

# FINAL SHOWN

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Kier, Larry 02-05-2019

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Total Time 00:16:07



Page/Line	Source	ID
7:24 - 8:2	<p><b>Kier, Larry 02-05-2019 (00:00:03)</b>  7:24 Q. Good morning, Dr. Kier. How are you  8:1 doing?  8:2 A. Pretty good. Thank you.</p>	LK2_COMBINED_07.1
35:5 - 35:15	<p><b>Kier, Larry 02-05-2019 (00:00:28)</b>  35:5 Q. -- right after sort of the heading. It  35:6 says that you were a senior expert on genetic  35:7 toxicology --  35:8 A. Uh-huh.  35:9 Q. -- at Monsanto; correct?  35:10 A. Yes.  35:11 Q. What does it mean that you were a senior  35:12 expert?  35:13 A. That I had the most experience as a  35:14 genetic toxicology expert. That's -- senior means a  35:15 long time of experience.</p>	LK2_COMBINED_07.2
35:19 - 35:21	<p><b>Kier, Larry 02-05-2019 (00:00:09)</b>  35:19 Q. Were you the most knowledgeable Monsanto  35:20 employee on genetic toxicology as it pertained to  35:21 glyphosate while you were employed at Monsanto Company?</p>	LK2_COMBINED_07.3
35:22 - 36:3	<p><b>Kier, Larry 02-05-2019 (00:00:26)</b>  35:22 A. I don't know that I knew all of the tests  35:23 when I was at Monsanto. That would be more product  35:24 toxicology that would have -- I guess later on when I  36:1 was making presentations, I did become familiar with  36:2 and I would have been the expert that was most familiar  36:3 with the genetic toxicology testing for glyphosate.</p>	LK2_COMBINED_07.4
47:3 - 47:5	<p><b>Kier, Larry 02-05-2019 (00:00:03)</b>  47:3 Q. And when did you leave  47:4 Monsanto Company?  47:5 A. 2000.</p>	LK2_COMBINED_07.5
47:6 - 47:9	<p><b>Kier, Larry 02-05-2019 (00:00:05)</b>  47:6 Q. And at  47:7 some point after you left Monsanto Company, you became  47:8 a consultant for Monsanto Company; correct?  47:9 A. Uh-huh.</p>	LK2_COMBINED_07.6
64:17 - 64:22	<p><b>Kier, Larry 02-05-2019 (00:00:28)</b>  64:17 Q. Do you believe that you know enough about  64:18 glyphosate to say that glyphosate is safe?  64:19 A. I know enough to say that from a</p>	LK2_COMBINED_07.7

64:20 genotoxicity standpoint, that I believe that  
64:21 glyphosate -- glyphosate-based formulations don't  
64:22 present a significant genotoxic risk.

77:1 - 77:5

**Kier, Larry 02-05-2019 (00:00:09)**

LK2\_COMBINED\_07.8

77:1 Q. In your time at Monsanto Company as an  
77:2 employee --

77:3 A. Uh-huh.

77:4 Q. -- do you believe that Monsanto

77:5 intentionally avoided testing Roundup formulations?

77:8 - 77:8

**Kier, Larry 02-05-2019 (00:00:02)**

LK2\_COMBINED\_07.9

77:8 A. I don't think I've encountered that, no.

77:9 - 77:21

**Kier, Larry 02-05-2019 (00:00:47)**

LK2\_COMBINED\_07.10

77:9 Q. (By Mr. Wool) And just so the testimony  
77:10 is clear, you in your time as an employee of Monsanto  
77:11 Company --

77:12 A. Uh-huh.

77:13 Q. -- did not encounter any situations in

77:14 which you found Monsanto Company to be resistant to

77:15 testing the genotoxicity of glyphosate-based

77:16 formulations?

77:17 A. No, in the sense that -- and here again

77:18 your question is genotoxicity testing, and that could

77:19 encompass a lot of things, but I don't recall a -- just

77:20 a resistance to genotoxicity testing. Specific tests

77:21 would be called for.

