

Aaron 2017-03-20 Direct & Redirect Exam Played in Court

Blair, Aaron 03-20-2017

[REDACTED]

[REDACTED]

Total Time 01:20:57



Page/Line	Source	ID
12:25 - 14:8	Blair, Aaron 03-20-2017 (00:01:01) 12:25 Q. All right. Good morning, Dr. Blair. 13:1 A. Good morning. 13:2 Q. How are you, sir? 13:3 A. Okay. 13:4 Q. Good. What -- would you please state 13:5 your name on the record. 13:6 A. Aaron Earl Blair. 13:7 Q. All right, sir. And Aaron Earl Blair, 13:8 and you're a doctor? 13:9 A. Ph.D. 13:10 Q. Ph.D. You've got -- I'm going to start 13:11 and go through a little bit of your credentials, if I 13:12 may, sir. 13:13 A. Sure. 13:14 Q. Okay. You graduated in 1965 with a 13:15 degree in biology from Kansas Wesleyan University? 13:16 A. Yes. 13:17 Q. Master of Science degree in '67 from 13:18 North Carolina State University? 13:19 A. Yes. 13:20 Q. And a Ph.D. in genetics at North Carolina 13:21 State University? 13:22 A. Yes. 13:23 Q. And then in 1976, you got a MPH. What is 13:24 an MPH? 13:25 A. Masters in Public Health. 14:1 Q. And that's -- your CV says epidemiology? 14:2 A. Correct. 14:3 Q. Okay. And what is epidemiology? 14:4 A. The study of causes and distribution of 14:5 diseases. 14:6 Q. Have you -- have you been professionally 14:7 since 1976 studying the causes of diseases? 14:8 A. Yes.	Blair.1
14:9 - 14:20	Blair, Aaron 03-20-2017 (00:00:28) 14:9 Q. And explain it to me, if you would. 14:10 Where and how have you been studying the causes of 14:11 diseases since 1976? 14:12 A. The study of disease in human	Blair.2

Page/Line

Source

ID

14:13 populations, evaluating various factors that might be
14:14 related to the initiation or etiology of those
14:15 diseases.

14:16 Q. As the -- you say you've spent your
14:17 professional life with this doctorate degree studying
14:18 the causes of diseases. Have you studied the causes
14:19 of cancer?

14:20 A. Yes.

14:21 - 14:24

Blair, Aaron 03-20-2017 (00:00:09)

Blair.3

14:21 Q. And within the broad field of studying
14:22 the causes of cancer, have you studied the causes of
14:23 non-Hodgkin's lymphoma?

14:24 A. Yes.

16:2 - 16:10

Blair, Aaron 03-20-2017 (00:00:18)

Blair.4

16:2 Now, it sounds like you spend an awful
16:3 lot of time at the National Cancer Institute. Is
16:4 that right?

16:5 A. Yes.

16:6 Q. What is the National Cancer Institute?

16:7 A. It is one of the institutes, the National
16:8 Institutes of Health devoted to studying cancer.

16:9 Q. And you started there in 1976?

16:10 A. Yes.

16:15 - 16:20

Blair, Aaron 03-20-2017 (00:00:13)

Blair.5

16:15 And how long did you stay there, from
16:16 1976 until when? Are you still there or are you
16:17 retired or --

16:18 A. I am retired now, but I have an emeritus
16:19 position, which means I go in a couple of days a week
16:20 and do what I've always done. I just don't get paid.

16:23 - 17:11

Blair, Aaron 03-20-2017 (00:00:29)

Blair.6

16:23 All right. So you started there in 1976.

16:24 You were a staff fellow for the Environmental
16:25 Epidemiology Branch at the National Cancer Institute?

17:1 A. Correct.

17:2 Q. Went on 1978 to '82, became the acting
17:3 chief of the occupational study section of the
17:4 Environmental Epidemiology Branch, National Cancer
17:5 Institute?

17:6 A. Yes.

Page/Line	Source	ID
17:22 - 18:3	<p>17:7 Q. Describe for us what it is you are doing 17:8 there and -- 17:9 A. Studying various sorts of exposures that 17:10 occur in occupations and to see if they are related 17:11 to cancer.</p> <p>Blair, Aaron 03-20-2017 (00:00:13)</p> <p>17:22 Q. All right. Let's go on then. You became 17:23 the chief of the occupational study section in 1982, 17:24 right? 17:25 A. Yes. 18:1 Q. Okay. Remained the chief for, and I will 18:2 do this math, 14 years until 1996? 18:3 A. Sounds right.</p>	Blair.7
18:8 - 18:11	<p>Blair, Aaron 03-20-2017 (00:00:07)</p> <p>18:8 Exhibit 1 a copy of your CV or curriculum vitae, 18:9 okay? 18:10 (Blair Exhibit No. 1 was marked for 18:11 identification.)</p>	Blair.8 BA1.1
18:18 - 18:19	<p>Blair, Aaron 03-20-2017 (00:00:02)</p> <p>18:18 Q. Is this your CV, sir? 18:19 A. Yes.</p>	Blair.9
19:18 - 20:5	<p>Blair, Aaron 03-20-2017 (00:00:34)</p> <p>19:18 Q. All right. So after being the chief for 19:19 14 years at the Occupation and Environmental 19:20 Epidemiology Branch, you went on to become in 2004 a 19:21 senior investigator. Please tell us what that means. 19:22 A. It means I stepped down as head of the 19:23 unit and just retained a position at the National 19:24 Cancer Institute, and that is a senior position. 19:25 Q. Okay. And then you retired from 20:1 full-time work there in 2007. 20:2 A. Yes. 20:3 Q. And have been working for free as a 20:4 professor emeritus there ever since. 20:5 A. Yes.</p>	Blair.10 BA1.1.1
20:14 - 20:15	<p>Blair, Aaron 03-20-2017 (00:00:03)</p> <p>20:14 Q. Who is WHO? 20:15 A. World Health Organization.</p>	Blair.11 clear
21:7 - 21:16	<p>Blair, Aaron 03-20-2017 (00:00:18)</p> <p>21:7 BY MR. MILLER:</p>	Blair.12

Page/Line	Source	ID
	21:8 Q. Could you just let the jury know some of 21:9 those groups that you served at the request and for 21:10 the World Health Organization.	BA1.3.1
	21:11 A. Well, the main one is the International 21:12 Agency for Research on Cancer, which is part of the 21:13 World Health Organization.	
	21:14 Q. Okay. And is that also referred to as 21:15 IARC?	
	21:16 A. Correct.	
23:12 - 23:15	Blair, Aaron 03-20-2017 (00:00:13)	Blair.13
	23:12 Did there come a time when you were asked 23:13 to be involved with the World Health Organization, 23:14 the International Association of Cancer, to what has 23:15 now become Volume 112 of the monographs?	BA1.5.1
23:16 - 23:16	Blair, Aaron 03-20-2017 (00:00:00)	Blair.14
	23:16 A. Yes.	
24:5 - 24:7	Blair, Aaron 03-20-2017 (00:00:11)	Blair.15
	24:5 Q. All right. So what we have here, can you 24:6 identify this document, which is Exhibit 2, please?	BA2.1
	24:7 A. Well, it is one of the monographs.	
25:6 - 25:10	Blair, Aaron 03-20-2017 (00:00:14)	Blair.16
	25:6 And will go, if you would, sir, to the 25:7 first page of the preamble, and it says here that the 25:8 IARC was established in two -- in 1965.	BA2.3 BA2.3.1
	25:9 Is that your understanding?	
	25:10 A. Yes.	
25:11 - 25:16	Blair, Aaron 03-20-2017 (00:00:13)	Blair.17
	25:11 Q. All right. It says: Through the IARC" 25:12 -- I'm sorry, I will quote exactly. 25:13 "Through the monographs program, IARC 25:14 seeks to identify the causes of human cancer." 25:15 That's true, isn't it, sir?	BA2.3.2
	25:16 A. Yes.	
26:2 - 26:13	Blair, Aaron 03-20-2017 (00:00:32)	Blair.18
	26:2 Q. Okay. All right. And there's in the 26:3 preamble a discussion of the selection of agents for 26:4 review by IARC, and I want to ask you about it. 26:5 It says: "Agents are selected for 26:6 review" -- is that for review to see if they cause 26:7 cancer?	BA2.5 - BA2.5.1

Page/Line	Source	ID
	26:8 A. Yes.	
	26:9 Q. -- "on the basis of two main criteria:	
	26:10 There is evidence of human exposure, and there is	
	26:11 some evidence or suspicion of carcinogenicity."	
	26:12 Is that your understanding, Dr. Blair?	
	26:13 A. Yes.	
26:14 - 26:17	Blair, Aaron 03-20-2017 (00:00:09)	Blair.19
	26:14 Q. Okay. And IARC has in this preamble a	
	26:15 discussion of what they will review as they consider	
	26:16 these issues, right, sir?	BA2.6
	26:17 A. Yes.	
27:13 - 27:17	Blair, Aaron 03-20-2017 (00:00:13)	Blair.20
	27:13 "Only reports that have been published or	BA2.6.1
	27:14 accepted for publication in openly available	
	27:15 scientific literature are reviewed."	
	27:16 Is that true, sir?	
	27:17 A. Yes.	
27:18 - 27:21	Blair, Aaron 03-20-2017 (00:00:09)	Blair.21
	27:18 Q. And why is that true? Why -- why does	
	27:19 IARC only review those publications that have been	
	27:20 published in available scientific literature or have	
	27:21 been accepted for publication?	
27:25 - 28:4	Blair, Aaron 03-20-2017 (00:00:10)	Blair.22
	27:25 A. Because these materials are then	
	28:1 available to anyone.	
	28:2 Q. And IARC also reviews those exposure	BA2.6.2
	28:3 data?	
	28:4 A. Yes.	
28:5 - 28:24	Blair, Aaron 03-20-2017 (00:00:58)	Blair.23
	28:5 Q. And exposure data means how are humans	
	28:6 exposed to that agent, right?	
	28:7 A. Yes.	
	28:8 Q. Okay. And IARC extends invitations to	
	28:9 scientists around the world to participate in the	
	28:10 creation of a monograph for a book, right?	
	28:11 A. Yes.	
	28:12 Q. And it -- in this preamble it tells us:	BA2.7.1
	28:13 "Before an invitation is extended, each potential	
	28:14 applicant participant, including the IARC	
	28:15 Secretariat, completes a WHO declaration of interest	

Page/Line	Source	ID
	28:16 to report financial interests, employment, and 28:17 consulting, and individual and institutional research 28:18 support related to the subject of the meeting." 28:19 Is that your understanding? 28:20 A. Yes. 28:21 Q. So before these folks are invited to be 28:22 on this IARC panel, they have to declare their 28:23 interests? 28:24 A. Yes.	
29:2 - 29:11	Blair, Aaron 03-20-2017 (00:00:29) 29:2 Q. And it says in this monograph preamble 29:3 that a working group -- and I want to ask you, what 29:4 is a working group? 29:5 A. It's the group of people invited to 29:6 perform this activity. 29:7 Q. And the working group meets at IARC for 29:8 seven to eight days to discuss and finalize the text 29:9 and to formulate the evaluation. 29:10 Is that your experience? 29:11 A. Roughly that number of days, yes.	Blair.24 BA2.8.1
30:10 - 30:25	Blair, Aaron 03-20-2017 (00:00:38) 30:10 Page 9, there's a whole 30:11 section, and I'm not going to read it, but that IARC 30:12 considers the quality of studies considered, right? 30:13 A. Yes. 30:14 Q. Okay. And then on page 10, IARC 30:15 considers meta-analysis? 30:16 A. Yes. 30:17 Q. Now, could you tell the jury what is a 30:18 meta-analysis? 30:19 A. It is a quantitative or statistical way 30:20 of summing up results from several studies. 30:21 Q. Okay. And does IARC not only consider 30:22 meta-analysis that are available in the public 30:23 literature, but does IARC in fact do their own 30:24 meta-analysis? 30:25 A. Sometimes.	Blair.25 BA2.11 BA2.11.1 BA2.12 BA2.12.1
31:12 - 31:14	Blair, Aaron 03-20-2017 (00:00:04) 31:12 And does IARC also review pooled 31:13 analysis?	Blair.26

Page/Line	Source	ID
32:16 - 32:19	31:14 A. Yes. Blair, Aaron 03-20-2017 (00:00:09)	Blair.27
	32:16 Q. All right. Going, if we would, to	BA2.13
	32:17 page 11 in the preamble for IARC, it tells us that	
	32:18 they use a criteria to establish causality, right,	BA2.13.1
	32:19 sir?	
32:23 - 32:23	Blair, Aaron 03-20-2017 (00:00:00)	Blair.28
	32:23 A. Yes.	
33:7 - 33:14	Blair, Aaron 03-20-2017 (00:00:24)	Blair.29
	33:7 Q. Okay. It says in the preamble for IARC:	BA2.13.2
	33:8 "If the risk increases with exposure, this is	
	33:9 considered a strong indication of causality."	
	33:10 Is that true, sir?	
	33:11 A. Yes.	
	33:12 Q. IARC also considers studies of cancer in	BA2.14.1
	33:13 experimental animals?	
	33:14 A. Yes.	
33:15 - 33:18	Blair, Aaron 03-20-2017 (00:00:13)	Blair.30
	33:15 Q. Page 15. In the preamble they discuss	BA2.17
	33:16 that IARC considers mechanistic and other relevant	BA2.17.1
	33:17 data. Is that right, sir?	
	33:18 A. Yes.	
34:6 - 34:9	Blair, Aaron 03-20-2017 (00:00:14)	Blair.31
	34:6 Q. And after -- even before this seven- to	
	34:7 nine-day working group meeting in France, does the	clear
	34:8 working group review materials in the time before	
	34:9 that?	
34:11 - 34:12	Blair, Aaron 03-20-2017 (00:00:03)	Blair.32
	34:11 THE WITNESS: The individuals on the	
	34:12 working group --	
34:13 - 34:21	Blair, Aaron 03-20-2017 (00:00:11)	Blair.33
	34:13 MR. MILLER: Yes.	
	34:14 THE WITNESS: -- review materials before	
	34:15 then.	
	34:16 BY MR. MILLER:	
	34:17 Q. Okay. And for what period of time	
	34:18 approximately do individuals in the working group	
	34:19 review material?	
	34:20 A. A couple of months. Three months. It's	
	34:21 a while.	

