SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF ALAMEDA

COORDINATION PROCEEDING SPECIAL TITLE (Rule 3.550)	)
ROUNDUP PRODUCTS CASES	) JCCP NO. 4953
THIS DOCUMENT RELATES TO:	)
ALL ACTIONS	)

VIDEO DEPOSITION OF DONNA FARMER, PhD
January 24, 2019
9:08 a.m.

CONFIDENTIAL

Reporter: Jude Arndt, CSR, RPR
CSR No. 084-004847

DEPOSITION OF DONNA FARMER, PhD, produced, sworn, and examined on January 24, 2019, at Husch Blackwell, 190 Carondelet Plaza, Suite 600, in the City of St. Louis, State of Missouri, before Jude Arndt, a Certified Shorthand Reporter and Certified Court Reporter.

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(Exhibits are attached.)

THE VIDEOGRAPHER: This is a continuation of the video deposition of Dr. Donna Farmer. Today's date is January 24th, 2019, and the time is 9:08 AM. Will counsel please identify themselves?

MR. HALL: Jeff Hall for Monsanto.

MR. JOHNSTON: Robert Johnston for Monsanto.

MS. MILLER: Christine Miller for Monsanto.

MR. LUNDY: Hunter Lundy for the plaintiffs.

MR. BAUM: Michael Baum for plaintiffs.

THE VIDEOGRAPHER: Thank you. The court reporter is Jude Arndt and will now swear in the witness.

The witness, DONNA FARMER, PhD, first having been duly sworn, testified as follows:

QUESTIONS BY MR. HALL:

Q. Good morning, Dr. Farmer.

A. Good morning.

Q. First I want to ask you to tell us a little bit about yourself. Where did you grow up?

A. In Denver, Colorado.

Q. Do you have a family?

A. Yes, I do.

Q. Tell us just a little bit about your family, please.

A. I've been married for 38 years, and I have three children. I have two boys and a girl, and my one son is married and just recently we have a five-month-old granddaughter, Emma.

Q. And where do you and your family live?

A. In University City, a suburb of St. Louis.

Q. Tell us a little bit about your education after high school, please.

A. As I said, I was in raised in Denver, so I went to University of Colorado in Boulder. I have a bachelor of arts in biology, and then I went on to graduate school.

Q. What graduate school did you go to?

A. I went to the University of Cincinnati College of Medicine.

Q. Did you get a degree there?

A. Yes, I did.

Q. What degree did you get?

A. I have a PhD in anatomy and cell biology.

Q. In your PhD coursework, did you study

toxicology?

A. Yes, I did.

Q. What is toxicology, briefly?

A. It's the study of the effect of substances on living organisms.

Q. After you obtained your PhD -- well, what year did you obtain your PhD?

A. 1982.

Q. After you received the PhD, what did you do next?

A. I went on to become a professor of anatomy at the Univer -- at Chicago College of Osteopathic Medicine that's now a part of Midwestern University in Chicago, Illinois.

Q. When you were a professor of anatomy in Chicago, who did you teach?

A. I taught first-year medical students.

Q. How long did you do that?

A. For six years.

Q. What did you teach them?

A. First-year medical students, you teach them gross anatomy, histology, which is looking at tissues under microscope, neuroanatomy, understanding the nervous system, and embryology.

Q. After you taught there -- did you say for seven years?

A. Six years.

Q. Six years. What did you do next?

A. My husband I met when we were in graduate school. He is an M.D. And after he did his training in Chicago, he was coming down here to Washington University to continue his research training.

Q. So you moved to St. Louis in the late 1980s?

A. Yes. Uh-huh.

Q. What did you do first in St. Louis professionally?

A. Professionally, I was at Washington University in the department of OB/GYN.

Q. What did you do at Washington University?

A. We were looking at the placenta, understanding how the role of the placenta in helping have healthy babies.

Q. And this is Washington University in St. Louis?

A. Yes.

Q. Who did -- were your were you a teacher, lab worker at Washington University? What exactly did

you do?

A. I co-led with another PhD. A lab. We were head of the lab for an M.D. there. And I also was a part of the faculty that taught sophomore students.

Q. How long did you do that at Washington University?

A. I was there for three years.

Q. And when you left Washington University, what year was that?

A. It was in 1991.

Q. What did you do next?

A. I went to Monsanto.

Q. All right. So you joined Monsanto in 1991?

A. Yes.

Q. Why did you join Monsanto?

A. I really was in -- looking for another opportunity because when I was teaching medical school, I was interacting with a lot of people on a daily basis. When I was at Wash U, it was this other gentleman and I in a lab for about 10 hours a day. While it was really fun and exciting research, I really wanted to have more interaction in science in a more broader way.

Q. What position did you take at Monsanto? What was your job when you joined in 1991?

A. As a regulatory toxicologist.

Q. Tell us briefly what a regulatory toxicology does at Monsanto.

A. The -- because of the products that we had, which are pesticides, we work with the U.S. Environmental Protection Agency, which is a regulatory agency, and so our job as regulatory toxicologists is to understand what is the information that the agency need to be able to evaluate the safety of the product.

Q. Well, we'll come back to your job plenty this morning. Tell us, when you joined Monsanto in 1991, became a regulatory toxicologist, did you also take more training in the field of toxicology?

A. Yes, I did.

Q. Tell us briefly about that, please.

A. When I started in the fall of 1991, I also sat in on the course of -- toxicology course at St. Louis University, and the director of our department also taught a toxicology course for those within the department as well as attending society meetings, like the Society of Toxicology, where they always have continuing education courses on various aspects of

toxicology.

Q. All right. So you joined Monsanto in 1991. When did you start working with glyphosate and Roundup and other glyphosate products at Monsanto?

A. 1996.

Q. And is it fair to say since 1996 through today, you have had some involvement with glyphosate and glyphosate products at Monsanto?

A. Yes.

Q. Give us just an overview, if you can, about what your job responsibilities have been at Monsanto as they relate to glyphosate and glyphosate products.

A. Yeah. Okay, I think there's probably two major areas. As we just talked about, the regulatory piece, working with regulatory agencies, making sure that we have the data, conduct the studies to develop the data that the agencies use to evaluate the safety of the product.

And then there's another piece that's called -- what we would call product stewardship, and the baseline of product stewardship is always following laws and regulations and then doing above and above that.

Q. Well, we'll come back to those subjects in some more detail. I'd like to turn now to glyphosate and Roundup and glyphosate products at Monsanto. And just for shorthand, Roundup is the primary glyphosate product at Monsanto; correct?

A. It was the primary brand name, and there was one formulation always known as Roundup, the original.

Q. And there -- are there other brand names Monsanto uses for glyphosate products as well?

A. Yes.

Q. So I'll just refer to Roundup and the other Monsanto glyphosate products as glyphosate products; is that okay?

A. Yes.

Q. Now, the plaintiff's lawyer, when he was asking you questions, asked whether you believe glyphosate and Roundup cause cancer. I want to ask you, based on the science that you have conducted in your career, the science you've reviewed and studied, does Roundup cause cancer?

A. No.

MR. LUNDY: Objection. She's not an expert in medicine.

Q. (By Mr. Hall) Do you use Roundup yourself?

A. Yes, I do.

Q. How long have you used Roundup?

A. Probably -- since we've owned a house, around 25 years or more.

Q. Tell us a little bit about that use. How often do you use Roundup?

A. We have a small yard, so I use it probably about three times a year.

Q. When you use Roundup yourself, do you wear special equipment?

A. No, I follow the label directions.

Q. Do you have any concerns about your health related to your use of Roundup for 25 years?

A. No.

Q. You mentioned that your husband is a medical doctor; is that right?

A. Yes. Uh-huh.

Q. Has your husband the doctor ever expressed any concerns to you about your health related to your use of Roundup?

MR. LUNDY: Objection. Hearsay.

A. No.

Q. (By Mr. Hall) Have you ever recommended --

MR. LUNDY: And may I ask this -- when I make an objection, Dr. Farmer, please let me make the objection before you respond, and then after I make it then give your response.

MR. HALL: Sure.

MR. LUNDY: Would you afford me that courtesy, Jeff?

MR. HALL: Of course. Of course.

MR. LUNDY: Thank you.

MR. HALL: We'll both pause to make sure we do that.

A. Yeah.

MR. LUNDY: Thank you.

A. I apologize.

Q. (By Mr. Hall) Have you ever recommended to anyone that they use Roundup?

A. Yes.

Q. Tell us a bit about that. Who have you made recommendations for Roundup to?

A. I can think of a couple recently. One is a friend of mine -- her son was wearing a backpack sprayer. They have about a 20-acre farm, and he was

out spraying a glyphosate-based product, and I was recommending that he had -- there are different products he could use, one for gravel, one for the poison ivy, and so recommending that he look at a different products.

Another one is a future daughter-in-law. Her father has a 100-acre farm in Wisconsin, and we were talking about the different uses that he has for Roundup products on his farm.

Q. And you said it was your future daughter-in-law?

A. Uh-huh.

Q. But then you said he has.

A. It's her father.

Q. Oh, okay.

A. It was her father's farm.

Q. All right. Let me ask you about the Roundup and other Monsanto glyphosate products, what they're made of. What are the main ingredients in Monsanto glyphosate products?

A. The main ingredients are water, glyphosate and a surfactant, which a soapy-like substance.

Q. When Roundup is sprayed or other Monsanto glyphosate products are sprayed, about what percentage

of it is water?

A. Around -- greater than 90 percent, 95 percent.

Q. Now, you mentioned water, glyphosate, and surfactants. Let me ask you about glyphosate. What is glyphosate?

A. Glyphosate is a synthetic molecule that was discovered to act on a process in plants and is very effective in all plants in controlling and killing them.

Q. We've heard that glyphosate products are popular and in demand. Do you know what accounts for why it is a popular demanded product?

A. I think there's a couple reasons. One, it's very efficacious. As we talked about, it acts on a process found in plants, so it controls any kind of unwanted plants. And the other one is it has a very good safety profile.