107:17 - 107:21

**Kier, Larry 02-05-2019 (00:00:11)**

LK2\_COMBINED\_07.12

107:17 Q. Have you heard of a gentleman named Dr.

107:18 James Parry -- P-A-R-R-Y?

107:19 A. Yes, I have.

107:20 Q. That name rings a bell?

107:21 A. Yes, it does.

108:3 - 108:7

**Kier, Larry 02-05-2019 (00:00:16)**

LK2\_COMBINED\_07.13

108:3 Q. Do you recall whether or not you had any

108:4 contact with him in your professional capacity as an

108:5 employee of Monsanto?

108:6 A. Not that I recall. Not anything directly

108:7 with him, no.

135:9 - 135:15

**Kier, Larry 02-05-2019 (00:00:29)**

LK2\_COMBINED\_07.14

135:9 Q. Do you believe that formulations may have

135:10 a different genotoxicity profile than glyphosate by

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142:15 - 142:22	<p>135:11 itself?</p> <p>135:12 A. In my experience, the typical formulations</p> <p>135:13 where I've seen the data don't have a different</p> <p>135:14 genotoxicity profile than glyphosate for the core</p> <p>135:15 assays.</p> <p><b>Kier, Larry 02-05-2019 (00:00:20)</b></p> <p>142:15 Q. Well, let's talk about some of these tests</p> <p>142:16 that it appears Dr. Parry recommended Monsanto conduct</p> <p>142:17 in the late 1990s.</p> <p>142:18 A. Uh-huh. Yes.</p> <p>142:19 Q. A states provide comprehensive in vitro</p> <p>142:20 cytogenic data on glyphosate formulations. Did I read</p> <p>142:21 that correctly?</p> <p>142:22 A. Yes, you did.</p>	LK2_COMBINED_07.17
143:4 - 143:11	<p><b>Kier, Larry 02-05-2019 (00:00:22)</b></p> <p>143:4 Q. Fair enough. Do you know whether or not</p> <p>143:5 Monsanto conducted in vitro cytogenic data on</p> <p>143:6 glyphosate formulations?</p> <p>143:7 A. I think they may have, but offhand I don't</p> <p>143:8 know for sure. I could determine that pretty easily</p> <p>143:9 by -- if it's in Kier and Kirkland. Do you want me to</p> <p>143:10 do that?</p>	LK2_COMBINED_07.18
143:12 - 143:21	<p>143:11 Q. Yeah, you can look in Kier and Kirkland.</p> <p><b>Kier, Larry 02-05-2019 (00:00:44)</b></p> <p>143:12 A. Okay. So in Kier and Kirkland in Table 2,</p> <p>143:13 which is in vitro mammalian cell assays of glyphosate,</p> <p>143:14 glyphosate salt solutions, and GBFs -- I do not see</p> <p>143:15 under the GBFs -- there's a couple of literature</p> <p>143:16 studies.</p> <p>143:17 So I don't see any regulatory studies</p> <p>143:18 there.</p> <p>143:19 Q. So it does not appear that Monsanto</p> <p>143:20 conducted those studies?</p> <p>143:21 A. I -- according to this, yes.</p>	LK2_COMBINED_07.19
145:10 - 146:7	<p><b>Kier, Larry 02-05-2019 (00:01:13)</b></p> <p>145:10 Q. Will you read Subparagraph B on Page 265,</p> <p>145:11 please?</p> <p>145:12 A. On the assumption that the reported in</p> <p>145:13 vitro positive clastogenic data for glyphosate is due</p> <p>145:14 to oxidative damage determine the influence of</p>	LK2_COMBINED_07.20 EXHIBIT 160.33.1

