, CRR

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