Q. Well, when you say it has a very good safety profile, are there -- in the field of toxicology, are there general measures of the toxic properties or toxicity of substances?

A. Yes.

Q. What is a generally-accepted measure of

toxicity of substances used to evaluate many substances?

MR. LUNDY: Objection.

A. When --

MR. LUNDY: Calls for an expert opinion.

Q. (By Mr. Hall) Based on your experience, can you describe a generally-accepted toxicology measure used to give a general evaluation of the toxicity of substances?

MR. LUNDY: Objection. I don't think the witness is qualified as an expert in toxicology.

A. Toxicologists like to do -- kind of compare relative toxicity of substances, and one of the very first ones that toxicologists do will be an oral LD50, and LD stands for lethal dose.

Q. (By Mr. Hall) And is an LD50 measure, is that something that's uses or -- used to measure the toxic properties of many substances?

A. Yes.

Q. Even substances we use on a daily basis?

A. Yes.

Q. And the LD50 you said is lethal dose. What's the 50?

A. Giving it one time, it's a dose that will

kill 50 percent of the population that it's given to.

Q. And are you familiar with the LD50 measures for substances that all of us use every day?

A. Yes.

Q. Give us some examples of an LD50 measure for common substances.

A. So for example, water would be 90,000 milligrams per kilogram.

Q. So the LD50 for water is 90,000?

A. Yes.

Q. What's the LD50 for another common everyday substance?

A. If you look at table salt, it's around 3,000 milligrams per kilogram.

Q. So it's -- table salt is 3,000, water is 90,000. How do they compare?

A. As the number goes down -- the lower the number it's considered more toxic.

Q. Table salt is then considered more toxic than water?

A. Yes.

Q. Give us another example of a product used -- we all use on a daily basis, what the LD50 is?

A. Caffeine that you would find in coffee has

an LD50 -- and again, these are typically done in rodents rats -- is around 50 milligrams -- I'm sorry, 200 milligrams per kilogram.

Q. Is there an LD50 measure for glyphosate?

A. Yes.

Q. And what is that?

A. It's around 5,000.

Q. And is the LD50 measure, this -- is it -- does it reflect anything about cancer?

A. No, it doesn't.

Q. Is this just a relative measure toxicologists use to gauge the relative toxicity of substances?

A. Yes, it is.

Q. Now, you said the LD50 of water is 90,000, the LD50 of glyphosate is 5,000 --

A. Yes.

Q. -- and the LD50 of caffeine is around 200?

A. Yes.

Q. What is the LD50 of Roundup glyphosate products?

A. They're around 5,000 as well.

Q. What does an LD50 5,000 measure for

glyphosate and glyphosate products -- what does that tell you as a toxicology (sic) about the relative toxicity of glyphosate?

A. That is --

MR. LUNDY: Object to the question. Calls for an expert opinion.

A. It has a low toxicity.

Q. (By Mr. Hall) Why -- why is it that glyphosate -- you said it's effective on weeds. Why is glyphosate effective on weeds if it has a relatively low toxicity level?

A. The target for glyphosate is a process in plants, and that's not found in human cells or animal cells.

Q. You mentioned that there's water, glyphosate, and surfactants in Roundup and Roundup -- and glyphosate products; right?

A. Yes.

Q. Let me ask you about surfactants first. What are surfactants?

A. They're soapy-like substances.

Q. What are some products that contain surfactants that we'd be familiar with using daily?

A. They would be shampoos and dishwashing

detergents and body soaps. Things like that.

Q. Why do Roundup and other glyphosate products include this soapy-like surfactant substance?

A. One of the things that surfactants do, say, with water droplets is -- because, again, remember, we said there's a lot of water that's in the formulated product when it's sprayed -- is if you think about the water sitting as a droplet and it drops on that plant leaf, if you don't, it can just bounce off.

So the surfactant reduces the tension of that ball of water to make it look more like a pancake so it spreads out over the surface of the leaf as well as not allowing it then to fall off.

Q. I want to ask you about the testing that Monsanto has done over the years of glyphosate, Roundup, and glyphosate products; okay?

A. Uh-huh.

Q. First, have you been involved in that testing?

A. Yes.

Q. Have you been extensively involved?

A. Yes.

Q. Give us first an overview of the substances that Monsanto tested over the years as they

related to glyphosate and glyphosate products.

A. So we have done glyphosate the active -- what we call the active ingredient. Again, we talked about -- the next one is the surfactant. We've done testing on the surfactants. And then when those two are put together in the glyphosate products, the formulation what we call it, we will then test that formulation.

Q. And by formulation, are you referring then to Roundup or other glyphosate products?

A. Yes.

Q. Now, I'm going to be asking you some details about the various tests that Monsanto has done over the years on glyphosate and glyphosate formulations and surfactants. Tell us first, did Monsanto itself actually do the test that we're going to be talking about?

A. We -- there's -- so there's -- the Monsanto monitor contracted all of those tests. Some of the tests were done at a testing facility we had at Monsanto and others were done at testing facilities that are established to do that for all sorts of industries.

Q. All right. Well, let me make sure I have

that clear. Were some of the tests that you're going to describe actually done by Monsanto employees in a lab at Monsanto?

A. Yes.

Q. When were those tests done?

A. Back in the -- I think in the 1980s and 1990s.

Q. And is that lab at Monsanto still used for these kinds of tests?

A. No, it's not.

Q. So after that lab is no longer used, who has actually done the tests you're going to be describing of glyphosate, surfactants, and glyphosate products?

A. And even back then, we also used outside, what we call contract labs, who are toxicology testing labs that we use.

Q. Are these professional laboratories that are owned by someone other than Monsanto?

A. Yes.

Q. And are you familiar with these professional laboratories?

A. Yes.

Q. Are they under some kind of accreditation

system, or is there some kind of check done to the quality of their work?

A. Absolutely.

Q. Can you describe a little bit about that?

A. They have oversight by the regulatory agencies, so they conduct studies both to be submitted to the Environmental Protection Agency as well as the Food and Drug Administration. They can bring in auditors to look at the data.

They also have -- all of their technicians and the people that work there also have certification. For their animal facilities, they have to have certification. So they have a lot of different organizations that they have to be certified by and inspected by.

Q. These professional laboratories you're talking about, the third-party laboratories that have done much of this testing for Monsanto --

A. Uh-huh.

Q. -- do they do testing for other companies aside from Monsanto?

A. Yes.

Q. Do you know if they do work for many other companies?

A. Yes.

Q. Now, when -- over what period of time have the tests that Monsanto has done -- either in the lab that it owned back in the 1980s and 1990s or third-party labs that you've described -- over what period of time have these tests been done?

A. They have been ongoing for all this time, many, many years.

Q. Did it start before you arrived at Monsanto in the 1990s?

A. Yes.

Q. Does it continue today?

A. Yes.

Q. Let's take a closer look at the testing first of glyphosate. You mentioned that Monsanto has tested glyphosate, the active ingredient. Tell us in general terms the categories of tests that Monsanto has done over the years on glyphosate itself.

A. I think there's kind of three major areas you can look at, is the acute -- what we call acute toxicology, we do the genotoxicology, and then we do a number of animal tests that look at a variety of different endpoints.

Q. Let's take those one at a time. You

mentioned acute toxicology test of glyphosate.

A. Uh-huh.

Q. Give us a sense of what are acute toxicology tests of glyphosate.

A. Just a few minutes ago we were talking about the oral LD50. That would be considered an acute study. Then we look at different routes. We look at a dermal route for LD50, we look at an inhalation route for what we can an LC, lethal concentration, 50. Then we look at eye and skin irritation, then we look at what happens if you have repeat exposure to it, do you develop an allergy.

Q. Are these acute toxicology tests -- well, first of all, do they test for cancer?

A. No.

Q. Potential cancer causing of any substance?

A. No.

Q. Are these standard toxicology tests done of many substances?

A. Yes.

Q. And tell us, are you familiar with the results of these tests?

A. Yes.

Q. And by the way, you mentioned the

professional third-party laboratories have done many of the tests for Monsanto of glyphosate, glyphosate products, and surfactants. What has your role been with respect to the testing that Monsanto has done over your career at Monsanto?

A. So when we worked either with our Monsanto lab or these contract labs, we are considered study monitor. We work to get the contract in place, to get the study placed at that facility, and then we work with -- the main person there is called the study director.

They're the ones who are actually supervising and overseeing the conduct of the study, and then they work with the pathologist who evaluates some of the results coming out of the studies.

Q. And you used the term study monitor. Does that describe your role?

A. Yes.

Q. And tell us a little more about exactly what you would do, what you have done, with respect to these tests that Monsanto has done over the decades of your experience there.

A. So we would determine there was a need to do a study or we needed a new formulation to be tested.

I would call up the study director or their contract person and say we'd like to place this set of acute studies with you.

They would send me a protocol. A protocol is the study design; it says exactly how they're going to conduct the study. I would make sure that our people got the proper test materials sent to that study and that it was analyzed and that you had that analysis of what the substance was.

And then the study director -- I would sign the protocol, and then they would be involved in conducting the study, and then they would report back to me with the results. They would write the report. We would review the report with them. They would have the pathologist look at it, and then the study director and the pathologist signed the reports.

Q. And then at the conclusion of the signing of the reports, would you obtain the reports yourself?

A. They would keep a copy for themselves and they would send a copy to us at Monsanto.

Q. And then ultimately what did Monsanto do with those reports?

A. So I work with what are called regulatory affairs managers, and they are the ones who submit

these studies to the agencies. So the copy then would be given to our regulatory affairs managers and then they would make the official submissions to the regulatory agencies.

Q. And the regulatory agencies would include the United States Environmental Protection Agency?

A. Yes.

Q. Would it include agencies for other countries around the world?

A. Yes.

Q. Now, you mentioned the acute toxicity testing that Monsanto did of glyphosate. What did those acute toxicology tests show as to glyphosate? What were the results of those tests in your experience?

A. For glyphosate by itself, it has all low acute toxicity, but it is an eye irritant, because it's an acid, so it's very -- like if you got lemon juice in you on eye it would burn. So we do have eye irritation with glyphosate itself.