Page/Line	Source	ID
	145:15 antioxidants. Evaluate the clastogenic activity of 145:16 glyphosate in the presence and absence of a variety of 145:17 antioxidant activities. Such a study should also 145:18 incorporate glyphosate formulations to clarify the 145:19 validity of reports of differences in activity. 145:20 I recommend that both A and B should be 145:21 undertaken using the in vitro micronucleus assay in 145:22 human lymphocytes. The in vitro micronucleus assay 145:23 would provide a more cost-effective method for 145:24 evaluating a large number of experimental variables.	
	146:1 Q. And do you know if Monsanto Company 146:2 conducted this test with glyphosate-based formulations? 146:3 A. I don't recall that. I don't know.	
	146:4 Q. Would that be in the Kier and Kirkland 146:5 article? 146:6 A. It would be if -- well, let's see. It 146:7 would be in the same table, I think. Table 2. Let me	
146:8 - 146:8	<b>Kier, Larry 02-05-2019 (00:00:07)</b>	LK2_COMBINED_07.21
146:9 - 146:10	146:8 look at still just Table 2 in discussion. Yes. Thank <b>Kier, Larry 02-05-2019 (00:00:11)</b>	LK2_COMBINED_07.22
146:11 - 146:19	146:9 you. I just wanted to check the text to crosscheck it 146:10 with the table. <b>Kier, Larry 02-05-2019 (00:00:27)</b> 146:11 And what the text says -- sorry. On Page 146:12 293 of Kier and Kirkland, right column, second full 146:13 paragraph, there were no regulatory studies of GBFs in 146:14 in vitro mammalian cell chromosome aberration or 146:15 micronucleus assays.	LK2_COMBINED_07.23
	146:16 Q. So am I correct that Monsanto did not 146:17 conduct the tests that Dr. Parry describes in Paragraph 146:18 B using glyphosate -- 146:19 A. As far as I know, yes.	EXHIBIT 640.12.2
156:3 - 156:8	<b>Kier, Larry 02-05-2019 (00:00:16)</b> 156:3 Q. (By Mr. Wool) And Exhibit 13 appears to 156:4 be an e-mail exchange between Donna Farmer, Mark 156:5 Martens, and you, amongst other Monsanto employees. 156:6 A. Yes. Ah. 2001? 156:7 Q. Yes. 156:8 A. And I'm no longer at Monsanto.	EXHIBIT 686.1.1
156:23 - 157:4	<b>Kier, Larry 02-05-2019 (00:00:18)</b>	LK2_COMBINED_07.25

156:23 Q. And do you recall why Monsanto employees  
156:24 were e-mailing you with respect to Dr. Parry's  
157:1 recommendations?

157:2 A. I mean, I -- because I was a gene tox  
157:3 person formerly at Monsanto. That's my assumption,  
157:4 yes.

158:10 - 159:1

**Kier, Larry 02-05-2019 (00:00:43)**

LK2\_COMBINED\_07.26

158:10 Q. Let's turn back to the first page --

EXHIBIT 686.1.2

158:11 A. Yes.

158:12 Q. -- of this e-mail.

EXHIBIT 686.1.3

158:13 Now, in the middle of this paragraph, Mark  
158:14 Martens writes I don't know for sure how suppliers  
158:15 would react, but if somebody came to me and said they  
158:16 wanted to test Roundup, I know how I would react. With  
158:17 serious concern. We have to really think about doing  
158:18 formulations even if they are not on the market.  
158:19 Glyphosate is still in there and could get caught up in  
158:20 some false positive finding. Did I read that  
158:21 correctly?

158:22 A. I think so. It took me a while to catch  
158:23 up with where you were.

158:24 Q. What did you understand Mr. Martens's  
159:1 comment here to mean?

159:6 - 159:15

**Kier, Larry 02-05-2019 (00:00:41)**

LK2\_COMBINED\_07.27

159:6 I'm not sure what all of this -- it  
159:7 doesn't make a whole lot of sense to me, actually.

159:8 Q. What do you understand the term false  
159:9 positive finding to mean?

159:10 A. That would be an effect that is, for one  
159:11 reason or another, not a genuine effect. Caused by  
159:12 artifact perhaps.