Page/Line	Source	ID
35:3 - 35:14	Blair, Aaron 03-20-2017 (00:00:36)	Blair.34
	35:3 Q. And there are different categories.	BA2.24
	35:4 There's 1, 2A, 2B, 3, that sort of thing?	BA2.24.1
	35:5 A. Yes.	
	35:6 Q. Okay. Category 2A is the agent is	BA2.24.2 -
	35:7 probably carcinogenic to humans, right?	BA2.24.3
	35:8 A. Yes.	
	35:9 Q. And carcinogenic means causes cancer,	
	35:10 right?	
	35:11 A. Yes.	
	35:12 Q. Okay. So -- and we're going to talk	
	35:13 about it in more detail, but you were selected for	clear
	35:14 the working group that looked at Roundup, right?	
35:18 - 35:21	Blair, Aaron 03-20-2017 (00:00:06)	Blair.35
	35:18 A. Yes.	
	35:19 Q. And your group -- I think there were 17	
	35:20 scientists on that group?	
	35:21 A. Sounds about right.	
35:24 - 36:1	Blair, Aaron 03-20-2017 (00:00:06)	Blair.36
	35:24 But that group decided that Roundup and	
	35:25 glyphosate was probably carcinogenic to humans,	
	36:1 right?	
36:7 - 36:7	Blair, Aaron 03-20-2017 (00:00:00)	Blair.37
	36:7 A. Yes.	
37:10 - 38:2	Blair, Aaron 03-20-2017 (00:00:36)	Blair.38
	37:10 Q. And the meeting occurred in Lyon, France,	BA3.1 - BA3.1.1
	37:11 March 3rd through 10th, 2015, right?	
	37:12 A. Yes.	BA3.1
	37:13 Q. And the list of participants -- I would	
	37:14 like to go over it for -- if I could, included Aaron	BA3.1.2
	37:15 Blair, National Cancer Institute, retired --	
	37:16 That's you, right, sir?	
	37:17 A. Yes.	
	37:18 Q. -- from the United States of America, and	
	37:19 you were the overall chair of the group, weren't you?	
	37:20 A. Yes.	
	37:21 Q. Okay. How much did they pay you for	
	37:22 that?	
	37:23 A. We're not paid.	
	37:24 Q. It's a volunteer assignment, isn't it?	

Page/Line	Source	ID
	37:25 A. Yes.	
38:4 - 38:4	38:1 Q. So you reviewed all these materials for 38:2 months. Right? Blair, Aaron 03-20-2017 (00:00:00)	Blair.39
38:8 - 38:12	38:4 THE WITNESS: Yes. Blair, Aaron 03-20-2017 (00:00:11) 38:8 Q. Spent seven to nine days -- I'm sorry, it 38:9 looks like seven days reviewing these materials with 38:10 these other scientists, and you volunteered and did 38:11 it all for free.	Blair.40
39:11 - 39:13	38:12 A. Other than travel expenses. Blair, Aaron 03-20-2017 (00:00:03)	Blair.41
39:14 - 39:17	39:11 Q. So how many subgroups are there or were 39:12 there in this particular group? 39:13 A. Four. Blair, Aaron 03-20-2017 (00:00:10)	Blair.42
	39:14 Q. Okay. And there were people from the 39:15 Environmental Protection Agency who volunteered and 39:16 served on this panel that concluded that glyphosate 39:17 was a probable cause of human cancer.	BA3.1.3
39:19 - 39:19	Blair, Aaron 03-20-2017 (00:00:00)	Blair.43
43:1 - 43:8	39:19 THE WITNESS: Yes. Blair, Aaron 03-20-2017 (00:00:13) 43:1 Q. And you think it was unanimous, but 43:2 you're not a hundred percent sure. Is that fair? 43:3 A. Yeah.	Blair.44
	43:4 Q. Now, I want to ask you, an invited 43:5 specialist, what is an invited specialist? 43:6 A. It may be that someone brings special 43:7 expertise so it would be of value to the working 43:8 group.	BA3.1.4
43:21 - 43:25	Blair, Aaron 03-20-2017 (00:00:11) 43:21 Q. But an invitation was extended to 43:22 Christopher Portier, who was from the Agency for 43:23 Toxic Substances and Disease Registry in the United 43:24 States.	Blair.45
	43:25 A. Yes.	BA3.1.5
44:14 - 44:19	Blair, Aaron 03-20-2017 (00:00:11) 44:14 Q. And there were observers 44:15 at the meeting. Now, what's the function of an	Blair.46
		BA3.2

Page/Line	Source	ID
	44:16 observer?	
	44:17 A. That usually means they are sort of	
	44:18 stakeholders in the issue being evaluated.	
	44:19 Q. Okay.	
44:21 - 44:25	Blair, Aaron 03-20-2017 (00:00:12)	Blair.47
	44:21 Q. And the Monsanto Company was allowed to	
	44:22 have an observer at the meeting, weren't they, sir?	
	44:23 A. Yeah.	
	44:24 Q. That was a Dr. Thomas Sorahan, right?	
	44:25 A. Yes.	
45:3 - 45:5	Blair, Aaron 03-20-2017 (00:00:02)	Blair.48
	45:3 Q. And did he -- was he allowed to speak up	
	45:4 at the meeting?	
	45:5 A. Yes.	
45:18 - 45:23	Blair, Aaron 03-20-2017 (00:00:18)	Blair.49
	45:18 Q. All right. So after this selection of	BA3.1.6
	45:19 these 17 people IARC put together, you were the	
	45:20 chairman. After months of review, a seven-day	
	45:21 meeting, there was a report issued. Is that fair to	
	45:22 say?	
	45:23 A. Yes.	
46:2 - 46:3	Blair, Aaron 03-20-2017 (00:00:04)	Blair.50
	46:2 Q. Let's take a look at what I	
	46:3 believe to be the IARC report for glyphosate.	BA4.1
46:10 - 46:16	Blair, Aaron 03-20-2017 (00:00:10)	Blair.51
	46:10 Q. This is a report from IARC for	
	46:11 glyphosate?	BA4.1.1
	46:12 A. Okay. Yes.	
	46:13 Q. Yes? Okay.	
	46:14 And glyphosate is the active ingredient	
	46:15 in Roundup?	
	46:16 A. Yes, sir.	
47:15 - 47:18	Blair, Aaron 03-20-2017 (00:00:08)	Blair.52
	47:15 IARC studied obviously the drug in humans	
	47:16 and studied it in exposed humans. That's a fair	
	47:17 statement?	
	47:18 A. Yes.	
48:13 - 48:18	Blair, Aaron 03-20-2017 (00:00:09)	Blair.53
	48:13 Q. Okay. So you not only	
	48:14 chaired the entire panel but you subchaired the	

Page/Line	Source	ID
	48:15 epidemiology section.	
	48:16 A. I was on the epidemiology --	
	48:17 Q. I'm sorry. Well, was there a subchair?	
	48:18 A. There was.	
49:16 - 49:16	Blair, Aaron 03-20-2017 (00:00:01)	Blair.54
	49:16 Let's look at the epidemiology then.	
49:23 - 50:6	Blair, Aaron 03-20-2017 (00:00:28)	Blair.55
	49:23 Q. Okay. Going to page 78 of your report,	BA4.78
	49:24 "Cancer in Humans." We're on page 78. Do you see	BA4.78.1
	49:25 this, Doctor?	
	50:1 It says: "There is limited evidence in	
	50:2 humans for the carcinogenicity of glyphosate. A	
	50:3 positive association has been observed for	
	50:4 non-Hodgkin's lymphoma."	
	50:5 What does a "positive association" mean,	
	50:6 sir?	
50:10 - 50:14	Blair, Aaron 03-20-2017 (00:00:09)	Blair.56
	50:10 A. It means there were studies that showed	
	50:11 an excess risk for people exposed.	
	50:12 Q. And that would include the	
	50:13 epidemiological studies that were done.	
	50:14 A. Yes.	
50:19 - 50:25	Blair, Aaron 03-20-2017 (00:00:19)	Blair.57
	50:19 Your report goes on to say: "There is	BA4.78.4
	50:20 strong evidence that exposure to glyphosate or	
	50:21 glyphosate-based formulations is genotoxic based on	
	50:22 studies in humans in vitro and studies in	
	50:23 experimental animals."	
	50:24 That's what your 17-expert committee	
	50:25 found?	
51:2 - 51:2	Blair, Aaron 03-20-2017 (00:00:00)	Blair.58
	51:2 THE WITNESS: Yes.	
53:22 - 53:25	Blair, Aaron 03-20-2017 (00:00:13)	Blair.59
	53:22 Q. So then moving on in time, the	BA4.18.1
	53:23 next study we see on your chart for non-Hodgkin's	
	53:24 lymphoma is a study by De Roos in 2003, right?	
	53:25 A. Yeah.	
54:12 - 54:19	Blair, Aaron 03-20-2017 (00:00:28)	Blair.60
	54:12 Q. Okay. And Dr. De Roos and others in this	
	54:13 peer-reviewed journal studied people who were exposed	

Page/Line	Source	ID
54:14 to 54:15	to glyphosate in Nebraska, Iowa, Minnesota, Kansas, from the period 1979 to 1986, right?	
54:16	A. Yes.	
54:17	Q. And what they found was that there was	
54:18	over a doubling of the risk of non-Hodgkin's lymphoma	
54:19	for people who had been exposed to glyphosate, right?	
55:2 - 55:7	Blair, Aaron 03-20-2017 (00:00:08)	Blair.61
55:2	THE WITNESS: Yes.	
55:3	BY MR. MILLER:	
55:4	Q. Is it -- is this finding of a doubling of	
55:5	the risk of non-Hodgkin's lymphoma, is it	
55:6	statistically significant?	
55:7	A. Yes.	
55:10 - 55:14	Blair, Aaron 03-20-2017 (00:00:12)	Blair.62
55:10	Q. Is this one of the pieces of evidence	
55:11	upon which your committee based their opinion there	
55:12	was a positive association between exposure to	
55:13	glyphosate and non-Hodgkin's lymphoma?	clear
55:14	A. Yes.	
56:6 - 56:8	Blair, Aaron 03-20-2017 (00:00:04)	Blair.63 BA4.19.1
56:6	There was a study from Canada called the	
56:7	McDuffie study, right, sir?	
56:8	A. Yes.	
56:12 - 56:20	Blair, Aaron 03-20-2017 (00:00:29)	Blair.64
56:12	Q. And they examined people who had been	
56:13	exposed to glyphosate from 1991 to 1994, right, sir?	
56:14	A. They examined cases who occurred in that	
56:15	time period, I think, who might have been exposed.	
56:16	Q. Yes, sir. And they did exposure,	
56:17	unexposed. They did people that had been exposed for	
56:18	zero to two days and for people who had been exposed	
56:19	to greater than two days in that time period, right?	
56:20	A. Yes.	
57:6 - 57:9	Blair, Aaron 03-20-2017 (00:00:09)	Blair.65
57:6	But for people that were exposed for	
57:7	greater than two days, they found a doubling of the	
57:8	risk of non-Hodgkin's lymphoma from exposure to	
57:9	Roundup or glyphosate?	
57:10 - 57:10	Blair, Aaron 03-20-2017 (00:00:00)	Blair.66
57:10	A. Yes.	