Q. You mentioned three categories -- acute toxicology tests, genotoxicity tests, and animal testing. Let's move to the genotoxicity tests. First of all, what is genotoxicity?

A. So what we're looking at is each cell has genetic material that's very important, and so we want to make sure that we understand does this substance adversely affect the genetic substance in that cell. And this is a really important study that we -- one of the very first ones we always do with new chemicals.

Q. And when you say a cell, an effect on a cell, that's a cell of what?

A. Of any tissue in your body. We're looking at -- the cell has a nucleus, and in that nucleus -- I think a lot of people have seen a picture of a cell, dark purple circle, and that's called the nucleus, and in that nucleus is that genetic material. So what we want to know is does that substance have any impact on that genetic material.

Q. And these genotoxicity tests, are they tests of the effective glyphosate on actual cells of human beings, or animals, or plants, or what?

A. All of the above.

Q. Tell us, how do you go about testing effects of a substance on cells? Is that done in a laboratory?

A. Yes.

Q. Tell us a little bit about how that's

done.

A. So -- I think a lot of people have heard about a petri dish. So if you have cells, you have to grow them in some sort of a dish, and we call it a petri dish. And that's called in vitro, so it's an in vitro system.

And you would plate your cells out on that petri dish, and then you would cover them with the fluid that keeps them alive, gives them nutrients. And then you would add your test material to then that water, whatever is bathing those cells.

Q. So in vitro testing is in a dish in a laboratory where you are just introducing the substance to cells in that dish?

A. Yes.

Q. And I take it you can't see those cells with the naked eye?

A. Not individually, no.

Q. So they're examined under a microscope or something like that?

A. Yes.

Q. Is there any other kind of a genotoxicity test of glyphosate?

A. Then we would call it in vivo, and what

that means is in live animals. Because you can understand in a petri dish, you just have cells.

While they have some mechanisms of capability to repair, we really want to know what's going on in a whole animal, because that's really how people will be exposed to this, is in a whole system.

So that animal has barriers where the chemical have to get through. It has repair mechanisms. It has a lot more complex testing system, so we will then do genotoxicity testing in whole animals.

Q. And is this animal testing you're describing, is that required by the EPA?

A. Yes.

Q. Is it required by other regulators in other countries around the world, the animal testing?

A. Yes.

Q. So you mentioned that there's in vitro testing of cells and in vivo testing of cells in this genotoxicity testing. Over the years, what has Monsanto's genotoxicity testing of glyphosate shown?

A. No genotoxicity.

Q. And what does genotoxicity -- if a substance is genotoxic, you've mentioned that means --

you said that means damage to cell genes. Does that mean it's a carcinogen if it's genotoxic?

MR. LUNDY: Object. That calls for an expert opinion, and she's not an expert in toxicology. She's not an expert in medicine. She's not a doctor.

MR. HALL: Go ahead.

MR. LUNDY: You haven't called her to give a question.

MR. HALL: Go ahead.

MR. LUNDY: An opinion on carcinogenicity.

A. Not necessarily.

Q. (By Mr. Hall) Now, you mentioned that over the years, the results of Monsanto's genotoxicity of glyphosate have shown it is not genotoxic?

A. Yes.

Q. Let's move to the animal tests that you mentioned. Are these tests usually of mice and rats?

A. Yes.

Q. And again these are required by the EPA?

A. Yes.

Q. Tell us a little bit about how these tests are done, of glyphosate.

A. They're done over different periods of time, from several weeks, to several months, to over

the lifetime of the animals. They're typically done orally; they're put into their diet, so it's mixed into their food and they eat it through that. And we then do this -- again, looking at different endpoints.

Q. What's an endpoint?

A. So for example, one endpoint would be an effect on reproduction, and another endpoint might be on the immune system.

Q. You mentioned that with the glyphosate testing, the glyphosate would be introduced in the food. Is it mixed in the mice and rats' foods?

A. Yes.

Q. Tell us a little bit about how much glyphosate is used in these animal tests in the food.

A. What we have -- when you look at these studies that are done, a group of animals will be fed the food without any glyphosate in it, and then we will have anywhere between three and five other groups that will be fed increasing amounts of glyphosate. So you have like a low dose, some middle doses, and then a high dose.

Q. And you mentioned there's one group that doesn't get any doses. Is that the control group?

A. Yes.

Q. As to the animals that get the doses of glyphosate, can you give us a sense of how much glyphosate they are getting? For example -- well, go ahead. Can you give us a sense of that?

A. Yeah. If you look at a range of the studies that have been conducted, maybe one of the low doses might be 50 milligrams per kilogram upwards of around 5,000 milligrams per kilogram.

Q. For those of us who those numbers don't mean much to, including me, can you compare that amount of glyphosate to the amount of glyphosate somebody would be exposed to by actually using Roundup or glyphosate products, a human being?

A. Yeah.

MR. LUNDY: I'm going to object to the question. It calls for an expert opinion. She's not qualified to give it. She can testify on what the studies of Monsanto show, but you're asking for her opinion.

MR. HALL: I wonder if you could just state the objection without argument to preserve the record. We'd go a little faster.

MR. LUNDY: I'll try to do that it.

MR. HALL: Thank you.

MR. LUNDY: I wish she would slow down in her answers so I can make my objection.

MR. HALL: We'll continue to try to do that as well.

MR. LUNDY: Thank you.

MR. HALL: So both of us let's go slow and make sure we get a record where people are speaking without interruption.

Q. (By Mr. Hall) Let me ask a slightly different question. Are you familiar with exposure studies of people who use glyphosate products and how much glyphosate -- what kind of dose you get of glyphosate if you actually use glyphosate products?

A. Yes.

Q. And you were describing the amount of glyphosate used in these animal studies, the doses to these animals. Can you give us some sense of comparison between the amount of glyphosate that the animals are eating, are exposed to, as compared to the amount of exposure someone, a person using glyphosate products would obtain?

MR. LUNDY: Same objection.

A. I -- when we talked about, remember, the low dose to the high dose? So if you're comparing the

low dose to the high dose compared to, say, someone from the farm family exposure study, which was a task force study looking at glyphosate exposure in farmers -- it would be around 10,000 to 1,000,000 times greater the doses that the animals would be seeing than what that person had been exposed to.

Q. (By Mr. Hall) The animal tests involved much higher doses of glyphosate than people would ever be exposed to; is that fair?

A. Yes.

Q. Why -- do you have an understanding of why -- in these animal tests required by the EPA and other regulatory agencies, why are the animals receiving such highs doses of glyphosate?

A. The regulatory agencies want you to reach what's called a maximum tolerated dose, and so it typically is around 1,000 milligrams per kilogram, but as we talked about before, glyphosate has such low toxicity, we had to push the doses even higher to some of those animals.

Q. Why -- what's the point, in these animal tests, of having such high doses provided to the animals?

A. They really want to see a response of

those animals to that chemical. Is it really causing any adverse effect in them, without just generalize making them sick? They want a very spec -- they want to push it as high as they can to get -- elicit a response from those animals as a result of exposure to that chemical, without making them sick.

Q. What period of time are these animal tests conducted, the mice and rat studies that you've mentioned?

A. I'm sorry. Can you --

Q. How long are these tests?

A. These are for a good portion of the lifetime of mice and rats. So they'll go from like 18 months to 24 months.

Q. Are there also some shorter-term studies as well?

A. Yes.

Q. Is one purpose of the two-year animal studies, the longer animal studies, to see if a substance can cause cancer in the animals?

A. Yes.

Q. By the way, if the substance can cause cancer in an animal, does that mean it necessarily would cause cancer in a person?

A. No.

Q. What were the results of the animal testing of glyphosate that Monsanto did throughout your career?

A. Not carcinogenic.

Q. Now, you mentioned that Monsanto also tested surfactants. Who makes the surfactants, the soapy-like substance that you told us is part of the glyphosate products?

A. Other companies, not Monsanto.

Q. Do you know if the companies, the other companies that make surfactants, test surfactants themselves?

A. Yes.

Q. Do they do toxicity and genotoxicity and animal testing of surfactants, these other companies that make surfactants?

A. Yes, they do.

Q. Did Monsanto itself -- has Monsanto itself also tested surfactants?

A. Yes.

Q. Was Monsanto required by regulators to do all the tests of surfactants that it has done?

A. No.

Q. Why has Monsanto tested surfactants?

A. We wanted to have a complete profile of the toxicological -- toxicology of our surfactants.

Q. Let me show you a document.

MR. HALL: Actually, let's take a short break, if we could.

THE VIDEOGRAPHER: We are going off the record at 9:44 AM.

[A brief recess was taken.]

THE VIDEOGRAPHER: We are back on the record at 9:57 AM.

Q. (By Mr. Hall) Dr. Farmer, before we took that break, I was asking you about surfactant testing. You told us that the manufacturers of surfactants tested surfactants and that Monsanto itself also tested surfactants. Do you recall that?

A. Yes.

Q. I want to ask you now about the testing that Monsanto did of surfactants. That's something you've been involved in extensively throughout your career; correct?

A. Yes.

Q. Let me show you a document that's been marked as Exhibit -- Deposition Exhibit 68. And it is

titled surfactants genotoxicity studies conducted by Monsanto.

Are you familiar with this chart?

A. Yes, I am.

[Exhibit 68 marked for identification.]

Q. What is this chart?

A. This is a chart is a list of different surfactants that are used in our glyphosate products, and it lists the genotoxicity studies that were conducted on those various surfactants, and there are different types of genotox studies listed.

Q. And where is the surfactant type identified on this chart?

A. It's under description of product or test substance.

Q. That would be the second-to-the-last column on the right?

A. Yes.

Q. And then the chart has entries for each of those. Some have multiple entries; that is, for each formulation. Is that what they are? Or recipe of surfactant?

A. Surfactant -- yeah, type of surfactant.

Q. And so for example, the one first one is

called MON 8080?

A. Yes.

Q. And that refers to the surfactants that Monsanto used and tested?

A. Yeah. MON is a designation for Monsanto, and then 8080 identifies that particular surfactant.

Q. And we see the Bates columns -- Bates begin and Bates end.

Do you see that?