159:13 Q. And without knowing definitively whether  
159:14 or not a substance is genotoxic, is it possible to  
159:15 presuppose that a finding would be a false positive?

159:18 - 160:4

**Kier, Larry 02-05-2019 (00:00:38)**

LK2\_COMBINED\_07.28

159:18 A. No, I mean, that doesn't make -- your  
159:19 question doesn't -- didn't make any sense. Sorry.

159:20 Q. (By Mr. Wool) Well, isn't the point of  
159:21 doing, for example, a genotox test, to determine  
159:22 whether a substance is genotoxic?

Page/Line	Source	ID
	159:23 A. Uh-huh. Uh-huh.	
	159:24 Q. And without doing the test or having a	
	160:1 sufficient amount of data, how would it be possible to	
	160:2 know that the finding would be a false positive?	
	160:3 A. Well, you wouldn't have a finding to label	
	160:4 it false if you hadn't done the test.	
160:10 - 160:12	<b>Kier, Larry 02-05-2019 (00:00:10)</b>	LK2_COMBINED_07.29
	160:10 Q. And prior to this -- the commencement of	elear
	160:11 the study, were you ever aware of a study that you	
	160:12 believed would turn up a false positive?	
160:15 - 161:3	<b>Kier, Larry 02-05-2019 (00:00:55)</b>	LK2_COMBINED_07.30
	160:15 A. That's actually two questions to me.	
	160:16 Maybe you didn't intend it that way. There are certain	
	160:17 endpoints, and I think I've indicated things like in	
	160:18 the DNA damage category where a positive finding	
	160:19 doesn't necessarily indicate genotoxicity or DNA	
	160:20 reactive genotoxicity, so in that sense it's a false	
	160:21 positive in that it's a possible result in that assay,	
	160:22 but it doesn't mean there's mutagenesis or DNA-reactive	
	160:23 genotoxicity.	
	160:24 The other type of false positive would be	
	161:1 one where, for example, you get a	
	161:2 statistically-significant increase in an endpoint, but	
	161:3 it isn't reproducible.	
241:20 - 244:1	<b>Kier, Larry 02-05-2019 (00:02:39)</b>	LK2_COMBINED_07.31
	241:20 Q. Now, one of the other areas of testimony	
	241:21 today involved a document, Exhibit 9, that is both a --	
	241:22 apparently some sort of a report by a Dr. James	
	241:23 Parry --	
	241:24 A. Uh-huh.	
	242:1 Q. -- and some other attached e-mails.	
	242:2 A. Yes.	
	242:3 Q. And do you remember looking at the page	EXHIBIT 160.33.2
	242:4 ending in Bates Numbers 265, which appears to be	
	242:5 actions recommended by Dr. Parry?	
	242:6 A. Yes, we looked at that earlier today.	
	242:7 Uh-huh.	
	242:8 Q. And are there six subparts or more of	
	242:9 actions?	
	242:10 A. There are more. Yes.	

242:11 Q. And Mr. Wool asked you about A and B; is  
242:12 that correct?

EXHIBIT 160.33.3

242:13 A. I believe so, yes. Uh-huh.

242:14 Q. And in A there was a question of whether  
242:15 or not Dr. Parry had suggested that perhaps it should  
242:16 be considered to, quote, provide comprehensive in vitro  
242:17 cytogenetic data on glyphosate formulations, period,  
242:18 close quote.

EXHIBIT 160.33.4

242:19 Do you see that?

242:20 A. I do.

242:21 Q. And I believe you testified that there had  
242:22 not been done by Monsanto in vitro cytogenetic data on  
242:23 glyphosate formulations; is that correct?

242:24 A. We didn't encounter any of those as  
243:1 indicated in Table 2 of Kier and Kirkland.