Page/Line	Source	ID
57:13 - 57:15	Blair, Aaron 03-20-2017 (00:00:04) 57:13 Q. And they found that was statistically 57:14 significant, that is to say it did not occur by 57:15 chance?	Blair.67
57:17 - 57:18	Blair, Aaron 03-20-2017 (00:00:01) 57:17 THE WITNESS: Outside the realm of 57:18 chance.	Blair.68
60:25 - 61:6	Blair, Aaron 03-20-2017 (00:00:24) 60:25 Q. All right. So now we go to the next page 61:1 of your table where you report on the study of 61:2 Eriksson, an epidemiological study on non-Hodgkin's 61:3 lymphoma published in 2008, and exposure to any 61:4 glyphosate, they've got a doubling of the risk of 61:5 non-Hodgkin's lymphoma statistically significant, 61:6 right?	Blair.69 BA4.23 BA4.23.1
61:8 - 61:8	Blair, Aaron 03-20-2017 (00:00:00) 61:8 THE WITNESS: Yes.	Blair.70
62:23 - 63:2	Blair, Aaron 03-20-2017 (00:00:12) 62:23 Q. All right, sir. 62:24 And for greater than ten days per year 62:25 use, what did the Eriksson study reveal about 63:1 non-Hodgkin's lymphoma after exposure to ten days of 63:2 glyphosate?	Blair.71
63:4 - 63:9	Blair, Aaron 03-20-2017 (00:00:11) 63:4 THE WITNESS: For this category of use, 63:5 it was -- the relative risk was 2.36, which was 63:6 statistically significant. 63:7 BY MR. MILLER: 63:8 Q. And 2.36 would be how much of an increase 63:9 in risk?	Blair.72
63:11 - 63:22	Blair, Aaron 03-20-2017 (00:00:27) 63:11 THE WITNESS: It's better if you just say 63:12 the relative risk. It's the relative risk is 2.36. 63:13 BY MR. MILLER: 63:14 Q. Okay. Would it be -- 63:15 A. It's more than doubling. 63:16 Q. It's more than doubling. All right. 63:17 And what is dose response? 63:18 A. As level of exposure goes up, the risk or 63:19 relative risk goes up.	Blair.73

Page/Line	Source	ID
63:25 - 63:25	63:20 Q. Did we see dose response here in the 63:21 Eriksson study for non-Hodgkin's lymphoma in exposure 63:22 to Roundup? Blair, Aaron 03-20-2017 (00:00:00)	Blair.74
64:2 - 64:10	63:25 THE WITNESS: Yes. Blair, Aaron 03-20-2017 (00:00:20) 64:2 Q. And the preamble to IARC said dose 64:3 response was strong evidence of causality; is that 64:4 true? 64:5 A. Yes. 64:6 Q. All right. Let's go to lymphatic -- I'm 64:7 sorry, lymphocytic lymphoma B-cell. Do you see that? 64:8 A. Yes. 64:9 Q. Exposure to glyphosate? 64:10 A. Yes.	Blair.75 BA2.13.2 BA4.23.2
64:13 - 64:21	Blair, Aaron 03-20-2017 (00:00:25) 64:13 Q. Tell us what the findings were by 64:14 Eriksson. 64:15 A. For this subgroup of lymphoma, the 64:16 relative risk was 3.35, which was statistically 64:17 significant, because the confidence interval, the 64:18 lower level was greater than 1.0. 64:19 Q. And I know you don't like to put a 64:20 percentage on it, but would that be a 300 percent 64:21 increased risk?	Blair.76
64:23 - 64:25	Blair, Aaron 03-20-2017 (00:00:01) 64:23 THE WITNESS: Roughly. 64:24 BY MR. MILLER: 64:25 Q. Yes, sir. Okay.	Blair.77
65:1 - 65:8	Blair, Aaron 03-20-2017 (00:00:21) 65:1 And unspecified non-Hodgkin's lymphoma 65:2 and exposure to glyphosate, what were the findings, 65:3 and were they statistically significant? 65:4 A. The relative risk was 5.63, and the 65:5 confidence interval did not include 1.0, so it was 65:6 statistically significant. 65:7 Q. Would that be synonymous with a five 65:8 times risk?	Blair.78 BA4.23.3
65:9 - 65:9	Blair, Aaron 03-20-2017 (00:00:00) 65:9 A. Roughly.	Blair.79

Page/Line	Source	ID
67:21 - 67:23	Blair, Aaron 03-20-2017 (00:00:08) 67:21 Q. Okay. There was only one cancer that the 67:22 committee found to be associated with glyphosate, 67:23 right?	Blair.80 clear
67:25 - 67:25	Blair, Aaron 03-20-2017 (00:00:00) 67:25 THE WITNESS: Yes.	Blair.81
68:2 - 68:5	Blair, Aaron 03-20-2017 (00:00:07) 68:2 Q. And that's non-Hodgkin's lymphoma? 68:3 A. Correct. 68:4 Q. And the mechanistic evidence was what, 68:5 sir?	Blair.82
68:11 - 68:12	Blair, Aaron 03-20-2017 (00:00:06) 68:11 A. That it was genotoxic and had another 68:12 possible effect with oxidative stress.	Blair.83 BA4.78.5
69:21 - 70:4	Blair, Aaron 03-20-2017 (00:00:23) 69:21 Q. Okay. Now, for the first time we're 69:22 talking about a study here, the AHS study. I want to 69:23 ask you about it: "The AHS cohort did not show a 69:24 significantly increased risk of non-Hodgkin's 69:25 lymphoma." 70:1 So there was a study that did not show 70:2 the association between -- between glyphosate and 70:3 non-Hodgkin's lymphoma, right? 70:4 A. Yes.	Blair.84 BA5.2.1
70:7 - 70:13	Blair, Aaron 03-20-2017 (00:00:14) 70:7 Q. And in fact, you were the author of that 70:8 study, or one of them, right, sir? 70:9 A. One of the authors. 70:10 Q. And in spite of being the author of the 70:11 study that didn't show the association, you voted 70:12 that in fact there was an association based on the 70:13 totality of the evidence, right, sir?	Blair.85 clear
70:15 - 70:20	Blair, Aaron 03-20-2017 (00:00:20) 70:15 THE WITNESS: Yes. 70:16 BY MR. MILLER: 70:17 Q. Okay. All right. "And glyphosate has 70:18 been detected in the blood and urine of agricultural 70:19 workers indicating absorption." 70:20 What does that mean, sir?	Blair.86 BA5.2.2
70:25 - 71:4	Blair, Aaron 03-20-2017 (00:00:06)	Blair.87

Page/Line	Source	ID
85:17 - 85:23	<p>70:25 A. If it's in the blood, it had to get there 71:1 somehow. 71:2 Q. Sure. 71:3 A. So it had to be absorbed through some 71:4 tissue.</p> <p>Blair, Aaron 03-20-2017 (00:00:17)</p>	<p>Blair.88 BA9.1 - BA9.1.1</p>
86:3 - 86:12	<p>85:17 Q. All right. This is a publication "IARC 85:18 Monographs: 40 Years of Evaluating Carcinogenic 85:19 Hazards to Humans." 85:20 Do you remember that? 85:21 A. Yes. 85:22 Q. And you're one of the authors? 85:23 A. Yes.</p> <p>Blair, Aaron 03-20-2017 (00:00:25)</p>	<p>Blair.89</p>
86:13 - 86:21	<p>86:3 Basically, what you were looking at here 86:4 was to look historically at IARC's findings to see if 86:5 they had gotten it right or wrong over the years. Is 86:6 that a fair assessment? 86:7 A. And to discuss the process that they go 86:8 through. 86:9 Q. And what you concluded, and correct me if 86:10 I'm wrong, was -- was that IARC got it right most of 86:11 the time, or wrong? 86:12 A. That they get it right most of the time.</p> <p>Blair, Aaron 03-20-2017 (00:00:29)</p>	<p>Blair.90 BA9.2.1</p>
86:22 - 86:24	<p>86:13 Q. It says, for background: "Some critics 86:14 have claimed that IARC working groups, failures to 86:15 recognize study weaknesses and biases of working 86:16 group members, have led to inappropriate 86:17 classification of a number of agents as carcinogenic 86:18 to humans." 86:19 That was the background for which caused 86:20 you to want to research this subject, right? 86:21 A. Yes.</p> <p>Blair, Aaron 03-20-2017 (00:00:05)</p>	<p>Blair.91</p>
87:4 - 87:8	<p>86:22 Q. And what did you do to investigate this 86:23 to see if in fact IARC had been getting it right more 86:24 often than not?</p> <p>Blair, Aaron 03-20-2017 (00:00:17)</p> <p>87:4 A. Well, we looked at the process that IARC</p>	<p>Blair.92</p>

Page/Line	Source	ID
87:9 - 87:11	87:5 followed, the historical examples of what they had 87:6 done, and whether or not later changes were made to 87:7 the evaluations to indicate general agreement with 87:8 what IARC had done or not.	Blair.93
	Blair, Aaron 03-20-2017 (00:00:07) 87:9 Q. And you concluded, "you" being this group 87:10 of scientists, concluded that these recent criticisms 87:11 are unconvincing, right?	BA9.2.2
87:14 - 87:14	Blair, Aaron 03-20-2017 (00:00:00)	Blair.94
	87:14 THE WITNESS: Yes.	
87:16 - 87:17	Blair, Aaron 03-20-2017 (00:00:03)	Blair.95
	87:16 Q. I'm not real good with numbers, but I'm	BA9.1
	87:17 going to give it a try. One, two	BA9.1.3
87:17 - 87:19	Blair, Aaron 03-20-2017 (00:00:04)	Blair.96
	87:17 going to give it a try. One, two -- there's over 110	
	87:18 scientists that authored this paper.	
	87:19 A. Right.	
89:24 - 90:20	Blair, Aaron 03-20-2017 (00:01:00)	Blair.97
	89:24 Q. Let's start off where you left off with	
	89:25 plaintiffs' counsel. You have been doing research	
	90:1 regarding cancer in farmers for, what, 40 years now?	
	90:2 A. Close.	
	90:3 Q. And, in fact, you have publications on	
	90:4 cancer and hematopoietic cancers in farmers dating	
	90:5 back, from my research, at least to 1979?	
	90:6 A. Yes.	
	90:7 Q. And there have been epidemiological	
	90:8 studies that have associated farming with	
	90:9 hematopoietic cancers and non-Hodgkin lymphoma dating	
	90:10 back to the 1960s, right?	
	90:11 A. Yes.	
	90:12 Q. And that was well before glyphosate was	
	90:13 on the market, correct?	
	90:14 A. Yes.	
	90:15 Q. So it's fair to say that there is some --	
	90:16 something going on with farmers that appears to be	
	90:17 associated with an increased risk of non-Hodgkin	
	90:18 lymphoma that predated glyphosate being on the scene,	
	90:19 right?	
	90:20 A. Yes.	

Page/Line

Source

ID

90:24 - 91:3

Blair, Aaron 03-20-2017 (00:00:10)

Blair.98

90:24 There is something going on with farmers
 90:25 and their exposures that is leading to an increased
 91:1 risk of non-Hodgkin lymphoma that we know for a fact
 91:2 can't be glyphosate, correct?
 91:3 A. Yes.

91:23 - 96:7

Blair, Aaron 03-20-2017 (00:04:32)

Blair.99

91:23 Q. Okay. But when you're studying
 91:24 glyphosate in epidemiology, when you're focusing on
 91:25 glyphosate in farmers, you want to make sure that you
 92:1 control -- that you can control for those other
 92:2 possible confounders to be sure that you are actually
 92:3 studying glyphosate, correct?
 92:4 A. Yes.
 92:5 Q. Now, your research into farmers has
 92:6 included both case -- what's called case-control
 92:7 studies and cohort studies, correct?
 92:8 A. Yes.
 92:9 Q. And you played a significant role -- I
 92:10 think this was referred to briefly in your testimony
 92:11 with questions from plaintiffs' counsel -- about the
 92:12 formation of the Agricultural Health Study, correct?
 92:13 A. Correct.
 92:14 Q. And the Agricultural Health Study is a
 92:15 collaborative effort involving the National Cancer
 92:16 Institute, the National Institute of Environmental
 92:17 Health Sciences, and the United States Environmental
 92:18 Protection Agency, correct?
 92:19 A. Those three, and also the National
 92:20 Institute of Occupational Safety and Health, and the
 92:21 University of Iowa.
 92:22 Q. And the Agricultural Health Study is
 92:23 what's called a cohort study, correct?
 92:24 A. Yes.
 92:25 Q. And that is when you get a group of
 93:1 individuals, and in this case, farmers, correct?
 93:2 A. Yes.
 93:3 Q. And you --
 93:4 A. And their spouses.
 93:5 Q. And their spouses.

93:6 And you find out various exposures
93:7 they've had, various facts about them before they
93:8 have any -- the disease in question that you're going
93:9 to be studying, correct?
93:10 A. Correct.
93:11 Q. And then you follow them over time to
93:12 determine whether or not that disease develops --
93:13 A. Yes.
93:14 Q. -- or certain diseases develop?
93:15 And in this case you brought together --
93:16 how many -- how many farmers and their wives did you
93:17 gather information on in your study?
93:18 A. About 80,000.
93:19 Q. And for those 80,000 then, you obtained
93:20 information about all sorts of different exposures
93:21 that they may have had, correct?
93:22 A. Yes.
93:23 Q. And that included obtaining information
93:24 regarding any exposures to glyphosate, correct?
93:25 A. Yes.
94:1 Q. And at the time you gathered that
94:2 information, you were not -- you were looking at
94:3 exposures, historical exposures going back in time,
94:4 correct?
94:5 A. Yes.
94:6 Q. And the Agricultural Health Study was
94:7 initiated and formed to address some of the
94:8 limitations in the earlier case-control studies that
94:9 had been conducted regarding risks of pesticides or
94:10 other exposures in farmers, correct?
94:11 A. It -- it was initiated and formed to
94:12 provide a different design to look at the same issue.
94:13 Q. It was initiated, at least in part, to
94:14 address some of the limitations of the case-control
94:15 studies, correct?
94:16 A. Yes.
94:17 Q. And, for example, one of the limitations
94:18 of the case-control studies was something called
94:19 recall bias, correct?
94:20 A. It's a potential limitation.