A. Yes.

Q. And do you understand that identifies the Bates numbers of the documents as they were produced in this litigation?

A. Yes.

Q. The next column -- author, study director -- what does that refer to?

A. This is what we talked about earlier. The people who actually are conducting the studies are called study directors, and these are the last names of those individuals.

Q. Are those people at professional labs, at Monsanto, or both?

A. Both.

Q. The year, is that the year the test was

done?

A. That typically is the year the report was issued. So the test could have been done a year or so before, and then that would have been the year that the report was issued.

Q. And then we see the title of the genotoxicity test of the surfactants; right?

A. Correct.

Q. And then the test organism. What does that refer to?

A. That refers, what did -- what type of cell did we test it on or what kind of whole animal did we test it in.

Q. And it looks like some -- are some human cells?

A. Yes.

Q. What other kinds of cells were tested in these tests shown on Exhibit 68?

A. There are some bacterial cells, and some bone marrow cells.

Q. Bone marrow cells from mice, I see; is that right?

A. Yes.

Q. And then there's a column called assay.

What does an -- what does assay mean?

A. That is a general title for that type of study.

Q. Is assay a word for test? Like --

A. For test, study. They're all kind of interchangeable.

Q. And in that column we see Ames. What is the Ames assay?

A. The Ames assay is an in vitro test using bacterial cells, and it was named after Bruce Ames, who invented it.

Q. And are these tests standard genotoxicity tests that are done on many substances?

A. Yes.

Q. And you told us what the description or product column is. The last column is positive or negative. When referring to genotoxicity tests, what does positive mean?

A. That there was evidence of genotoxicity.

Q. The test showed some genotoxic effect?

A. Correct.

Q. And what does negative mean as to a genotoxicity test?

A. There was no evidence of genotoxicity.

Q. What were the results of the genotoxicity studies that Monsanto has done on surfactants?

A. They were all showing no evidence of genotoxicity.

Q. And is that designated by the negative column, negative in the last column?

A. Yes, it is.

Q. On this chart. Okay. Thank you. Now, aside from the genotoxicity test, did Monsanto do other testing of surfactants?

A. Yes.

Q. Describe those generally.

A. We would do acute testing, as we talked about before, and we also did some animal testing.

Q. And what did the tests of surfactants that Monsanto has done show? What were the results?

A. In those animal tests?

Q. Well, in all of the tests. Can you speak generally about all of them?

A. Yeah, I --

MR. LUNDY: Objection. Hearsay.

A. Again, from the genotox, there was no evidence of genotoxicity. When we gave it to pregnant rats and looked at their offspring, there was no

evidence of production of birth defects.

And when we gave it to them over a period of time in doses in their diets, there was no evidence of what we would call target organ toxicity, that the surfactants weren't targeting like a kidney or a liver, and the predominant finding we would see would be gastrointestinal irritation.

Q. (By Mr. Hall) Did Monsanto reach a conclusion as to whether or not the surfactants it used in glyphosate products was genotoxic?

A. We concluded it was not genotoxic.

Q. Were all of the tests that you've just described that Monsanto did, were those tests that you yourself were involved in?

A. I was involved in not all of them but a number of them.

Q. And are those tests -- for the ones that you weren't involved in, are you familiar with the test study reports?

A. Yes.

Q. Let's move to the Roundup -- or the formulated product testing, the glyphosate product testing that Monsanto did. You've told us about Monsanto's testing of glyphosate, the active

ingredient, the testing of surfactants done by Monsanto.

I want to ask you now about the formulated product testing. What categories of testing has Monsanto done of the formulated glyphosate products?

A. We have done the acute testing that we talked about, we've done genotoxicity, and we have done some animal testing and some worker exposure studies.

Q. Let's talk about the acute toxicity tests again. Are these the same five or six toxicity tests you've described, the LD50 and similar tests?

A. Yes.

Q. Are those sometimes referred to as six-pack tests?

A. Yes.

Q. And you told us those are standard toxicity tests; true?

A. Yes.

Q. What have those acute toxicity tests of formulated product, the tests that Monsanto has done, what did they show?

A. That it has low toxicity and is not irritating.

Q. That's consistent with the LD 5,000 --

LD50 5,000 or so measure you described early on?

A. Yes.

Q. Let's talk move to the genotoxicity tests of the formulated products that Monsanto has done. Has it done the same kind of genotoxicity tests of the formulated product that you described for glyphosate itself? That is, the laboratory in vitro petri dish and in vivo in animal tests?

A. Yes.

Q. Same kinds of tests?

A. Yes.

Q. All right. Let me show you another chart.

[Exhibit 69 marked for identification.]

Q. Handing you Deposition Exhibit 69.

MR. HALL: For almost all of them I don't think I have an extra, but that one I do.

Q. (By Mr. Hall) Dr. Farmer, I've handed you Deposition Exhibit 69.

Are you familiar with this chart?

A. Yes.

Q. Describe for us generally what it shows. It's titled formulated products, genotoxicity studies, conducted by Monsanto.

A. Yes. So this -- instead of having the

surfactant over-under, description of product, or test substance -- this would be an indication of the type of formulation that they were being testing. It again has the list of all the types of tests, and then it has the results, and then the different organisms that were tested.

Q. Does Exhibit -- Deposit --

MR. LUNDY: For the record, neither one of these documents have a Bates stamp number on them, and I'm wondering why not.

MR. HALL: These are charts that have been prepared for -- they're summary charts of documents that have been produced as identified by the Bates numbers, in Bates number columns.

Q. (By Mr. Hall) This summary chart, Exhibit 69 -- does Exhibit 69 list genotoxicity studies that Monsanto has done of formulated glyphosate products?

A. Yes.

Q. And we see the Bates columns, the two columns on the far left.

Do you see that?

A. Yes.

Q. Do those identify the Bates numbers of the various studies as they have been produced in this

litigation?

A. That's my understanding, yes.

Q. And we see the author. Tell us a little bit about the authors of these tests. What does that mean?

A. The authors are the individual that was in the laboratory that is designated as the study director. They're the ones that conducted the study, and they're the ones then that wrote the report.

Q. The year. Is that the year of the report?

A. Yes.

Q. Would that correspond to the year of the test, or not necessarily?

A. Not necessarily.

Q. The year of the test might be a year before, or --

A. Yes.

Q. -- the same year. Okay. The title seems self-explanatory. The test organisms. Tell us what that means, please.

A. This is the type of organism. If it's in a petri dish and it's identified as like salmonella typhimurium, which is a bacteria -- you'll see there are mouse erythrocytes, you'll see there are human

lymphocytes, so this is going to identify the type of cell and will also tell you which kind of study was done, whether it was done in mice or whether it was done in a rat. It tells you the whole animal that was tested.

Q. And so the genotoxicity test of formulated products that Monsanto did included tests of bacteria cells?

A. Uh-huh. Yes.

Q. Did it include tests of the effects of formulated product on mice cells?

A. Yes.

Q. Did it include the effects of formulated products, testing the effects of formulated products on human cells?

A. Yes.

Q. And we see that word again, assay. Does that list the kind of genotoxicity test that was done?

A. That's the name -- yes, the name of the test.

Q. And you told us the description of the product. That's the reference to the formulation itself that was tested in these genotoxicity tests?

A. Yes.

Q. All right. And then we see the column positive or negative. As to the genotoxicity test of formulated products, what would a positive test result indicate?

A. That there was some indication of genotoxicity in the test.

Q. Were any of the genotoxicity tests that Monsanto did of formulated products, did they result in a positive finding -- that is, a finding of genotoxicity?

A. No.

Q. Were all of them negative as shown in this chart?

A. Yes.

Q. All right. Let me ask you now --

MR. LUNDY: Let me just make another objection for both 68 and 69. There's been no foundation. They're not Bates-stamped. We don't know who prepared it. The witness is not the project or the author or the study director, which she says she oftenly plays for Monsanto, and she's not on any of these studies done in Exhibit 68 or 69.

So I'm protecting the record and making the objection as to the admissibility of either one of

these documents.

MR. HALL: Okay. I'll just note for the record that these are Rule 1006 summaries of voluminous studies, all of which have been made available to the plaintiffs by production in this litigation.

MR. LUNDY: So where's the Bates stamp number for the --

MR. HALL: The Bates stamp of each study is listed on the chart in the first two columns.

MR. LUNDY: So who prepared the chart?

MR. HALL: I'm not here to have my deposition taken. It's a Rule 1006 summary chart.

MR. LUNDY: I understand, but did the witness prepare it or did you prepare it?

Q. (By Mr. Hall) Let's move to animal testing of formulated products. Did Monsanto do any animal testing, that's the testing required by the EPA and other regulators of animals, for formulated products?

A. Yes.

Q. Now, you told us about the animal testing of glyphosate -- that is the introduction into the food of the substance and the testing over various periods of time. As a general matter, was similar testing done

of the formulated product?

A. Yes.

Q. Was there any exception to that?

A. Some of the testing of the formulated product is done dermally, put on the skin, because that is a route of exposure to people who work with the product. Another one is inhalation, through breathing, because they may be breathing parts of it when they're out spraying.

Q. And tell us a bit about the doses of the formulated products in these animal studies. You told us in the animal studies of glyphosate itself, the doses were much, much higher -- the doses for the animals were much, much higher than what has been measured as human doses for using glyphosate. Is the same true for the animal testing of the formulated product?

A. Yes.

Q. Give us some idea of the comparison between the doses used in the animal testing of formulated product and the doses that someone would obtain actually using glyphosate.

MR. LUNDY: Objection. Calls for an expert opinion.

A. If you look at the dermal study, the dose that was put on was 1,000 milligrams per kilogram, and you would have someone who would be exposed to, say, .004, so you're looking at, what, several thousand-fold higher in the animal study than you would have a human being exposed to.

Q. (By Mr. Hall) Okay. Thousands of times higher?

A. Yes. Uh-huh.

Q. All right. Now, did -- you mentioned that in the testing of glyphosate -- the animal testing of glyphosate -- Monsanto did the two-year studies that were aimed at testing to see if the substance caused cancer in the animals. Do you recall that?