243:2 Q. Now, earlier we were talking and you said  
243:3 there's a large database on glyphosate. Are there  
243:4 other tests that might give information similar to what  
243:5 in vitro cytogenetic tests would have done?

elcar

243:6 A. Yes. So this is in the chromosomal  
243:7 effects category, and the most common other test would  
243:8 be an in vivo test for micronucleus or chromosome  
243:9 aberrations.

243:10 Q. And had Monsanto performed in vivo tests?

243:11 A. Yes, they had.

243:12 Q. Then there is a second category in B. If  
243:13 you can look at that.

EXHIBIT 160.33.5

243:14 A. Yes. Uh-huh.

243:15 Q. Which talks about in vitro positive  
243:16 clastogenic data.

243:17 A. Uh-huh.

243:18 Q. And oxidative damage.

243:19 A. Uh-huh.

243:20 Q. Was there some other form of testing done  
243:21 by Monsanto that filled the informational need  
243:22 suggested by Dr. Parry there?

elcar

243:23 A. Yes. I believe there were studies done  
243:24 addressing this that are in the Heydens, et al, 2008  
244:1 publication.

LK2\_COMBINED\_07.32



246:4 Q. you're talking about  
246:5 typical GBFs. Can you please tell us what you mean by  
246:6 that?

246:7 A. Those would be the ones that are commonly  
246:8 used and consequently tested.

246:9 Q. Is it the case that there are the  
246:10 occasional glyphosate formula that is not commonly  
246:11 used?

246:12 A. I believe so, yes.

246:13 Q. But was it -- is the Monsanto database and  
246:14 the studies therein -- is there information about the  
246:15 typical GBFs, the ones most likely to be encountered?

246:16 A. I believe there is, yes.

248:10 - 248:19

**Kier, Larry 02-05-2019 (00:00:23)**

LK2\_COMBINED\_07.33

248:10 Q. How would you characterize the amount of  
248:11 time you spent consulting for any client after that  
248:12 period?

248:13 A. Pretty minor part of my time. Yeah.

248:14 Q. And did you have consulting clients beyond  
248:15 Monsanto?

248:16 A. I did.

248:17 Q. And those were in areas other than  
248:18 herbicides; correct?

248:19 A. Yes.

249:20 - 250:6

**Kier, Larry 02-05-2019 (00:00:29)**

LK2\_COMBINED\_07.34

249:20 Q. Dr. Kier, have you ever used a  
249:21 glyphosate-based formulations on your residential  
249:22 property?

249:23 A. I have.

249:24 Q. And has any other member of your family  
250:1 used glyphosate on your property?

250:2 A. My wife was the primary user of primarily  
250:3 Roundup. Uh-huh.

250:4 Q. And you've allowed your wife to use  
250:5 Roundup on your property; correct?

250:6 A. For many, many years. Yes.

254:19 - 254:24

**Kier, Larry 02-05-2019 (00:00:17)**

LK2\_COMBINED\_07.35

254:19 Q. Do you believe that Monsanto wanted to  
254:20 know the ultimate answer with respect to whether or not  
254:21 Roundup causes cancer?

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254:22 A. I think they wanted to have information  
254:23 sufficient for them and the regulatories -- regulators  
254:24 to address that, yes.

255:9 - 255:19

**Kier, Larry 02-05-2019 (00:00:35)**

LK2\_COMBINED\_07.36

255:9 Q. (By Mr. McMinn) Dr. Kier, you may not  
255:10 know this for sure, but we've been talking about  
255:11 genotoxic testing of glyphosate-based formulations.  
255:12 And is it your belief that the  
255:13 formulations typically sold in the United States are  
255:14 the glyphosate-based formulations for which genotoxic  
255:15 testing has been done?  
255:16 A. I don't know for certain, but I would  
255:17 assume that the formulations for which we got  
255:18 genotoxicity test results are typical formulations that  
255:19 would be sold in the United States.

████████████████████  
████████████████████  
**Total Time = 00:16:07**

**Documents Shown**

EXHIBIT 160  
EXHIBIT 640  
EXHIBIT 686