94:21 Q. The Agricultural Health Study was
 94:22 initiated in order to have a study that was examining
 94:23 the possibility of exposures, for example, glyphosate
 94:24 and non-Hodgkin lymphoma that did not have this
 94:25 problem with recall bias, correct?

95:1 A. Correct.

95:2 Q. The issue of recall bias is that when you
 95:3 are asking individuals who have a disease already
 95:4 about their past exposures, the concern is that they
 95:5 will recall more exposures than people who don't have
 95:6 the disease, correct?

95:7 A. That's a concern.

95:8 Q. If you have recall bias, then you're
 95:9 going to have an artificial increase in that odds
 95:10 ratio, those numbers we were looking at previously,
 95:11 that is due to the fact that the individual with
 95:12 cancer just recalls more exposures, not that he
 95:13 actually had more exposures, right?

95:14 A. Of course, it actually depends on the direction of
 95:15 the bias. It can be either direction.

95:16 Q. But for recall bias, if a person with
 95:17 cancer recalls more exposures than a person who
 95:18 doesn't have cancer and hasn't been thinking about
 95:19 that --

95:20 A. If they record more exposures, that would
 95:21 be true. If they recalled less, it would be the
 95:22 other direction.

95:23 Q. Understood. And so the Agricultural
 95:24 Health Study was designed to avoid that problem
 95:25 altogether, correct?

96:1 A. Correct.

96:2 Q. The Agricultural Health Study was also
 96:3 designed to try and deal with issues of
 96:4 misclassification of exposures by going to farmers
 96:5 who you -- you testified earlier have better recall
 96:6 and also periodic follow-up, correct?

96:7 A. Yes.

96:11 - 97:3

Blair, Aaron 03-20-2017 (00:00:57)

Blair.100

96:11 But at the time of enrollment, the
 96:12 members of the AHS cohort had an average of about 15

96:13 years of experience mixing or applying pesticides,
 96:14 correct?
 96:15 A. Sounds about right.
 96:16 Q. And you have been -- just to step back,
 96:17 you've been researching the issues of potential
 96:18 association between pesticides and cancer for nearly
 96:19 your entire professional career, correct?
 96:20 A. Correct.
 96:21 Q. The effort to determine pesticides that
 96:22 might be associated with cancer has been your life's
 96:23 work, correct?
 96:24 A. Well, one of them.
 96:25 Q. You certainly invested a lot of time into
 97:1 looking for potential expose -- associations between
 97:2 pesticides and hematopoietic cancers, correct?
 97:3 A. Yes.

102:15 - 103:16

Blair, Aaron 03-20-2017 (00:01:06)

Blair.101

102:15 Q. And I think you stated that maybe three
 102:16 months before the meeting, individuals on the working
 102:17 group would be tasked to look at certain parts of the
 102:18 science with respect to the various pesticides that
 102:19 were being reviewed, correct?
 102:20 A. To look at the certain parts of?
 102:21 Q. Certain parts of the scientific
 102:22 literature.
 102:23 A. Yes, right.
 102:24 Q. The members of the working group would
 102:25 not be looking at all the scientific literature on a
 103:1 pesticide before they went to the meeting, correct?
 103:2 For example, you didn't look at anything outside of
 103:3 epidemiology, correct?
 103:4 A. Up until shortly before the meeting when
 103:5 drafts, other drafts were distributed on it.
 103:6 Q. Okay.
 103:7 A. But mainly you focused on your discipline
 103:8 and the working group you were in, yes.
 103:9 Q. Is it also fair to say that prior to that
 103:10 week -- that one-week meeting, you would be focusing
 103:11 on specific assignments that had been given to you to
 103:12 write certain parts of the Monograph?

Page/Line	Source	ID
114:13 - 114:21	<p>103:13 A. That would be the main focus, not the 103:14 only focus. And the next focus is the subgroup 103:15 you're in, to look at that literature because that's 103:16 where your expertise lies.</p> <p>Blair, Aaron 03-20-2017 (00:00:24)</p>	Blair.102
115:12 - 116:3	<p>114:13 The -- the work that was being done 114:14 during that three-month period before the meeting, 114:15 the responsibility was to assemble the data and put 114:16 into tables. It was not to come up with an 114:17 evaluation during that prior period, correct? 114:18 A. Right. 114:19 Q. So the evaluation process doesn't begin 114:20 until the start of that one-week period, correct? 114:21 A. Correct.</p> <p>Blair, Aaron 03-20-2017 (00:00:30)</p> <p>115:12 Q. So you would have maybe a day or two of 115:13 analysis and evaluation that went into the IARC 115:14 working group's classification of glyphosate, 115:15 correct? 115:16 A. Roughly correct. 115:17 Q. So -- 115:18 A. But spread over the five days. 115:19 Q. Right. 115:20 A. So it -- you know, it's important that 115:21 it's not just done this day and then it's done. 115:22 Q. Right. 115:23 A. It's done, you look at it, you think 115:24 about it, you come back to it, you look at it and 115:25 think about it, you come back to it. 116:1 Q. Right. 116:2 A. That's a different process than just you 116:3 got this day.</p>	Blair.103
117:16 - 117:18	<p>Blair, Aaron 03-20-2017 (00:00:05)</p> <p>117:16 The evaluation analysis only takes place 117:17 during that one-week period, correct? 117:18 A. Yes.</p>	Blair.104
119:13 - 120:19	<p>Blair, Aaron 03-20-2017 (00:01:36)</p> <p>119:13 Q. So just so I'm clear, the IARC working 119:14 group, both the subgroup and the full working group, 119:15 determined that the evidence of glyphosate with</p>	Blair.105

119:16 respect to non-Hodgkin lymphoma was limited, correct?

119:17 A. For epidemiology, yes.

119:18 Q. The term "limited" as used by IARC, and

119:19 as you understood it when you were making that

119:20 finding, is that epidemiology -- epidemiology studies

119:21 have found an association between glyphosate and

119:22 cancer, but that chance, bias and confounding could

119:23 not be excluded as explanations for the finding,

119:24 correct?

119:25 A. Correct.

120:1 Q. Now, you had previously in your previous

120:2 answer talked about the separate evaluation that IARC

120:3 came to as far as overall the 2A classification,

120:4 correct? So epidemiology is a part of that, right?

120:5 A. Yes.

120:6 Q. But the 2A classification for glyphosate

120:7 was based, at least in part, on a separate

120:8 determination regarding the animal studies, correct?

120:9 A. Yes.

120:10 Q. The 2A classification for glyphosate is

120:11 based upon the determination that the animal studies

120:12 provided strong evidence of carcinogenicity in

120:13 animals for glyphosate, correct?

120:14 A. Yes, that's as I recall it. Because now

120:15 you're going to the subgroup --

120:16 Q. Right.

120:17 A. -- that I didn't sit in on, you know, and

120:18 I just have to remember what they said. Yes, I think

120:19 that's right.

128:20 - 129:5

Blair, Aaron 03-20-2017 (00:00:33)

Blair.106

128:20 Q. And you discussed earlier that pursuant

128:21 to the preamble for IARC, IARC only considers

128:22 scientific literature that is peer-reviewed or

128:23 made-publicly-available regulatory documents; is that

128:24 correct?

128:25 A. Not just regulatory. It's peer reviewed

129:1 or publicly available is the key thing.

129:2 Q. Understood. Prior to Monograph 112 --

129:3 the Monograph 112 working group meeting, you were

129:4 aware of unpublished epidemiological data regarding

Page/Line	Source	ID
129:6 - 129:8	129:5 glyphosate and hematopoietic cancers, correct? Blair, Aaron 03-20-2017 (00:00:07)	Blair.107
131:18 - 131:21	129:6 A. Well, I'm hesitating because it means 129:7 were we working on the pooled analysis at that time, 129:8 which I think was probably true. Blair, Aaron 03-20-2017 (00:00:11)	Blair.108
131:22 - 131:22	131:18 Q. In this October 23rd e-mail, Dr. Pahwa 131:19 provides a summary of a meeting you guys had on 131:20 October 20 in which you discussed in part the 131:21 possibility of getting some -- I will focus this Blair, Aaron 03-20-2017 (00:00:02)	4751.1 4751.1.1 Blair.109
131:23 - 133:6	131:22 because it's getting out of focus. Blair, Aaron 03-20-2017 (00:01:19) 131:23 Dr. Pahwa is recounting a discussion that 131:24 you had on October 20 about the possibility of 131:25 getting some NAPP data on glyphosate published in 132:1 time for consideration by the Monograph 112 working 132:2 group, correct? 132:3 A. Yes. 132:4 Q. And during this meeting, you explained 132:5 your role on the Monograph 112 working group and the 132:6 deadline for getting data published for consideration 132:7 by the working group in its evaluation of glyphosate, 132:8 correct? 132:9 A. Well, is it in here somewhere? 132:10 Q. Yes. 132:11 A. You're saying -- 132:12 Q. I'm sorry. It's the final bullet on the 132:13 first page, and it's highlighted on the document, but 132:14 it starts: "Aaron will be" -- the final bullet. 132:15 A. Okay. Closing date. All right. Yes. 132:16 Q. "Aaron will be on the IARC" -- 132:17 A. Yeah. 132:18 Q. -- "Monograph 112 working group on 132:19 March 3rd to 10 to help evaluate malathion, 132:20 parathion" -- 132:21 A. Yeah, okay. 132:22 Q. -- "diazinon, glyphosate," et cetera. 132:23 "The closing date for data is February 3rd. Manisha 132:24 has agreed to lead an analysis of glyphosate and NHL,	Blair.110 4751.1.2

Page/Line	Source	ID
139:13 - 139:21	<p>132:25 MM and HL risks. She will submit her proposal to the 133:1 NAPP executive committee by October 24th. Once 133:2 approved, a progress check will be done in a month to 133:3 determine if it's feasible to meet the February 3rd 133:4 deadline. NHL is the priority cancer site." 133:5 You see that? 133:6 A. Yeah.</p> <p>Blair, Aaron 03-20-2017 (00:00:28)</p>	4751.2.1
139:13 - 139:21	<p>139:13 Q. Dr. Harris reports back to the group that 139:14 the North American Pooled Project data did not show 139:15 an elevated risk for multiple myeloma associated with 139:16 glyphosate, correct? 139:17 A. Yes.</p>	4789.1.1
139:22 - 141:11	<p>139:18 Q. The adjusted odds ratio for multiple 139:19 myeloma for ever and never use of glyphosate was 1.23 139:20 with confidence intervals of 0.86 to 1.76, correct? 139:21 A. Yes.</p> <p>Blair, Aaron 03-20-2017 (00:01:31)</p>	4789.1.2
139:22 - 141:11	<p>139:22 Q. That's what epidemiologists refer to as a 139:23 null finding, correct? 139:24 A. No, that's not what they refer to as a 139:25 null finding. 140:1 Q. Not the -- 140:2 A. That's what they refer to as an excess 140:3 that isn't statistically significant. 140:4 Q. A nonstatistically significant finding, 140:5 correct? 140:6 A. Nonstatistically significant excess. 140:7 Q. Okay. So there was no statistically 140:8 significant association between glyphosate exposure 140:9 and multiple myeloma in the NAPP data, correct? 140:10 A. Correct. 140:11 Q. Dr. Harris also reports results with 140:12 proxy respondents excluded, correct? The last three 140:13 columns in her table? 140:14 A. Yes. 140:15 Q. A proxy is a next of kin or a spouse, not 140:16 the actual individual who had the potential exposure, 140:17 correct? 140:18 A. Correct.</p>	4789.1.3

Page/Line

Source

ID

140:19 Q. And generally speaking, self-reported
140:20 data of the individual who had the exposure is
140:21 considered more reliable than proxy reported exposure
140:22 data, correct?

140:23 A. Correct.

140:24 Q. When proxy respondents were excluded, the
140:25 NAP data -- NAPP data showed that the odds ratio for
141:1 ever/never use of glyphosate and multiple myeloma was
141:2 0.97 with confidence intervals of 0.63 to 1.48,
141:3 correct?

4789.1.4

141:4 A. Right.

141:5 Q. So using the most reliable exposure data,
141:6 there was no suggestion whatsoever of any increased
141:7 risk of multiple myeloma with glyphosate exposure,
141:8 correct?

141:9 A. Correct.

141:10 Q. So that was a null finding, correct?

141:11 A. Yes.

142:3 - 144:14

Blair, Aaron 03-20-2017 (00:02:36)

Blair.113

142:3 Q. And then the second paragraph, the last
142:4 sentence, starting at the end of line 2: "I expect
142:5 we will have a draft to review in the next few weeks
142:6 and a paper could be submitted early in the new year
142:7 or before." Correct?