A. Yes.

Q. Did Monsanto do similar two-year studies of the formulated product?

A. No.

Q. Why not?

A. I think there's two things to address that. One is the existing data didn't give us any indication of any concern. And the second one is is that conducting that study would be difficult in conducting it and in interpreting the results from that

study.

Q. Let's focus on those two reasons. You said first, the existing test -- testing that Monsanto had done -- well, let me ask another question first. Does the EPA and other regulators around the world require two-year testing, two-year animal testing of the formulated product?

A. No.

Q. Now, you mentioned that you saw two reasons why Monsanto did not do that test, which you've told us is not required. The first one is that other testing gave no indication that a two-year test would be called for. What do you mean by that? Tell us a little bit more about that.

A. As we talked about, we had the chronic study with glyphosate, where we saw no evidence of carcinogenicity.

Q. When you say the chronic study, what study are you referring to?

A. Chronic -- sorry. Chronic in -- study in mice, long-term studies in mice and long-term studies in rats.

Q. Those are the two-year studies?

A. Yes.

Q. Okay.

A. We saw no evidence of carcinogenicity in those studies.

Q. Of glyphosate itself?

A. Of glyphosate itself.

Q. Okay.

A. We then look at the genotox data. In all of the studies that we had done with glyphosate, there was no evidence of genotoxicity.

Q. You mentioned that there was a second reason why Monsanto did not do these two-year animal studies of the formulated product. What is that second reason?

A. It's the difficulty in conduct and interpretation of the study. As we talked about with the surfactants, when we did the surfactants we saw no evidence of genotoxicity in any of the studies with any of the surfactants, and when we did the animal studies, the primary finding was gastrointestinal irritation.

So whether we gave it to them for 30 days or we gave it to them for 90 days, all we saw was gastrointestinal irritation, irritation to their GI system. We didn't see what we talked about as a target organ.

So if we were to do a test of the formulated product -- if we -- the EPA wants us to get those doses really, really high to elicit that response, the surfactant would be so disruptive to the animal's GI system that they may not eat the food or they may just be really sick.

Q. When you say the surfactant is disruptive to the animal's GI system, what do you mean? Tell us a little more about what that actually means as far as the animal ingesting surfactant or the formulated product that includes surfactant.

A. Surfactants are named for surface-acting substances, because they act on the surface of cells, and unlike when you have surfactants in body soap, you have a tough layer of skin that helps protect your other cells from that.

Your GI system doesn't have that protective layer, so those surfactants are very disruptive to those really delicate cells that are in the lining of the GI system. So again, to get a dose high enough to meet that -- what they call the maximum tolerated dose with a surfactant, we would be really pushing GI irritation significantly on these animals.

Q. Well, why is that a factor or why is that

a potential issue in an animal test -- that is, if the animal has significant digestive irritation or problems?

A. Because they're so sick that it complicates the interpretation of the results of the study. So we don't know if the findings that we're seeing at the end of the study are due to the test material directly or due to that the animals are so sick during the study.

Q. All right. So you've said that Monsanto did not do long-term animal studies of the formulated product. Are there any long-term studies of the formulated product in existence?

A. Yes.

Q. What are those?

A. Epidemiology studies.

Q. And epidemiology studies are long-term studies of the use of formulated products by people?

A. That's -- I'm not an epidemiologist, but that's my understanding, is that they're looking at people who were using products and following them long-term.

Q. Let me show you a document that the plaintiff's lawyer asked you about. It's Deposition

Exhibit 5, already marked. And Deposition Exhibit 5 is a September 21st, 2009, e-mail from you to John Combest. Do you recognize this document?

A. Yes, I do.

Q. Do you recall the plaintiff's lawyer asking you questions about it when it was his turn?

A. Yes, I do.

Q. When you were asked about this document, you said you wanted to put it in context. Do you recall that?

A. Yes, I do.

Q. I want to ask you some questions that will allow you to put it in context. As we're looking at Deposition Exhibit 5, this e-mail from you to John Combest. First, remind us who Mr. Combest is.

A. He was in our public affairs group.

Q. And you were communicating him -- with him in 2009 about a Roundup article in the Fremont Herald. We see the subject line at the top. (Indicating.)

A. I think it's Fremantle.

Q. Fremantle. Sorry. Thank you. And explain to us the e-mail, your e-mail here. We see a paragraph -- we see first a couple sentences at the beginning. Then we see a paragraph that's numbered 5.

A. I see that.

Q. We see a statement then after that, and then a Paragraph Number 2, another statement, and then Donna.

Do you see that?

A. Yes, I do.

Q. What are the numbered Paragraphs 5 and 2 in your e-mail here?

A. They are taken from what would be a -- called a question-and-answer document.

Q. Were they copied and pasted into your e-mail?

A. Yes. Yes.

Q. Did -- were you the author of the paragraphs that are numbered 5 and the paragraphs -- paragraph that's numbered 2 in the e-mail?

A. No.

Q. All right. So what you wrote is -- are the words before Paragraph 5, the words between Paragraph 5 and Paragraph 2, and the words following Paragraph 2; is that accurate?

A. Yes.

Q. Now, you were asked about the statement that begins or this.

Do you see that?

A. Yes.

Q. Now, were you offering in this e-mail -- were you offering comments on paragraphs numbered 5 and 2?

A. Yes.

Q. What paragraph was the or this sentence were you commenting on? Paragraph 5 or Paragraph 2?

A. 2.

Q. All right. Now, I want to focus on Paragraph 2, which is titled will Roundup harm my family or me, and gives two sentences that follow.

Do you see that?

A. Yes.

Q. And you told us you didn't author that paragraph; true?

A. No, I did not.

Q. So you were reviewing and commenting on it; correct?

A. Correct.

Q. I want to ask you about a sentence that the plaintiff's lawyer didn't ask you about in Paragraph 2. The very first sentence.

Do you see that?

A. Yes.

Q. Can you read the first sentence of Paragraph Number 2 in this excerpt that you were reviewing?

A. Okay. Based on the results of short-term and long-term testing, it can be concluded that Roundup poses no danger to human health when used according to label directions.

Q. Now, in this e-mail did you offer any comment or critique of that statement that you just read, the first sentence in Paragraph Number 2?

A. No.

Q. Why not?

A. It was accurate and reflected the -- my opinion of the safety of Roundup.

Q. Including that Roundup poses no danger to human health when used according to label directions?

A. Yes.

Q. Now, the second sentence of Paragraph 2 starts out in long-term exposure studies of animals.

Do you see that?

A. Yes.

Q. Now, can you read that second sentence of Paragraph 2?

A. In long-term exposure studies of animals, Roundup did not cause cancer, birth defects, or adverse reproductive changes at dose levels far in excess of likely exposure.

Q. Was your comment above Paragraph 2 directed to that second sentence that starts in long-term exposure studies of animals?

A. Yes.

Q. Let me ask you now about that second sentence that you were reviewing here that was written by someone else. And it says in long-term exposure studies of animals, Roundup did not cause cancer, birth defects, or adverse reproduction changes at dose levels far in excess of likely exposure. Is that an accurate statement?

A. That's not an accurate statement.

Q. What's inaccurate about that second statement -- second sentence of Paragraph 2?

A. As we had just talked about, we had not done those long-term studies in animals.

Q. Now, your comment above this second sentence -- I'm sorry -- above this Paragraph Number 2, you told us was directed at that second sentence; correct?

A. Yes.

Q. And when you said you cannot say that Roundup does not cause cancer, we have not done carcinogenicity studies with Roundup, what did you mean?

A. That was to correct the record on the statement below regarding the long-term exposures. It didn't say that I -- because if you look at the first sentence above, I had no concern for Roundup, including that it did not cause cancer.

Q. So in the second sentence, when it says in long-term exposure studies of animals, Roundup -- you told us that Monsanto did long-term exposure studies of animals for glyphosate; true?

A. True.

Q. But not for Roundup?

A. Correct.

Q. By your comment there in this e-mail aimed at that second sentence, did you mean that there is some basis to believe that Roundup does cause cancer?

A. No.

Q. Explain.

A. As we talked about, the data both of the long-term testing that we have with glyphosate and with

the surfactants and what we know about the Roundup formulations not being genotoxic, we are -- I was confident, as you can see in that first sentence, that due to all those studies, the long -- short-term and long-term testing of those ingredients -- that Roundup poses no danger, including the risk of cancer to human health.

Q. And again, you're referring to the first sentence of Paragraph 2?

A. Yes.

Q. Which you made no comment on in this e-mail?

A. No.

Q. Did you believe that sentence was true in 2009?

A. Yes.

Q. Did you believe that first sentence that says based on the results of short-term and long-term testing, it can be concluded that Roundup poses no danger to human health when used according to label directions -- do you believe that statement is true today?

A. Yes.

Q. Does your testimony here that you've just

described about Paragraph 2 in your comment, is it now in context?

A. Yes.

Q. Let me move to a different subject. I've been asking about the testing that Monsanto did of glyphosate, surfactants, and formulated products. I now want to shift to what the regulators around the world have said about Monsanto's glyphosate products and glyphosate. Okay?

A. Okay.

Q. Have you been involved, as a regulatory toxicologist, in the submissions that Monsanto has made of its test data to the EPA and regulators in the European Union and many other countries around the world?

A. Yes.

Q. For how long?

A. Off and on for the 20-some -- 25 years that I've supported glyphosate. Because sometimes there were other toxicologists involved after me and some before me, but I've been involved with them.

Q. Tell us, please, a little bit about the process here. You have described all the testing that Monsanto has done. What does Monsanto do with those

tests?

A. So we look at what the regulators want. So there's a lot of other subjects -- so they want ecotox studies, and environmental fate studies, and efficacy studies, and product chemistry studies, and they want toxicology studies.

So our job in the product safety center, as a regulatory toxicologist, is to understand what studies do they want for toxicology for them to evaluate the safety. So we make sure that those studies are conducted.

The EPA has a very specific list, and they have very specific ways they want those studies conducted. So we make sure that we get the studies that they want and conducted according to how they want them done. We then give them to our reg affairs managers, and they're the ones who then formalize the submission to the agencies.

Q. I want to ask about your understanding then about what the agencies, the EPA and the other regulators around the world, do with the test data that you provide. Do they have -- does the EPA have its own scientists who review the tests that Monsanto submits?

A. Yes.

Q. Do other -- the other regulators around the world also have scientists who review and evaluate the testing data you submit?

A. Yes.

Q. Let me show you Exhibit 70.

[Exhibit 70 marked for identification.]

Q. Sorry I didn't have it stamped yet, Dr. Farmer.

A. Oh. Sure. I'll give that back to you.

Q. My mistake. Thank you. And Exhibit 70 is a document that on the first page has a United States Environmental Protection Agency authentication, and it is followed by a title page EPA reregistration eligibility decision, RED glyphosate. And it is a document of several hundred pages.

First, Dr. Farmer, are you familiar with this document?

A. Yes.

Q. What is it?

A. The EPA, like all regulatory agencies do periodic reviews, and this was their rereview of glyphosate in 1993, and it's called the reregistration eligibility decision -- or shorthand, the RED -- on glyphosate.

Q. What does it mean when the EPA registers or reregisters a particular substance that's used in herbicides like glyphosate?

A. It meets the safety standard that is in place that day and we are able to sell the product.

Q. Do you have an understanding of what it is that the EPA is evaluating when it is considering -- when it considers the registration of glyphosate?

A. Yes.

Q. Give us in general terms what that -- what the EPA is evaluating.

A. They're looking at the safety of it from the human safety side, they're looking at the ecological safety side, because it's going to be used in the environment.

They look at is it safe to the environment, to water, soil. They look at how people are going to use it. They look at whether it's going to be in their diet. They look at the quality of the product itself. So they look at a very big, very significant package of data.

Q. In the course of considering the registration or reregistration of glyphosate, did the EPA evaluate Monsanto's testing methods, the quality of

its testing, and the data produced?

A. Yes.

MR. LUNDY: Object. Calls for hearsay. I'll just make this objection for the record and then I'll stop. The witness is not qualified as an expert, and you're asking her about hearsay testimony, and not having been qualified as a expert under 702 or 703, she's not permitted to testify about hearsay testimony. That's my objection. I'm protecting the record. Go ahead, Mr. Hall.

Q. (By Mr. Hall) Does Exhibit 70, the EPA reregistration decision document for glyphosate, include summaries of Monsanto's actual testing of glyphosate?

A. This has summaries, yes.

Q. And does this Exhibit 70, this RED, reregistration eligibility decision, does it include the EPA's scientific -- scientists' evaluation of Monsanto's testing of glyphosate?

MR. LUNDY: I'm going to object. And would you agree that my objection is continuing through this and I won't make it every time, or do you want me to make my object --

MR. HALL: When you say continuing through

this, about this document?

MR. LUNDY: This document. I'm sure you're going to go through other regulatory body documents, or maybe just the EPA. I don't know. But as to this one, if you'll --

MR. HALL: Sure.

MR. LUNDY: -- recognize it as continuing, I'll hush up.

MR. HALL: Okay.

MR. LUNDY: Thank you.

MR. HALL: For this document, sure.

MR. LUNDY: All right.

[The pending question was read by the reporter.]

Q. (By Mr. Hall) Go ahead.

A. Yes.

Q. Did you use and rely on the Exhibit 70, the EPA's reregistration eligibility decision about glyphosate, in your job as a regulatory toxicologist for Monsanto?

A. Yes.

Q. How?

A. We would use it as a confirmation of the conclusions that we came to about our product.

Q. Did the EPA's reregistration decision for glyphosate have an impact on the company's conduct of its business?

A. No.

Q. Did the -- when you say that you relied on the document, did the reregistration decision in 1993, did it inform -- help inform Monsanto's views that glyphosate and glyphosate products are not cancer-causing?

A. Yes.

MR. LUNDY: Objection. This calls for an expert opinion that's not within her ability to give such.

Q. (By Mr. Hall) When you say the EPA's reregistration decision helped inform Monsanto's views that glyphosate and glyphosate products did not cause cancer, how did it do that? Explain that.

A. In here, they talk about their decision on their carcinogenicity evaluation of glyphosate.

Q. And did they have scientists who reviewed the same tests that Monsanto had performed?

A. Yes.

Q. Did they come to the conclusion that glyphosate is not genotoxic?

A. Yes.

Q. Did they -- what else did they conclude with respect to glyphosate as it relates to whether or not it causes cancer?

A. They put it into Group E, which is evidence of non-carcinogenicity.

Q. Did this reregistration decision permit Monsanto to sell glyphosate products?

A. Yes.

Q. Let me ask you about another regulatory document.

[Exhibit 71 marked for identification.]

Q. You have a document that our reporter has marked as Deposition Exhibit 71. This also has an EPA authentication on the first page. And then on the second page, it has an EPA letterhead document entitled subject, alkyl amine polyalkoxylates. I'm not a chemist.

A. That's good.

Q. Are you familiar with Exhibit 71?

A. Yes.

Q. What is Exhibit 71?

A. The EPA -- this is about inerts, and the alkyl amine polyalkoxylates are a group of surfactants

that are used in glyphosate products. And the EPA -- before a pesticide manufacturer can put inert into their pesticide formulation, they have to be approved by the EPA, and this is a review of one of those types of inerts.

Q. And when you're referring to inerts here, this -- is Exhibit 71 addressing surfactants that Monsanto include -- has included in glyphosate products?

MR. LUNDY: Same objection as a while ago. If you will recognize my objection that this document is hearsay, and that under 701 or 702 she's not a qualified expert to testify about the hearsay, and that she -- neither 70 or 71 is a document that she's authored. If you will recognize those statements, I won't object through this testimony.

MR. HALL: Sure. Maybe we'll just do it document by document. Is that all right?

MR. LUNDY: Thank you.

MR. HALL: Sure.

A. Could you ask that again.

[The pending question was read by the reporter.]

A. Yes.

Q. (By Mr. Hall) Tell us -- give us an overview understanding of what Exhibit 71, the EPA's review of surfactants, shows.

A. They show that there was no concern for genotoxicity, that the animal studies showed the GI irritation that we had talked about before, and that they had no concern for carcinogenicity.

Q. Did this Exhibit 71, the EPA's -- is it a registration of surfactants? What is it called?

A. They call it an a exemption from a requirement of a tolerance?

Q. Is it an approval?

A. It would be an approval, yes.

Q. Does the EPA's approval of the surfactants in Exhibit 71, did it include evaluations by EPA scientists of the tests on surfactants that had been done by the manufacturers of surfactants, the other companies you were referring to earlier?

A. Yes.

Q. Did it include the EPA's evaluation of certain tests that Monsanto itself did on surfactants as well?

A. Yes.

Q. Is Exhibit 71 a document you're familiar

with and have used and relied on in the course of your work as a regulatory toxicologist?

A. Yes.

Q. Did the EPA reach any conclusion or evaluation of the question of whether surfactants are carcinogenic?

A. They did.

Q. What conclusion did they reach?

A. That they had no -- it's in a paragraph in here. But the bottom line is they had no concern for carcinogenicity for these surfactants.

Q. If you turn to Page 15 of 94. Is that where the EPA addressed that question?

A. Yes.

Q. And what does the first sentence of Section 4.4 of the EPA's approval of surfactants say?

A. There is no evidence that the AAPs are carcinogenic.

Q. And does the AAPs there refer to surfactants Monsanto has used in glyphosate products?

A. Yes.

[Exhibit 72 marked for identification.]

Q. The reporter has handed you Deposition Exhibit 72, Dr. Farmer. Exhibit 72's first page is

titled -- it's on a letterhead of European Commission Health and Consumer Protection, directorate-general.

Do you see that?

A. Yes.

Q. And it's dated January 21st, 2002; correct?

A. Correct.

Q. By the way, do you recall -- I asked you about the EPA's reregistration document. Do you -- that was Exhibit 70. Do you recall the date of the EPA's reregistration document?

A. 1993.

Q. And I don't know if I asked you about the surfactant approval, the EPA's approval in Exhibit 71 as to the surfactants. Do you recall the date of the EPA's -- that document?

A. I think around 2009.

Q. And this document here, the European Commission document, Exhibit 72, is dated 2002.

Are you familiar with this document?

A. Yes.

Q. Tell us what Exhibit 72 is.

MR. LUNDY: And let me make this objection on Exhibit Number 72. This is a hearsay document that

the witness did not author and that the witness has not been qualified as an expert.

So under evidentiary rules, and I've said 701, 702, but I'll say 703 -- because I don't have the rules in front of me -- and I'll say 703 as a -- objection that is retroactive to the previous two exhibits, that they are all hearsay, and she's not qualified to comment on them.

And so with those -- with you noting that education objection, I won't make anymore for this document. Is that -- would you agreeing that that's a continuing objection?

MR. HALL: For Exhibit 72, I agree.

MR. LUNDY: Thank you.

[The pending question was read by the reporter.]

Q. (By Mr. Hall) Tell me what Exhibit 72 is, Dr. Farmer.

A. This is a review for -- this is a review report for the active substance -- glyphosate, and this is their review for -- they called it the Annex 1 listing, basically the registration of glyphosate in the European Union.

Q. Exhibit 72 reflects the European Union's

registration of glyphosate?

A. Evaluation and registration -- yes.

Q. And the European Union -- what is that?

A. Many of the countries in Europe all kind of joined together to form the European Union. There's about maybe 25 countries that have joined together. So think about it, the United States has all the states and we have the EPA. This would be similar.

Q. Okay. And the European Union would include Germany, France, Switzerland, many other countries in Europe?

A. Yes.

Q. So this is the 2002 European Union approval of glyphosate. Give us an overview of your understanding of what the European Union looked at when it considered glyphosate back at this time.