4789.1.5

142:8 A. Okay. Yes.

142:9 Q. And you were copied on obviously this
142:10 e-mail that sets forth the NAPP data for glyphosate
142:11 and multiple myeloma, correct?

142:12 A. Correct.

142:13 Q. But despite the fact that you had this
142:14 data and it was in a form that could be submitted for
142:15 review and submitted for publication in time for the
142:16 IARC Monograph, this data was not in fact published
142:17 in time for the IARC Monograph 112 review, was it?

clear

142:18 A. I think not.

142:19 Q. In fact, the data was not published until
142:20 June of 2016, some twenty months later and well after
142:21 the IARC working group had conducted its review of
142:22 glyphosate, correct?

142:23 A. And I don't think it was submitted to --

142:24 it can be submitted to IARC if it's accepted for
142:25 publication, but I don't think this was. So I think
143:1 your answer -- your comments are correct.
143:2 Q. Now, the June 2000 --
143:3 A. And I just want to make the point that it
143:4 doesn't have to be published, it has to be accepted,
143:5 which means it's available from the journal.
143:6 Q. Good clarification. So if you had -- you
143:7 and the other NAPP investigators had submitted this
143:8 data, it could have been considered by the IARC
143:9 working group even if it hadn't been published yet?
143:10 A. If it had been accepted by the journal
143:11 and up on the journal's website, which happens to --
143:12 actually, one of the papers I got is the website
143:13 version. It is the same thing as the published one.
143:14 Q. But you guys didn't -- you guys didn't do
143:15 that. You didn't get this data in a position that
143:16 the IARC working group could consider it, correct?
143:17 A. Correct.
143:18 Q. And -- but you were obviously aware of
143:19 this data during the IARC working group
143:20 deliberations, right?
143:21 A. Yes.
143:22 Q. Did you mention the NAPP findings of no
143:23 association between glyphosate and multiple myeloma
143:24 to any of your fellow working group members during
143:25 the Monograph 112 deliberations?
144:1 A. I don't think so. But I don't recall for
144:2 sure. It wasn't published.
144:3 Q. Just to be clear, it wasn't published
144:4 because you guys decided not to publish it, correct?
144:5 A. Because we didn't go through the process
144:6 to get everything ready to send it off for
144:7 publication. It's still not a sure thing, you
144:8 understand. You make it sound like you decide, then
144:9 it's done for sure. No, that's not the case. You
144:10 work on it, you look at it, you revise, you send it
144:11 to the journal to get reviews back from authors of --
144:12 the reviewers at the journal and so forth, and all
144:13 that goes into the decision of whether you can make

Page/Line	Source	ID
145:14 - 145:17	144:14 it, and we didn't do that. That is correct. Blair, Aaron 03-20-2017 (00:00:03) 145:14 (Blair Exhibit No. 16 was marked for 145:15 identification.) 145:16 MR. MILLER: 16? 145:17 MR. LASKER: 16.	Blair.114 5637.1
145:18 - 146:5	Blair, Aaron 03-20-2017 (00:00:40) 145:18 BY MR. LASKER: 145:19 Q. And, Dr. Blair, this is a presentation 145:20 that the North American Pooled project investigators, 145:21 including yourself, made with respect to what the 145:22 NAPP data showed for glyphosate and non-Hodgkin 145:23 lymphoma, correct? 145:24 A. Yeah. Yes. 145:25 Q. And this was presented on June 2015, 146:1 which was after the IARC -- a few months after the 146:2 IARC Monograph 112 meeting, correct? 146:3 A. Right. 146:4 Q. Now, if I can direct you to the first 146:5 data table in this log deck, and it's a few pages in,	Blair.115 5637.1.1
146:6 - 146:6	Blair, Aaron 03-20-2017 (00:00:02) 146:6 and specifically -- so it would be this table right	5637.12.1 Blair.116
146:7 - 146:8	Blair, Aaron 03-20-2017 (00:00:01) 146:7 here (indicating). Okay. We will put it up on the 146:8 screen.	Blair.117
146:13 - 147:13	Blair, Aaron 03-20-2017 (00:01:13) 146:13 Q. So the -- this table presents data on 146:14 what the North American Pooled Project had found with 146:15 respect to glyphosate use and non-Hodgkin lymphoma 146:16 risks, correct? 146:17 A. Yes. 146:18 Q. And the first -- the overall odds ratio 146:19 for ever/never use of glyphosate and non-Hodgkin 146:20 lymphoma in the North American Pooled Project is 1.22 146:21 with confidence intervals of 0.91 to 1.63, correct? 146:22 A. Correct. 146:23 Q. So this is basically the same finding 146:24 that the NAPP had made with respect to multiple 146:25 myeloma back in October of 2014, almost exact same 147:1 odds ratios, not statistically significant, correct?	Blair.118

147:2 A. The odds ratio that are similar, right?

147:3 Q. Yes.

147:4 A. Is that your point?

147:5 Q. Yes.

147:6 A. Yes.

147:7 Q. And not statistically significant,

147:8 correct?

147:9 A. Yes.

147:10 Q. And just like with the multiple myeloma

147:11 analysis we looked at before, we also have an

147:12 analysis that breaks out proxies and looks only at

147:13 the most reliable exposure data, and I think that is

5637.16.1

147:14 - 148:22

Blair, Aaron 03-20-2017 (00:01:37)

Blair.119

147:14 the table that looks like this (indicating). I

147:15 apologize, there's not -- there are no page numbers

147:16 here.

147:17 A. Okay.

147:18 Q. But in this analysis, proxy by

147:19 self-respondents, just as with multiple myeloma

147:20 finding, when you looked at the NAPP data and you

147:21 looked at the most -- the more reliable

147:22 self-respondent only data, you have an odds ratio for

147:23 non-Hodgkin lymphoma and glyphosate in the North

147:24 American Pooled Project of 1.04, with a confidence

147:25 interval of 0.75 to 1.45, correct?

148:1 A. Correct.

148:2 Q. So, again, this is a null finding from

148:3 the North American Pooled Project with respect to

148:4 whether or not glyphosate is associated with

148:5 non-Hodgkin lymphoma, correct?

148:6 A. Yes.

148:7 Q. Did you mention these North American

148:8 Pooled Project findings of no association between

148:9 glyphosate and non-Hodgkin lymphoma to any of your

148:10 fellow working group members during the Monograph 112

148:11 deliberations?

148:12 A. I don't think so. And I want to say,

148:13 actually I don't know whether these were available or

148:14 not. So you -- I mean whether I even knew about

148:15 them, because the analysis of multiple myeloma was

clear

148:16 going on, but I don't know whether this one was done
 148:17 or not. If it was, I'm sure you're going to show me,
 148:18 but I don't know whether this one was done or not.
 148:19 Q. Well, you certainly knew that you had the
 148:20 ability to look at that. You were --
 148:21 A. Well, that's a different thing than
 148:22 knowing what it is. We can look at a lot of things.

149:4 - 151:8

Blair, Aaron 03-20-2017 (00:02:03)

Blair.120

149:4 Q. Is it your testimony that you in fact,
 149:5 though, then didn't look at that data?
 149:6 A. I -- there were a bunch of things going
 149:7 on, and they were already analyzing, and I just don't
 149:8 remember the sequence that got to it. You make it
 149:9 sound like as if you can decide to look at it, and
 149:10 just it's over and done. These things take months
 149:11 and months and months. And so if you haven't looked
 149:12 at anything at all, the odds aren't good that you can
 149:13 complete it beforehand, before some date. And I
 149:14 think that was part of the thinking about non-Hodgkin
 149:15 lymphoma, that we couldn't get it ready in time.
 149:16 Q. You haven't published your findings with
 149:17 respect to glyphosate and non-Hodgkin lymphoma to
 149:18 this day, have you?
 149:19 A. No.
 149:20 Q. It's now three years later, correct?
 149:21 A. Scientific research takes time.
 149:22 Q. The -- and because of the fact that you
 149:23 had not published these results, including this
 149:24 finding of -- a null finding in the North American
 149:25 Pooled Project for glyphosate and non-Hodgkin
 150:1 lymphoma, that information was not available to IARC.
 150:2 Correct?
 150:3 A. No.
 150:4 Q. It was not available, correct?
 150:5 A. No.
 150:6 Q. I'm going to restate that.
 150:7 It is correct that IARC did not have this
 150:8 information, right? Yes, IARC didn't have it?
 150:9 A. IARC did not have it.
 150:10 Q. IARC didn't have it.

150:11 A. No.

150:12 Q. And the various regulatory agencies,
150:13 including the EPA and regulatory agencies around the
150:14 world, also have not had this information that the --
150:15 that you've been aware of with respect to non-Hodgkin
150:16 lymphoma?

150:17 A. Yeah, except -- so, okay, I see you're
150:18 pushing this hard now. So what if we look at
150:19 frequency of days per year of use?

150:20 Q. Okay.

150:21 A. So now when you look at the people who
150:22 used it more, they do have an excess of non-Hodgkin's
150:23 lymphoma among the self-respondents.

150:24 Q. That -- now, that's interesting you
150:25 picked that one out. Why did you not look at
151:1 duration or lifetime days?

151:2 A. There's a lot --

151:3 Q. There's a lot of analyses. You picked
151:4 that one.

151:5 A. There are a lot of them. You look at a
151:6 lot of different things and you have to try to
151:7 evaluate the whole thing. I picked out one and you
151:8 picked out one.

154:13 - 155:16

Blair, Aaron 03-20-2017 (00:01:34)

Blair.121

154:13 Q. So, with respect to the De Roos 2005
154:14 paper, this is a paper that you were -- a study that
154:15 you were co-author on, correct?

4603.1.1

154:16 A. Yes.

154:17 Q. And this is the cohort study we have been
154:18 discussing before and the analysis of cancer
154:19 incidence among glyphosate-exposed pesticide
154:20 applicators, correct?

154:21 A. Yeah. Yes.

154:22 Q. And if you turn to page 49, the first
154:23 page actually, on the "Materials and Methods"
154:24 section, the De Roos 2005 paper was reporting out the
154:25 findings from the AHS cohort based upon exposure data
155:1 gathered between 1993 and 1997, and incidence of
155:2 cancers identified as of December 31st, 2001,
155:3 correct?

4603.1.2

Page/Line	Source	ID
	155:4 A. Well, the '93 to '97 is correct. I guess	
	155:5 the other is.	
	155:6 Q. If you read down a little bit further	
	155:7 along that same section, you will see --	
	155:8 A. Yes.	
	155:9 Q. -- cancers.	
	155:10 A. Okay. Yes. Okay.	
	155:11 Q. And if you go to page 51, Table 2, based	4603.3.1
	155:12 on this data, De Roos 2005 identified 92 cases of	
	155:13 non-Hodgkin lymphoma in farmers and the cohorts who	
	155:14 had been -- who had reported exposure to glyphosate,	
	155:15 correct?	
	155:16 A. Yes.	
155:17 - 156:12	Blair, Aaron 03-20-2017 (00:00:51)	Blair.122
	155:17 Q. And De Roos calculated and adjusted risk	
	155:18 ratio for ever/never use of glyphosate and	4603.3.2
	155:19 non-Hodgkin lymphoma of 1.1 with a confidence	
	155:20 interval of 0.7 to 1.9, correct?	
	155:21 A. Correct.	
	155:22 Q. Which is showing no statistically	
	155:23 significant association, correct?	
	155:24 A. Yes.	
	155:25 Q. And De Roos 2005 also presents data on	
	156:1 non-Hodgkin lymphoma and glyphosate in association	
	156:2 with the duration and intensity of exposure to	
	156:3 glyphosate, correct?	
	156:4 A. Yes.	4603.4.1
	156:5 Q. That data was presented on page 52,	
	156:6 Table 3?	
	156:7 A. Yes.	
	156:8 Q. And provides an analysis of 61 cases of	
	156:9 non-Hodgkin lymphoma in farmers who had been exposed	
	156:10 to glyphosate, correct? Towards the bottom of that	
	156:11 chart, the non-Hodgkin lymphoma.	
	156:12 A. Yes. Yes. Yes.	
156:17 - 157:21	Blair, Aaron 03-20-2017 (00:01:20)	Blair.123
	156:17 Q. For both cumulative exposure days --	
	156:18 well, first of all, let me see if I understand this.	
	156:19 What is cumulative exposure days in the	
	156:20 AHS evaluation?	

156:21 A. The number of days per year they say they
156:22 applied a chemical multiplied by the number of years
156:23 they said they used it.

156:24 Q. And what is the intensity of exposure?

156:25 A. It's those two factors weighted also by
157:1 how they use protective equipment and things such as
157:2 that that would influence exposure.

157:3 Q. So in the De Roos 2005 paper for both
157:4 cumulative exposure days, which is this data here
157:5 (indicating), and for intensity weighted exposure
157:6 dates, which is this data here (indicating), the
157:7 relative risk for non-Hodgkin lymphoma was below 1.0
157:8 for higher exposures to glyphosate, correct?

4603.4.2

157:9 A. Correct.

157:10 Q. So farmers who had either more days of
157:11 exposure to glyphosate or had more intense exposure
157:12 to glyphosate had a high -- had a lower --

157:13 A. Lower.

157:14 Q. -- lower incidence of non-Hodgkin
157:15 lymphoma than farmers who had not used glyphosate,
157:16 correct?

157:17 A. That was not statistically significant.

157:18 Q. So this would be a negative association.
157:19 It wouldn't be a null finding, but it would not be
157:20 statistically significant, correct?

157:21 A. Correct.

160:10 - 160:14

Blair, Aaron 03-20-2017 (00:00:12)

Blair.124
clear

160:10 Q. In fact, as we discussed earlier, at the
160:11 time of entry into the Agricultural Health Study, the
160:12 subject applicators, the farmers, had an average of
160:13 about 15 years of pesticide use already, correct?

160:14 A. Correct.

160:20 - 161:13

Blair, Aaron 03-20-2017 (00:00:43)

Blair.125

160:20 Q. So on average, by the time the data
160:21 collected for the 2005 De Roos study was analyzed,
160:22 the farmers would have had -- more than 20 years had
160:23 passed from the time of their first exposure to their
160:24 cancer potentially, correct?

160:25 A. More than twenty years' exposure to what?

161:1 Q. To glyphosate.

Page/Line	Source	ID
	161:2 A. Some may have. Right?	
	161:3 Q. Correct.	
	161:4 A. Some may have.	
	161:5 Q. Certainly more than 6.7 years. That's	
	161:6 not the correct year to be looking at for how much	
	161:7 exposure they had had, correct?	
	161:8 A. That's the person -- their follow-up	
	161:9 time.	
	161:10 Q. So that was the time from the	
	161:11 questionnaire to follow-up, not exposure to	
	161:12 follow-up?	
	161:13 A. Correct.	
164:17 - 164:21	Blair, Aaron 03-20-2017 (00:00:18)	Blair.126
	164:17 Q. Okay. Now, in fact, the AHS has	
	164:18 conducted additional analyses of glyphosate following	
	164:19 the 2005 paper -- published study with far larger --	
	164:20 a far larger number of incidence of NHL cases and	
	164:21 longer follow-up, correct?	
164:22 - 165:8	Blair, Aaron 03-20-2017 (00:00:26)	Blair.127
	164:22 A. There is a paper on that?	
	164:23 Q. AHS has conducted analyses of	
	164:24 glyphosate --	
	164:25 A. Oh, okay. Okay.	
	165:1 Q. -- following the 2005 publication with a	
	165:2 far larger number of NHL cases and a longer	
	165:3 follow-up, correct?	
	165:4 A. I think that's underway, yes.	
	165:5 Q. Let me mark as next exhibit in line, and	
	165:6 I will do this as Exhibit A and B. So 19-A and 19-B.	
	165:7 (Blair Exhibit Nos. 19-A and 19-B	4065.1.1
	165:8 were marked for identification.)	
166:19 - 166:21	Blair, Aaron 03-20-2017 (00:00:05)	Blair.128
	166:19 Q. So these are drafts prepared in February	
	166:20 2013 and March of 2013, correct?	
	166:21 A. Yes.	
166:24 - 168:6	Blair, Aaron 03-20-2017 (00:01:34)	Blair.129
	166:24 If you look at the February 2013 draft,	
	166:25 there is -- in fact, starting on the very first page,	
	167:1 a comment on the draft by an AEB, and that would be	
	167:2 you, correct? Aaron Blair.	

Page/Line

Source

ID

167:3 A. On the first page?

167:4 Q. Well, if you look on the right, you will

167:5 see these little comment bubbles. And if you look

167:6 throughout the document, you will see these comment

167:7 bubbles.

167:8 A. Yes. Yes.

167:9 Q. And these -- this is your comment --

167:10 these are your comments on the document, correct?

167:11 A. Yeah. Correct.

167:12 Q. And if you look at the March 2013 draft,

4064.1.1

167:13 which is the next document, it also has various

167:14 comments by you on the publication -- on the draft

167:15 publication, correct?

167:16 A. Yes.

167:17 Q. Okay. Now, let's -- so it's fair to say

167:18 that as of March 2013, you had reviewed at least two

167:19 versions of this draft publication, correct?

167:20 A. Yes.

167:21 Q. Well, let's focus on the March 2013

167:22 draft. And if I could turn you first to page 6 in

4064.6.1

167:23 the discussion of the study population.

167:24 A. We're at 2000 -- oh, March '13. Okay.

167:25 Yes, got it.

168:1 Q. So I turn you to page 6.

168:2 A. Six?

168:3 Q. Yes. And this has a discussion of the

168:4 study population about halfway through, correct?

168:5 A. Yes.

168:6 Q. And now we're looking at all -- I'm

168:7 - 168:25

Blair, Aaron 03-20-2017 (00:01:04)

Blair.130

168:7 sorry, if you look at page 7, all incidence of

4064.7.1

168:8 primary non-Hodgkin lymphoma in the AHS cohort from

168:9 enrollment through December 31st, 2008, correct? At

168:10 the very top.

168:11 A. Yes.

168:12 Q. So this study includes an additional

168:13 seven years of follow-up, an additional seven years

168:14 of NHL cases beyond those that were reported and

168:15 published in the De Roos 2005 paper, correct?

168:16 A. Yes.

Page/Line	Source	ID
	168:17 Q. And if you look at page 9 of this 2013 168:18 draft paper, in the second paragraph on that page, it 168:19 talks about the fact that this study also includes 168:20 additional exposure data from a follow-up 168:21 questionnaire. 168:22 So you have five years of additional 168:23 exposure data that was not available for the 2005 168:24 study that was published, correct? 168:25 A. Correct.	4064.9.1
169:22 - 169:25	Blair, Aaron 03-20-2017 (00:00:10) 169:22 Q. Now, I've looked through these tables, 169:23 and the 2013 study does not appear to contain data on 169:24 ever/never use. But I would like to have you turn to 169:25 page 34.	Blair.131
170:1 - 171:15	Blair, Aaron 03-20-2017 (00:01:47) 170:1 And on page -- on page 34 of the 170:2 document, we have the AHS updated data on glyphosate 170:3 and non-Hodgkin lymphoma, correct? 170:4 A. Yes. 170:5 Q. And we have -- this is the data for both 170:6 duration and intensity-weighted duration of exposure 170:7 to glyphosate, correct? 170:8 A. Well, I think that's the case. I have to 170:9 look at the -- not duration but total days of 170:10 exposure and intensity-weighted days of exposure. 170:11 Q. Okay. Well, isn't total days of exposure 170:12 the duration of exposure? 170:13 A. Not in normal epidemiologic parlance. 170:14 Q. Okay. 170:15 A. Duration is often measured in years, and 170:16 that can be different than the total number of days. 170:17 Q. But in the 2005 De Roos paper, De Roos 170:18 was -- 2005 De Roos paper, duration was number of 170:19 days and -- 170:20 A. Yes. And this is the same. It's the 170:21 same. 170:22 Q. It's the same analysis -- 170:23 A. Same analysis. 170:24 Q. -- as the 2005 exposure -- 2005 170:25 publication, except in this analysis we have a	4064.34 Blair.132 4064.34.1 4064.31.1

Page/Line

Source

ID

171:1 category also of no exposure, correct?

4064.34.2

171:2 A. Yes.

171:3 Q. And the De Roos 2005 analysis that we

171:4 looked at was based upon -- the exposure analysis was

171:5 based upon 61 cases of non-Hodgkin lymphoma in

171:6 farmers who had reported exposure to glyphosate,

171:7 correct?

171:8 A. That sounds right to me.

171:9 Q. The 2013 analysis includes data on 250

4064.34.3

171:10 NHL cases among farmers who had reported exposure to

171:11 glyphosate, correct? Just add up the three rows of

171:12 exposure, about 250?

171:13 A. About. I was looking, and say, Well,

171:14 it's not going to add to 250, but it's about 250.

171:15 I'm not quibbling.

171:21 - 173:8

Blair, Aaron 03-20-2017 (00:01:37)

Blair.133

171:21 This 2013 cohort study with results for

171:22 glyphosate and non-Hodgkin lymphoma is more than four

171:23 times larger than the De Roos 2005 study, correct?

171:24 A. Yes.

171:25 Q. It's gone from 61 -- or 62 to 250 cases.

172:1 A. Yes.

172:2 Q. And the confidence intervals for the

172:3 various analyses of NHL based upon the levels of

172:4 glyphosate exposure, because it's a larger study, are

172:5 much tighter than the confidence intervals were for

172:6 De Roos 2005, correct?

172:7 A. Correct.

172:8 Q. Because this study now has more power,

172:9 correct?

172:10 A. Correct.

172:11 Q. So this 2013 cohort study finds no

172:12 association -- no evidence of association between

172:13 exposure to glyphosate and non-Hodgkin lymphoma,

172:14 correct?

172:15 A. Correct.

172:16 Q. And based upon the data that's set forth

172:17 here, if you look at individuals who had no exposure

172:18 to glyphosate, which is that first row, and you look

172:19 at the three categories of individuals who did have

172:20 exposure to glyphosate, if we were to do an
 172:21 ever/never analysis of glyphosate and non-Hodgkin
 172:22 lymphoma, the -- the relative risk here would be
 172:23 something below 1.0, correct? About 0.9?
 172:24 A. That's a reasonable guess, I think, yes.
 172:25 Q. So that means that the incidence of
 173:1 non-Hodgkin lymphoma in farmers exposed to glyphosate
 173:2 in the 2013 cohort study was lower than the incidence
 173:3 of non-Hodgkin lymphoma in farmers who were not
 173:4 exposed to glyphosate, correct?
 173:5 A. But not statistically significant.
 173:6 Q. So it's a negative association, but
 173:7 statistically --
 173:8 A. Not statistically significant.

clear

173:12 - 173:23

Blair, Aaron 03-20-2017 (00:00:34)

Blair.134

173:12 Q. And the applicators in the highest levels
 173:13 of exposure to glyphosate, both by lifetime days and
 173:14 intensity-weighted lifetime days, had the exact same
 173:15 incidence of non-Hodgkin lymphoma as applicators with
 173:16 no exposure to glyphosate whatsoever, correct?
 173:17 A. Correct.
 173:18 Q. So for the highest -- for each of these
 173:19 measures of exposure, for the relative risk for
 173:20 non-Hodgkin lymphoma at the highest level of exposure
 173:21 to glyphosate as compared to not exposed was a
 173:22 completely null result, correct?
 173:23 A. Yes.

175:20 - 176:14

Blair, Aaron 03-20-2017 (00:00:55)

Blair.135

175:20 Q. And because of the fact that we now have
 175:21 longer follow-up, the exposure levels at each of
 175:22 these three categories of low, medium and high
 175:23 exposure to glyphosate also are much higher than the
 175:24 exposure levels in the corresponding analysis in the
 175:25 2005 published paper, correct?
 176:1 A. The cumulative exposure is higher.
 176:2 Q. Now, these findings for glyphosate have
 176:3 never been published, have they?
 176:4 A. No. They haven't been published.
 176:5 Q. These findings, the AHS updated findings
 176:6 for glyphosate and non-Hodgkin lymphoma were not

Page/Line	Source	ID
	176:7 considered by IARC in its review of glyphosate, 176:8 correct? 176:9 A. No. 176:10 Q. These findings also have not been 176:11 available to any of the regulatory agencies that have 176:12 been conducting reviews of glyphosate and cancer, 176:13 correct? 176:14 A. Correct.	
176:20 - 176:22	Blair, Aaron 03-20-2017 (00:00:05) 176:20 Q. Well, you reviewed this data in 176:21 March 2013, correct? 176:22 A. Yes.	Blair.136
177:13 - 178:7	Blair, Aaron 03-20-2017 (00:01:00) 177:13 At the time that you were the chair of 177:14 the IARC working group and a member of the 177:15 epidemiology subgroup that was looking at the 177:16 evidence of whether or not glyphosate was associated 177:17 with non-Hodgkin lymphoma, you were aware of this 177:18 updated data of a study four times larger than the 177:19 published 2005 paper with respect to glyphosate and 177:20 non-Hodgkin lymphoma, correct? 177:21 A. That there were analyses of such data, 177:22 but no published studies. 177:23 Q. Correct. But you were aware of what the 177:24 data showed, correct? 177:25 A. Yes. But no published studies. 178:1 Q. Right. And did you alert any of your 178:2 fellow working group members or any of the other 178:3 members of the subgroup on epidemiology at IARC about 178:4 the fact that this much larger AHS cohort study with 178:5 larger follow -- a larger time of follow-up and 178:6 higher levels of exposure had been conducted? 178:7 A. No.	Blair.137
179:21 - 179:24	Blair, Aaron 03-20-2017 (00:00:18) 179:21 But with respect to the meta-analysis 179:22 that IARC conducted, that is mentioned on page 30 179:23 of the monograph. So if I could just turn you to 179:24 page 30 of the monograph.	Blair.138
179:25 - 180:2	Blair, Aaron 03-20-2017 (00:00:04) 179:25 And do you see there is the discussion of	6467.30.1 Blair.139

Page/Line

Source

ID

180:1 a meta-analysis?

180:2 A. Yes.