A. Similar to the U.S. EPA, it's -- on Page 3 it talks about the physical chemical properties, the fate of it in the environment. They look at the ecotoxicology to animals in the environment, mammalian toxicology, the residues and analytical method, and so it's a very similar data set, the data set meaning all the studies are required by regulatory agencies to look at the profile of glyphosate.

Q. Does the European Union have its own staff of scientists who reviewed and evaluated glyphosate?

A. Yes.

Q. And did they, those scientists at the European Union, review and evaluate the tests that Monsanto did on glyphosate, surfactants, and formulated products?

A. Yes.

Q. Now, in 2002, were there other companies in addition to Monsanto who also sold glyphosate products?

A. Yes.

Q. And give us a little understanding of how it is that other products came to sell glyphosate around that time.

A. Glyphosate went off patent around the world before 2000. In the U.S. it went off patent in 2002. So there were other companies in Europe that had developed their own glyphosate database, which is all those studies we've talked about.

Q. Well, let me ask you about that database. When other companies besides Monsanto began selling glyphosate products, were these competitors to Roundup and Monsanto's other glyphosate products?

A. Yes.

Q. When other companies began selling these competing products, do you know, did they do their own testing of glyphosate and the constituents of the glyphosate products?

A. Yes.

Q. And in 2002, in Exhibit 72, the European Union's evaluation of glyphosate -- did the European Union scientists also review the tests of glyphosate, glyphosate products, that had been done by other manufacturers in addition to Monsanto?

MR. LUNDY: I'm going to object. This is now double hearsay.

Q. (By Mr. Hall) Go ahead.

A. Yes.

MR. LUNDY: Subject to my objection, you can answer.

Q. (By Mr. Hall) It did include them?

A. Yes.

Q. Now, did Monsanto have anything to do with the genotoxicity, animal testing, or any testing done of glyphosate or glyphosate products that was done by these other manufacturers who made competing products?

A. No.

Q. Did Monsanto have any input into that testing?

A. No.

Q. Did Monsanto have any role at all in the glyphosate and related testing done by these other manufacturers who produced competing products?

A. No.

Q. Does Exhibit 72, the European Union's evaluation and approval of glyphosate, include the review by the European Union scientists of the testing done by other makers of glyphosate products?

A. Yes.

Q. By the way, did those other glyphosate product make -- manufacturers, did they use their own scientists, their own laboratories, their own materials in their testing of glyphosate and glyphosate products?

A. Yes.

Q. Did the fact that there were other tests done by other companies that Monsanto had nothing to do with, of glyphosate and glyphosate products -- well, first of all, do you have an understanding of the results of those tests?

A. Yes.

Q. How did you get that understanding?

A. When we were going through the European Union, we worked with the other company to submit summaries.

Q. And so you've seen summaries of the glyphosate and glyphosate product testing by other companies?

A. Yes.

Q. Have you seen the actual studies themselves and the actual data?

A. No.

Q. How -- what did those summaries show generally with respect to the testing done on glyphosate and glyphosate products done by other companies independent of Monsanto?

MR. LUNDY: Objection. Hearsay.

A. They were very consistent.

Q. (By Mr. Hall) Did the fact that there were other testing done by other companies in different laboratories of glyphosate and glyphosate products, and the tests came to consistent results -- did that help inform Monsanto's view that glyphosate and glyphosate products did not cause cancer in humans?

A. Yes.

Q. How? How did it bear on it?

MR. LUNDY: Objection, it calls for her to give hearsay testimony in answering the opinion question that you just asked her that she's not qualified to give. But subject to my objection, you can answer.

A. When you look at their genotox studies and their carcinogenicity studies, they came out the same. There was no evidence of genotoxicity and there was no evidence of carcinogenicity.

Q. (By Mr. Hall) As a toxicologist, why does it matter if there are independent tests done that come to similar results?

A. It's consistent. I mean, if they -- what we're seeing is that they had exactly the same results we did. So a lot of times in experiments, you can have different findings, but when they're coming out exactly the same, it's very confirmatory that you have the right responses and that they are consistent between the studies in different labs with different animals over different periods of time.

Q. Did the European Union in Exhibit 72, did it come to a conclusion as to whether or not glyphosate causes cancer?

A. Yes.

Q. In humans?
A. Yes.
Q. And what was their conclusion?
MR. LUNDY: Objection. Hearsay.
A. It was not carcinogenic.
MR. HALL: Why don't we take a short break, please?
MR. LUNDY: Sure.
THE VIDEOGRAPHER: We are going off the record at 10:50 AM.
[A brief recess was taken.]
THE VIDEOGRAPHER: We are back on the record at 11:04 AM.
Q. (By Mr. Hall) Dr. Farmer, staying with Exhibit 72 for just a minute. That's the European Union's approval in 2002 with respect to glyphosate. Did Monsanto rely on that approval in some way in the conduct of its business?
A. Yes.
Q. How?
A. With the approval, it allowed us then to go to each member state to register the formulations in those areas, and we also relied on the confirmatory conclusions of the European Union.

Q. And when you say register the formulations with member states, does that mean get the permission then to sell glyphosate products within each of those countries?

A. Yes.

Q. Going back for a minute to Exhibit 70. That's the 1993 EPA reregistration document for glyphosate that you described. Exhibit 71, which is the 2009 EPA surfactant approval that you described, and Exhibit 72, the European Union -- the 2002 European Union Commissions's approval with respect to glyphosate.

As to those three documents, did you yourself rely on those documents in the course of your work as a regulatory toxicologist for Monsanto?

A. Yes.

Q. How?

A. Well, every time we look at -- have questions about glyphosate or a new study comes out or someone asks us a question, we go back and we want to know what the regulatory agencies thought. We look at their opinions. And so time and time again, we will go back and look at all of these different regulatory agency documents when we prepare responses or review

new data.

Q. And when you say look at regulatory opinions, what kind of opinions are you describing? Are they expressed in these regulatory documents, Exhibit 70, 71, and 72?

A. Yes. While you'll find that the conclusions of the studies are always the same, each scientist has a different way that they evaluate the studies, and so that's what we look at. Because the EPA scientists were different than the European scientists, that were different than the testing facilities' study directors that did them.

So it's always good to come back and see what each evaluator thinks about the study, and the conclusions are always the same.

Q. Are the opinions of these regulator scientists included within these regulatory approval documents you've been describing, Exhibits 70, 71, 72?

A. Yes.

Q. Did you regularly rely on these documents in the course of your work for Monsanto?

A. Yes.

MR. LUNDY: I'm going to just renew my objection. The fact that she's not qualified as an

expert. This does not -- this is not hearsay evidence that would be allowed under 703 if, in fact, she was qualified. So same objection.

[Exhibit 73 marked for identification.]

Q. (By Mr. Hall) Doctor, the reporter has handed you a document marked as Deposition Exhibit 73, I believe. This is titled pesticide residues in food, 2004, joint FAO, WHO meeting on pesticide residues. Evaluations 2004, Part 2, toxicological.

Do you see that?

A. Yes.

Q. Are you familiar with that document?

A. Very.

Q. All right. Let me hand you another 2004 document.

[Exhibit 74 marked for identification.]

Q. I'm happy to report these two took a big dent in the pile of documents here that we have left.

MR. LUNDY: Jeff, will you recognize my same objections for Exhibit 73 and 74 as for the other exhibits so I don't have to keep interrupting?

MR. HALL: Okay. Okay.

MR. LUNDY: Thank you.

Q. (By Mr. Hall) Exhibit 74 is entitled

report 2004, pesticide residues in food. And I want to ask you about Exhibit 73 and 74 together right now. Do you recognize both of those documents?

A. Yes.

Q. What are these 2004 documents, both of which bear the insignia of the World Health Organization?

A. This is called -- what they call the JMPR. It's the joint meeting on pesticide residues. It's the joint meeting between the FAO, which is the Food Agricultural Organization, and the World Health Organization toxicology group.

So what these are, periodically these joint meetings between FAO and WHO get together. The WHO evaluates the toxicology of the active ingredient, like glyphosate. The FAO looks at the residues that would be found in crop commodities. Then they come back together to do a joint review.

Q. Do Exhibits 73 and 74 relate to each other in some way?

A. Yes, they do.

Q. Explain briefly how.

A. Exhibit 73, where it says Part 2, toxicological -- this has quite a few pages that go

through all of the toxicology studies that are on glyphosate. This report, Exhibit Number 74, is then a very shortened summary of the toxicological evaluation in context with the residues.

Q. Now, you mentioned this JMPR organization. Is that part of the World Health Organization?

A. Yes, it is.

Q. And we have heard a lot about IARC. Is IARC also part of the World Health Organization?

A. Yes, it is.

Q. Is there a particular division or group within the World Health Organization that has primary responsibility for evaluating the safety of herbicides and pesticides?

A. That is this joint meeting between the FAO and the WHO. That is exactly their charge, is to look at the toxicity of the pesticides, look at the residues of those pesticides and commodities, and then determine what is allowable to be in those commodities of that pesticide.

Q. So it's the JMPR that has that primary responsibility?

A. Yes.

Q. Give us an overview of what the JMPR did

in 2004 as it relates to glyphosate in Exhibits 73 and 74.

A. So it reviewed the toxicology studies that we've been talking about. They don't look at the ecotoxic or the environmental side because they are really looking at what would be in food and what people would eat, so they really concentrate on all of the studies that regard human health.

Q. Did the JMPR have its own team of scientists independent of Monsanto evaluating glyphosate?

A. Yes, they did.

Q. Did they -- did those scientists evaluate Monsanto's testing of glyphosate?

A. Yes, they did.

Q. Now, you mentioned earlier that as of around 2000, there were other companies that had begun selling glyphosate products in competition with Monsanto; correct?

A. Yes.

Q. In this 2004 evaluation of glyphosate done by the JMPR, did the JMPR scientists also evaluate the testing on glyphosate and glyphosate products done by those other companies independent of Monsanto?

MR. LUNDY: Objection. Hearsay.