180:8 - 181:1

Blair, Aaron 03-20-2017 (00:01:02)

Blair.140

180:8 Q. And it discusses the meta-analysis that

180:9 was done by Schinasi and Leon, and then an adjustment

180:10 that the working group made to that monograph -- I'm

180:11 sorry, to that meta-analysis so as to use fully

6467.30.2

180:12 adjusted estimates of the risks with non-Hodgkin's

180:13 lymphoma and glyphosate, correct?

180:14 A. Yes.

180:15 Q. And the IARC working group's conclusion

180:16 was that the meta risk ratio of all the epidemiology

6467.30.3

180:17 was 1.3, which had a confidence interval of 1.03 to

180:18 1.65. So it just made barely that level of

180:19 statistical significance, correct?

180:20 A. Correct.

180:21 Q. Now, the meta-analysis was based in part

clear

180:22 on the 2005 AHS publication, correct?

180:23 A. Correct.

180:24 Q. It was not based upon the data we've now

180:25 just looked at of the 2013 AHS data, correct?

181:1 A. Right.

181:23 - 184:2

Blair, Aaron 03-20-2017 (00:02:23)

Blair.141

181:23 Q. Now, as we've already discussed, the 2013

181:24 data finds for a much larger number of NHL cases --

181:25 provides findings for a much larger number of NHL

182:1 cases, we had like some four times, like 250 cases --

182:2 A. Right.

182:3 Q. -- in that data, correct?

182:4 A. Right.

182:5 Q. And the confidence intervals, because

182:6 it's a much larger study, were much tighter in that

182:7 2013 data than the -- than the data we have here,

182:8 correct?

182:9 A. Correct.

182:10 Q. And we already talked about the fact that

182:11 the relative risk from the 2013 data of ever/never

182:12 use was below 1.0, something like 0.9, so it was

182:13 slightly below the 1.1 relative risk for the De Roos

182:14 2005 paper, correct?

182:15 A. Correct.

182:16 Q. So if the 2013 data, which you were aware
182:17 of, had been available for IARC in its meta-analysis,
182:18 the AHS data would have had significantly more weight
182:19 in the meta-analysis than is reflected here --

182:20 A. Yes.

182:21 Q. -- and the relative risk data would have
182:22 been lower than the 2005 study that's incorporated
182:23 here, correct?

182:24 A. The relative risk for the AHS study would
182:25 have been lower.

183:1 Q. Right.

183:2 A. Was lower. Yeah.

183:3 Q. Yes, it would have been.

183:4 A. Yeah.

183:5 Q. So it's fair to say, given that IARC --
183:6 your meta-analysis was just barely statistically
183:7 significant at 1.03 in the lower bound, if IARC had
183:8 had the data from the 2013 study, much more -- a much
183:9 larger study, much greater weight, lower relative
183:10 risk -- that would have driven the meta-relative risk
183:11 downward, correct?

183:12 A. Correct.

183:13 Q. And the meta-relative risk with that 2013
183:14 data from the AHS study that you were aware of would
183:15 have not have been statistically significant, would
183:16 it?

183:17 A. I don't know, but probably not.

183:18 Q. Probably not.

183:19 Now, during the Monograph 112 working
183:20 group meeting, IARC provided the working group with
183:21 this meta-analysis data, correct?

183:22 A. Yes.

183:23 Q. Did you mention to anyone at the meeting
183:24 the likely impact that the more recent data from AHS
183:25 would have in decreasing the meta -- meta-relative
184:1 risk for glyphosate and non-Hodgkin lymphoma?

184:2 A. No.

185:17 - 185:21

Blair, Aaron 03-20-2017 (00:00:12)

Blair.142

185:17 Q. Okay. Now, the NAP data -- NAPP data

Page/Line	Source	ID
186:16 - 187:8	<p>185:18 that we were discussing earlier, that's actually a 185:19 pooled analysis of the data from McDuffie 2001 and 185:20 De Roos 2003, correct? 185:21 A. Yes.</p>	Blair.143
	<p>Blair, Aaron 03-20-2017 (00:01:04)</p>	
	<p>186:16 Q. So if we were then to use -- if the NAPP 186:17 data had been available to IARC, the data we were 186:18 looking at previously, you recall that the NAPP odds 186:19 ratio, even including proxy respondents for 186:20 ever/never use, for glyphosate and non-Hodgkin's 186:21 lymphoma was 1.22, correct? We looked at that 186:22 previously.</p>	5637.12.1
	<p>186:23 A. Sounds right.</p>	
	<p>186:24 Q. Okay. So if the NAPP data, again that 186:25 you were aware of at the time, had been available to 187:1 IARC and had been put into this analysis and replaced 187:2 McDuffie 2001 and De Roos 2003, the odds ratio number 187:3 for the U.S. and Canadian case-control studies would 187:4 drop from probably somewhere around 1.6 to 1.2 or so, 187:5 correct?</p>	clear
190:12 - 190:17	<p>187:6 A. I -- you know, I'm not comfortable making 187:7 pronouncements about your combining of data from 187:8 different studies without me seeing the data.</p>	Blair.144
	<p>Blair, Aaron 03-20-2017 (00:00:21)</p>	
	<p>190:12 Dr. Blair, I would like to continue our 190:13 discussion of the 2013 AHS data on glyphosate and -- 190:14 or actually on pesticides and lymphoma risk or 190:15 non-Hodgkin lymphoma risks, and particularly the 190:16 glyphosate data.</p>	
190:18 - 190:22	<p>190:17 If I could ask you to turn to page 84 of 190:18 that document, Supplemental Table 7. And you had 190:19 testified earlier this morning about the fact that 190:20 the definition of non-Hodgkin lymphoma has changed 190:21 over time. Do you recall that?</p>	Blair.145 4064.84.1
	<p>Blair, Aaron 03-20-2017 (00:00:17)</p>	
191:15 - 191:21	<p>190:22 A. Yes. 191:15 Q. Okay. So this data table, Supplemental 191:16 Table 7 is defining non-Hodgkin lymphoma as not 191:17 including multiple myeloma or CLL; is that correct?</p>	Blair.146
	<p>Blair, Aaron 03-20-2017 (00:00:17)</p>	

Page/Line	Source	ID
191:18	A. Correct.	
191:19	Q. Okay. So let's look at the data for	
191:20	glyphosate under the old definition, and that's on	
191:21	page 91.	4064.91.1
191:22 - 193:9	Blair, Aaron 03-20-2017 (00:01:53)	Blair.147
191:22	And on the middle of the page, again we	
191:23	have glyphosate data, both the duration and intensity	
191:24	of use, correct?	
191:25	A. Yes.	
192:1	Q. And again, we have data on no exposure	4064.91.2
192:2	and then low, medium and high exposure groups,	
192:3	correct?	
192:4	A. Correct.	
192:5	Q. Now, the total number of -- of farmers	
192:6	with non-Hodgkin lymphoma in this analysis is 72 plus	4064.91.3
192:7	51 plus 60, that's about 183 farmers, correct?	
192:8	A. Correct.	
192:9	Q. So with using this data from the 2013	
192:10	study, the study is about three times larger than the	
192:11	published data from the 2005 study, correct?	
192:12	A. Okay.	
192:13	Q. And the findings as far as the relative	
192:14	risks are concerned are pretty close to what the	
192:15	findings were with the new definition, correct?	
192:16	A. Correct.	
192:17	Q. As far as non-Hodgkin lymphoma risks?	
192:18	A. Yes.	
192:19	Q. So as we look at no exposures versus	
192:20	different levels of exposure, the ever/never risk	
192:21	ratio is again something like 0.9 or so, correct?	
192:22	A. Probably.	
192:23	Q. Okay. And the same discussion we had	
192:24	previously about how use of this updated data in the	
192:25	IARC meta-analysis would lower the meta-relative	
193:1	risk, that same answer would apply for this data as	
193:2	well, correct?	
193:3	A. Yes.	
193:4	Q. Now, I would like to take you to another	
193:5	part of the analysis in the 2013 -- in the 2013 AHS	
193:6	study with respect to different NHL subtypes.	

Page/Line	Source	ID
	193:7 Now, let me -- let's turn first to page 7	4064.7.2
	193:8 of the -- of the paper because they discuss the	
	193:9 different subtypes there. And there are five	
193:10 - 193:22	Blair, Aaron 03-20-2017 (00:00:31)	Blair.148
	193:10 different groups of subtypes discussed under tumor	
	193:11 characteristics.	
	193:12 Do you see that?	
	193:13 A. Yes.	
	193:14 Q. So the -- this is looking at different	
	193:15 types of non-Hodgkin lymphoma putting them into	
	193:16 categories, correct?	
	193:17 A. Correct.	
	193:18 Q. And then there is a separate analysis	
	193:19 conducted in this 2013 paper looking at the relative	
	193:20 risks for the studied herbicides for each of the	
	193:21 different NHL subtype categories, correct?	
	193:22 A. Correct.	
193:23 - 194:1	Blair, Aaron 03-20-2017 (00:00:20)	Blair.149
	193:23 Q. And that data -- that analysis starts on	19B.69.1
	193:24 page 69. And specifically on page 69, we have data	
	193:25 on glyphosate. Let's look first so we can get the	
194:2 - 194:21	Blair, Aaron 03-20-2017 (00:00:59)	Blair.150
	194:1 categories correct -- on page 66 at the beginning of	
	194:2 the table, so we can understand what is what.	19B.66.1
	194:3 So page 66 has the different categories	
	194:4 of non-Hodgkin lymphoma on those columns on the top,	
	194:5 right?	
	194:6 A. Correct.	
	194:7 Q. Okay. And then if you just keep your	
	194:8 finger on that page just so you can remind yourself	
	194:9 which categories are which, page 69 is where they	
	194:10 have the findings for glyphosate, and I would like to	19B.69.1
	194:11 ask you about the glyphosate finding with respect	
	194:12 to -- on these different types of non-Hodgkin	
	194:13 lymphoma.	
	194:14 So if you look at page 69, the AHS	19B_66_69.1.1
	194:15 analysis in the first subtype grouping, which is	
	194:16 chronic B-cell lymph -- lymphocytic lymphoma, small	
	194:17 B-cell lymphocytic lymphomas, and mantle cell	
	194:18 lymphomas, the 2013 AHS data analysis does not find	

195:9 - 197:15	<p>194:19 any association between glyphosate and that NHL 194:20 subtype, correct? 194:21 A. Correct.</p>	Blair.151
	Blair, Aaron 03-20-2017 (00:02:55)	19B_66_69.1.2
	<p>195:9 Q. And the 2013 AHS data actually finds a 195:10 statistically significant negative association 195:11 between increased glyphosate exposure and -- and 195:12 diffuse large B-cell lymphoma, correct? 195:13 A. For days per year, yes. 195:14 Q. Yeah. So, in other words, as a farmer 195:15 has more days of exposure of glyphosate in this study 195:16 population, the instance of large B-cell lymphoma 195:17 actually decreases, correct? 195:18 A. Correct. 195:19 Q. And that's a statistically significant 195:20 finding, correct? 195:21 A. Yes. Trend test.</p>	
	<p>195:22 Q. The 2013 AHS data also looks at 195:23 follicular B-cell lymphomas, correct? 195:24 A. Yes.</p>	19B_66_69.1.3
	<p>195:25 Q. And the 2013 AHS analysis does not find 196:1 any association between glyphosate exposure and 196:2 follicular B-cell lymphomas, correct? 196:3 A. Deficits that aren't statistically 196:4 significant. 196:5 Q. And when you say "deficits," what 196:6 actually they found in this study, again, is as the 196:7 level of -- as a farmer had more days of exposure to 196:8 glyphosate, the incidence of follicular B-cell 196:9 lymphomas went down, correct? 196:10 A. No. It means that at any level of 196:11 exposure, the level, the relative risk was less than 196:12 1.0.</p>	
	<p>196:13 Q. Correct. Correct. Correct. 196:14 A. It was 0.7 or 0.6. It does not go down. 196:15 Q. So what with the 2013 AHS data reveals is 196:16 that any level of exposure to glyphosate resulted in 196:17 a lower incidence of follicular B-cell lymphomas, 196:18 correct?</p>	
	<p>196:19 A. Lower -- lower incidence or lower</p>	

Page/Line

Source

ID

196:20 relative risk that isn't statistically significant.

196:21 Q. And with respect to the category for --

196:22 A. Other B-cell.

19B_66_69.1.4

196:23 Q. -- other B-cell type lymphomas, again we

196:24 see that with any level of exposure to glyphosate,

196:25 the incidence of B-cell type lymphomas, the relative

197:1 risk goes down, correct?

197:2 A. It's lower.

197:3 Q. And if you look at the point estimate for

197:4 relative risk, both for the other B-cell type

197:5 lymphomas and the follicular B-cell lymphomas at the

197:6 highest level of exposure, the relative risk is 30 to

197:7 40 percent lower for farmers with the highest level

197:8 of glyphosate exposure compared to farmers with no

197:9 exposure, correct?

197:10 A. Correct.

197:11 Q. Did you inform anyone at the IARC working

197:12 group that the AHS -- that the Agricultural Health

197:13 Study had conducted additional analyses of glyphosate

197:14 for various NHL subtypes?

197:15 A. No, because it wasn't published.

19B_66_69.1.5

198:10 - 198:19

Blair, Aaron 03-20-2017 (00:00:24)

Blair.152

198:10 Q. And the analysis, when you look at it

198:11 this way for glyphosate only, and the atrazine --

198:12 glyphosate and atrazine analysis, glyphosate only is

198:13 0.96; for glyphosate only with the glyphosate and

198:14 2,4-D, it's 1.1; for glyphosate only and glyphosate

198:15 and chlordane is 0.9.

198:16 So in the glyphosate-only portions of

198:17 this, again we're not showing any increased risk of

198:18 non-Hodgkin lymphoma, correct?

198:19 A. Correct.

4064.80.1

199:4 - 199:15

Blair, Aaron 03-20-2017 (00:00:19)

Blair.153

199:4 Q. For farmers who are exposed to both

199:5 glyphosate and atrazine, there is no statistically

199:6 significant increased risk of non-Hodgkin lymphoma,

199:7 correct?

199:8 A. Correct.

199:9 Q. For farmers exposed to both glyphosate

199:10 and 2,4-D, there is no statistically significant

Page/Line	Source	ID
199:16 - 199:20	<p>199:11 increased risk of non-Hodgkin lymphoma, correct? 199:12 A. Correct. 199:13 Q. For farmers exposed to glyphosate and 199:14 chlordane, there is no statistically significant 199:15 increased risk of non-Hodgkin lymphoma, correct? Blair, Aaron 03-20-2017 (00:00:09)</p>	Blair.154
199:21 - 200:8	<p>199:16 A. Yes. 199:17 Q. And this is also information that the 199:18 IARC working group did not have at the time it made 199:19 its analysis of glyphosate, correct? 199:20 A. Correct. Blair, Aaron 03-20-2017 (00:00:33) 199:21 Q. Now, I want to show you another document 199:22 that was from your production to us, and this is an 199:23 e-mail between you and some of the other Agricultural 199:24 Health Study investigators in February 2014. 199:25 First of all, who is Dr. Alavanha 200:1 (phonetic)? 200:2 A. Alavanja. 200:3 Q. Alavanja. 200:4 A. He was an investigator at the National 200:5 Cancer Institute and was involved in the Agricultural 200:6 Health Study. 200:7 Q. Is he an epidemiologist as well -- 200:8 A. Yes.</p>	Blair.155 4745.1.1
203:21 - 204:3	<p>Blair, Aaron 03-20-2017 (00:00:15) 203:21 Q. And you would agree that the AHS provides 203:22 important data regarding potential associations 203:23 between pesticides and cancer, correct? 203:24 A. Yes. 203:25 Q. You would agree that the AHS data and the 204:1 most updated AHS data should be considered by IARC, 204:2 correct? 204:3 A. Yes.</p>	Blair.156 clear
265:7 - 265:25	<p>Blair, Aaron 03-20-2017 (00:00:46) 265:7 Q. So the issue is we're weighing the 265:8 positive case-control studies, more than a few of 265:9 them that the jury has heard of by now, that show the 265:10 association statistically significant between 265:11 glyphosate and non-Hodgkin lymphoma, and the negative</p>	Blair.157

Page/Line	Source	ID
	265:12 study, AHS, which really didn't show a statistically 265:13 significant association, right? 265:14 A. Correct. 265:15 Q. And you, Dr. Blair, are one of the 265:16 authors of that AHS study, right? 265:17 A. Yes. 265:18 Q. Yet when it came time to vote as a 265:19 volunteer scientist on the International Agency for 265:20 the Research for Cancer, you voted unanimously with 265:21 16 of your peers that there was a probable 265:22 association between glyphosate and non-Hodgkin 265:23 lymphoma, right? 265:24 A. Well, I voted that way. I think it was 265:25 unanimous. I don't actually remember.	
266:17 - 266:22	Blair, Aaron 03-20-2017 (00:00:12) 266:17 Q. And I might not be pronouncing this 266:18 right, but Michael Alavanja? 266:19 A. Alavanya (phonetic). 266:20 Q. Excuse me. Michael Alavanja is one of 266:21 the authors of the AHS study, isn't he? 266:22 A. He is.	Blair.158
266:23 - 267:3	Blair, Aaron 03-20-2017 (00:00:25) 266:23 Q. No. 36. All right. Here is an article 266:24 that Dr. Alavanja wrote that came out -- let's make 266:25 sure we get the date right -- in 2013? Yes, okay. 267:1 Which was about -- well, which was the same year as 267:2 you had your AHS data, right, that you talked about 267:3 so much --	Blair.159
267:9 - 267:12	Blair, Aaron 03-20-2017 (00:00:12) 267:9 -- the same year that you had that -- 267:10 that AHS study, right? 267:11 A. Yes, this paper is in the same time 267:12 frame, '13.	Blair.160
269:15 - 269:16	Blair, Aaron 03-20-2017 (00:00:06) 269:15 Q. And he says: "Glyphosate positively 269:16 associated with non-Hodgkin lymphoma."	Blair.161
269:18 - 269:24	Blair, Aaron 03-20-2017 (00:00:14) 269:18 THE WITNESS: That's what he says. 269:19 BY MR. MILLER: 269:20 Q. Yes, sir. And following up on counsel's	Blair.162

Page/Line	Source	ID
270:4 - 270:18	<p>269:21 questions, you certainly never wrote a letter to 269:22 Dr. Alavanja, your co-author, and said, Gee, you're 269:23 wrong when you say that glyphosate is positively 269:24 associated with non-Hodgkin lymphoma, right? Blair, Aaron 03-20-2017 (00:00:35)</p>	Blair.163
	<p>270:4 A. I did not. 270:5 Q. Okay. And I think -- well, the jury is 270:6 going to hear a lot about this, but I want to ask 270:7 you, this AHS study was a cohort study, right? 270:8 A. Yes. 270:9 Q. And these other studies, the case- 270:10 control studies upon which the positive association 270:11 with non-Hodgkin lymphoma, it's a different kind of 270:12 epidemiological study, right, as compared to a cohort 270:13 study? 270:14 A. Yes. 270:15 Q. And that one of the problems -- all 270:16 studies have problems and no studies are perfect. Is 270:17 that fair? 270:18 A. Fair.</p>	
271:14 - 271:20	<p>Blair, Aaron 03-20-2017 (00:00:09) 271:14 Q. Sure. And one of the other problems with 271:15 cohort studies like the AHS study is loss to 271:16 follow-up. You've heard that phrase before, haven't 271:17 you? 271:18 A. Yes. 271:19 Q. Tell the jury what "loss to follow-up" 271:20 means, Doctor.</p>	Blair.164
272:2 - 272:10	<p>Blair, Aaron 03-20-2017 (00:00:21) 272:2 THE WITNESS: In the cohort studies, that 272:3 you have to keep following people, and in an open 272:4 society, it's hard to do. 272:5 BY MR. MILLER: 272:6 Q. And, look, we know you and Dr. Alavanja 272:7 are hard-working scientists that are working on this 272:8 issue when you prepared that cohort study, the AHS 272:9 study, but the truth is you had loss to follow-up. 272:10 A. We did.</p>	Blair.165
274:6 - 274:10	<p>Blair, Aaron 03-20-2017 (00:00:11) 274:6 Q. All right. So here we are, Doctor.</p>	Blair.166 BA37.1

274:7 Statistically significant information from a study
 274:8 that you authored with others. And this is an
 274:9 abstract, right, sir?

274:10 A. Yes.

274:11 - 276:8

Blair, Aaron 03-20-2017 (00:02:00)

Blair.167

274:11 Q. Explain to the jury what an abstract is.

274:12 A. Different scientific associations have
 274:13 meetings of their members, and at those meetings
 274:14 there will be verbal presentations, and you get
 274:15 accepted to be on the program by submitting an
 274:16 abstract to decide who gets to be on the program.
 274:17 And these are the abstracts. This is one of those
 274:18 abstracts.

274:19 Q. Sure.

274:20 A. It's not a full paper, but it's a -- a
 274:21 synopsis of some work someone has done they're
 274:22 willing to talk about.

274:23 Q. All right, sir. And it's presented at
 274:24 the International Society for Environmental
 274:25 Epidemiology. Right, sir?

BA37.1.1

275:1 A. Yes.

275:2 Q. And that was at their 2015 conference,
 275:3 right, sir?

275:4 A. I think so, yes.

275:5 Q. All right, sir. And so the jury
 275:6 understands, it was an evaluation of glyphosate,
 275:7 which is the active ingredient in Roundup, right?

275:8 A. Yes.

275:9 Q. And the risk of non-Hodgkin lymphoma --

275:10 A. Yes.

275:11 Q. -- major histological subtypes in the
 275:12 North American Pooled Project, right?

BA37.1.2

275:13 A. Correct.

275:14 Q. And you are one of the authors, Aaron
 275:15 Blair from the United States Cancer Institute, right?

BA37.1.3

275:16 A. Yes.

275:17 Q. And Dennis Weinberger -- I'm sorry,
 275:18 Weisenburger from the City of Hope Hospital. Right?

275:19 A. Yes.

275:20 Q. And among many others, right?

Page/Line	Source	ID
	275:21 A. A number of others.	
	275:22 Q. Yes, sir.	
	275:23 And what you scientists found	
	275:24 statistically significant and presented to the	BA37.1.4
	275:25 International Society for Environmental Epidemiology	
	276:1 was several findings, results. Cases who ever use	
	276:2 glyphosate had elevated non-Hodgkin lymphoma risk	
	276:3 overall, with an odds ratio of 1.51 statistically	
	276:4 significant. Right?	
	276:5 A. Yes.	
	276:6 Q. And as a scientist, statistical	
	276:7 significance is important, isn't it?	
	276:8 A. Yes.	
276:21 - 277:1	Blair, Aaron 03-20-2017 (00:00:13)	Blair.168
	276:21 Q. All right. Subjects who used glyphosate	
	276:22 for greater than five years had an increased odds	
	276:23 ratio that was higher, 2.58, right?	
	276:24 A. Yes.	
	276:25 Q. And that shows as dose-dependent	
	277:1 response, right?	
277:4 - 277:7	Blair, Aaron 03-20-2017 (00:00:07)	Blair.169
	277:4 A. Yeah, okay. Yes.	
	277:5 Q. And dose-dependant response is strong	
	277:6 evidence of causality is what the preamble to the	
	277:7 IARC tells us, right?	
67:25 - 67:25	Blair, Aaron 03-20-2017 (00:00:00)	Blair.170
	67:25 THE WITNESS: Yes.	
277:17 - 278:1	Blair, Aaron 03-20-2017 (00:00:31)	Blair.171
	277:17 Q. Okay. "Compared to non-handlers, those	
	277:18 who handled glyphosate for greater than two days/year	
	277:19 had significantly elevated odds of non-Hodgkin	
	277:20 lymphoma overall, odds ratio of 2.66."	
	277:21 Was that statistically significant,	
	277:22 Doctor?	
	277:23 A. Yes.	
	277:24 Q. And it goes on to tell us about various	
	277:25 subtypes of non-Hodgkin lymphoma, right?	
	278:1 A. Correct.	
278:8 - 278:20	Blair, Aaron 03-20-2017 (00:00:36)	Blair.172
	278:8 Q. And DLBCL, what's that?	

Page/Line	Source	ID
	278:9 A. Diffuse B-cell chronic leukemia.	
	278:10 Q. Trip -- triple the risk of diffuse B-cell	
	278:11 non-Hodgkin lymph --	
	278:12 A. Lymphoma, yeah.	
	278:13 Q. Right, sir?	
	278:14 Statistically significant?	
	278:15 A. Yes.	
	278:16 Q. As a result of exposure to glyphosate?	
	278:17 A. Yes.	
	278:18 Q. And this is information that was reported	
	278:19 out after IARC found the positive association between	
	278:20 glyphosate and non-Hodgkin lymphoma, right?	
278:21 - 278:21	Blair, Aaron 03-20-2017 (00:00:01)	Blair.173
	278:21 A. Yes.	
278:22 - 279:1	Blair, Aaron 03-20-2017 (00:00:12)	Blair.174
	278:22 Q. Okay. But you couldn't tell IARC about	
	278:23 this positive finding from this NAPP study because it	
	278:24 hadn't been published in March when you were in your	
	278:25 IARC meetings in Lyon, France, correct?	
	279:1 A. Correct.	
293:6 - 293:10	Blair, Aaron 03-20-2017 (00:00:13)	Blair.175
	293:6 Q. Okay. Has anything you've been shown by	
	293:7 Monsanto's lawyers in the 3 hours and 40 minutes that	
	293:8 he questioned you changed the opinions that you had	
	293:9 at the IARC meeting about glyphosate and non-Hodgkin	
	293:10 lymphoma?	
293:15 - 293:15	Blair, Aaron 03-20-2017 (00:00:00)	Blair.176
	293:15 A. No.	

Total Time = 01:20:57

Documents Shown

19B

19B_66_69

4064

4065

4603

Page/Line

Source

ID

4745
4751
4789
5637
6467
BA1
BA2
BA3
BA37
BA4
BA5
BA9