A. Yes.

Q. (By Mr. Hall) And is their evaluation included in these Exhibits 73 and 74?

A. Yes.

Q. What conclusion, if any, did the JMPR reach with respect to glyphosate and whether or not it is a carcinogen in 2004?

A. That it was not genotoxic and it wasn't carcinogenic.

Q. Did Monsanto -- let me ask you. Did you -- have you relied on Exhibits 73 and 74 in the course of carrying out your responsibilities as a regulatory toxicologist at Monsanto?

A. Yes, I have.

Q. How?

A. As we talked about with the other documents, we go back to this evaluation in particular because it had two other toxicology sets of glyphosate, so that helped inform us. And we use it again as references for other people who want to look at the summaries of the glyphosate studies.

Q. When you say it had two other sets of toxicological data, what are you referring to?

A. There were two other glyphosate manufacturers who put their regulatory packages in for review in this process.

Q. All right. Did the testing of those other glyphosate product manufacturers and the JMPR's evaluation of glyphosate in 2004, as reflected in Exhibits 73 and 74, did that help inform Monsanto's view that glyphosate and glyphosate products do not cause cancer?

A. Yes.

Q. How?

A. Again, the data was very consistent. We had three sets of studies, three sets of data packages that were done by three different manufacturers that occurred over -- in a different number of years in different laboratories around the world, were conducted by different study directors, and then you had a whole different set of scientists reviewing the data, and they all came to that same conclusion.

Q. And when you say data packages, I just want to make sure we understand what you're referring to. What do you mean?

A. Each regulatory -- there's a very specific set of studies that the regulators would like to see to

evaluate the safety of a product, so it's the acutes and the genotox and those animal studies we talked about, and there's many of those, and they then constitute that data package.

MR. HALL: I'm sorry. Did I -- no --

MR. LUNDY: I think I have it.

MR. HALL: No, I --

[Exhibit 75 marked for identification.]

Q. (By Mr. Hall) Dr. Farmer, the reporter has handed you Exhibit 75, which is titled renewal assessment report from December 2013 on glyphosate. And it's got Bates numbers MONGLY14274178 through 14274351.

Are you familiar with Exhibit 75?

A. Yes.

Q. Tell us what it is, please.

A. The European Union, like the U.S. EPA and other regulatory agencies, do periodic reviews of active ingredients. And so this was the European's reevaluations, called the Annex 1 renewal, of glyphosate.

Q. Give us an overview of what Exhibit 75 contains as it relates to glyphosate and glyphosate testing and whether or not glyphosate causes cancer?

MR. LUNDY: Will you recognize my same objections as to Exhibit Number 75 as to these other exhibits?

MR. HALL: Okay.

MR. LUNDY: Thank you.

A. They look, again, at the genotoxicity and the carcinogenicity, the studies that would be addressing that question, and they came to the conclusion that it wasn't genotoxic and it was not carcinogenic.

Q. (By Mr. Hall) Now, this renewal assessment report, Exhibit 75, on the front page says RMS Germany, Co-RMS Slovakia. What do those indicate?

A. RMS stands for Rapporteur Member State. So the European Union, one of the countries will act as the reviewer of all of the data sets. Then they will give it to the European Union that will then put it into what's called a peer-review process. So Germany and Slovakia then drafted this review of the glyphosate studies.

Q. And do you know, did Germany and Slovakia have their own team of scientists independent of Monsanto reviewing the testing of glyphosate?

A. Yes.

Q. Did they also review genotoxicity, animal testing, and other toxicity testing of glyphosate products done by manufacturers of glyphosate products other than Monsanto?

A. Yes.

Q. At this time, as of 2013, how many other companies in addition to Monsanto were selling glyphosate products?

MR. LUNDY: Objection. Hearsay.

A. There were a lot of people selling glyphosate products, but there were five other primary manufacturers of glyphosate.

Q. (By Mr. Hall) Okay. Fair enough. I should have asked you that question. So there were five other companies that made glyphosate products for sale to consumers and others?

A. Yes.

Q. And you had previously mentioned that there were two other companies. How did there come to be five, do you know?

A. Other companies develop their own what we call the data packages. They took glyphosate and put it through all those regulatory required studies.

Q. So with respect to any of those five

companies and their testing of glyphosate -- genotoxicity, animal studies, whatever it is -- did Monsanto have anything to do with the testing by those five other manufacturers of glyphosate products?

A. No.

Q. Did -- or does Exhibit 75 include references and information about the glyphosate testing done by other manufacturers of glyphosate products as of 2013?

A. Yes.

Q. Did -- is that information -- was that information of some importance to you in performing your job at Monsanto?

A. Yes.

Q. How?

A. Now we have several other companies who have a complete data set, and it again shows the consistency in the data with regards to all of the endpoints that it's not genotoxic, it wasn't carcinogenic. Very consistent.

And again, we have a whole bunch of other people involved. We have other companies with their glyphosate that they put into different testing laboratories, with different study directors, with

different pathologists, in different world areas, different animals. And then we have again a whole new set of different scientists evaluating all of that data.

Q. And again, you say complete data set. When you say complete data set, with respect to the question of whether glyphosate causes cancer or not, does the complete data set include genotoxicity and animal testing of glyphosate?

A. Yes.

Q. And did the scientists -- in the studies of those other five companies that made glyphosate, what were the conclusions of those studies as it bears on the question of whether glyphosate causes cancer?

A. It was that there wasn't any genotoxicity, and there was no carcinogenicity.

Q. What was the conclusion of the Germany and Slovakia scientists as reflected in Exhibit 75 on the question of whether glyphosate is genotoxic or carcinogenic?

A. That it was not genotoxic and it wasn't carcinogenic.

Q. Did the conclusions reached about glyphosate in Exhibit 75 help inform Monsanto's views

that glyphosate and glyphosate products do not cause cancer?

A. Yes.

Q. How?

A. It was confirmatory. We had our data set that we thought was clear. It was reproduced time and time again by five other manufacturers. It was confirmed by the reviewers of this. And again, this then would allow us to get the registration for our products to sell within the European Union.

Q. All right. Now, I'm focusing on the period before -- I can take that. Thank you. Focusing on the period before March 2015. March 2015 is the date of the IARC classification of glyphosate; is that correct?

A. Yes.

Q. And we've heard that IARC classified glyphosate as a probable carcinogen as of March 2015; is that correct?

A. Yes.

Q. So focusing on the period before that, we've -- I've asked you about a number of regulatory approvals, EPA and elsewhere in the world before that period. In addition to the ones that I've already

asked you about, before March 2015 were there other countries -- scientists in other countries, regulators, who evaluated whether glyphosate and glyphosate products are carcinogenic?

A. Yes.

Q. Identify some of the countries that evaluated whether glyphosate is carcinogenic or genotoxic before March of 2015, beyond the ones we've already discussed.

A. Japan, Canada, Australia.

Q. Did you review the reports of those other countries' evaluations of glyphosate?

A. Yes.

Q. Did those other -- well, what conclusions did Canada, Japan, and the other countries you're aware of who evaluated whether or not glyphosate is carcinogenic before March 2015 -- what did they conclude?

MR. LUNDY: Objection. Hearsay.

A. That it was not carcinogenic or genotoxic.

Q. (By Mr. Hall) Did you evaluate and review and consider the -- that conclusion by the regulators at Canada, Japan, and other countries before March of 2015 in your job at Monsanto?

A. Yes.

Q. How did you consider that information?

A. It was the same thing again, that when we would get that report we would look at it and it would be confirmatory of how we viewed the data, how our study directors and pathologists, as well as was consistent with regulators around the world --

MR. LUNDY: Let me make a belated objection. I don't know what report --

MR. HALL: Well, let's not interrupt the answer.

MR. LUNDY: She said report. I don't know what report she's talking about.

MR. HALL: I'd appreciate it if you'd give her the courtesy of finishing the answer and not interrupt her --

MR. LUNDY: As long as you recognize my objection. I don't want to --

MR. HALL: Well, I'm not going to recognize an interrupting objection like that. When she's done with her answer, then that --

MR. LUNDY: All right. Well, I've made my objection. Go ahead.

[The pending question was read by the

reporter.]

Q. (By Mr. Hall) Do you have anything to add to that?

A. Just again, that it was consistent that there were many other scientists in different countries looking at the same data and coming to the same conclusion.

Q. Is consistency and reproducibility and -- in the analysis and conclusions of scientific questions important to you as a toxicologist?

A. Very important.

Q. Explain why that's so important.

A. What you're looking for is that if you give a substance -- one of the questions we always ask, is it real, is it reproducible, and is it consistent? So every time that glyphosate has been given to those animals, it comes out that it is not a carcinogen, time and time and time again.

So we've seen, what is it, maybe seven regulatory data sets that all show that that consistency, that tells us that that response is real, because sometimes when you do a number of studies over and over again, because of changes in the animals or the changes in test material or some things, you can

get variability, or in the interpretation by the pathologist.

So this is consistent every time over the 30 or 40 years with different manufacturers, very consistent findings.

Q. Did the -- I think I asked you this, but I want to make sure the record is clear on this. With respect to the conclusions of -- and the testing done by all five of the companies as of 2015 that were selling glyphosate products in addition to Monsanto -- so those five companies. Did Monsanto have any role at all in those tests?

A. No.

Q. Do you -- did you know when -- did anyone at Monsanto actually know when those tests were done?

A. Not until after they were put into the various reviews.

Q. Until after those tests were done, did Monsanto have any information about where they were done, the laboratories selected for them?

A. Only if we had a summary of the studies.

Q. After the studies were done?

A. After -- yes. Yes.

Q. Did Monsanto have any input at all into

the protocol or analysis of the studies at the time they were done when these five other companies had scientists studying glyphosate?

A. No.

Q. As of March 2015, you've told us about the approvals for glyphosate and the conclusions that it was not carcinogenic in the United States, the European Union, Canada, Japan. Were there other countries that agreed that glyphosate was not carcinogenic and approved it for -- glyphosate products for sale in their countries?

A. Yes.

MR. LUNDY: Objection. Calls for hearsay.

Q. (By Mr. Hall) And is that something you're familiar with in your work at Monsanto, including as a regulatory toxicologist? That is, where regulators have approved glyphosate for sale?

A. I am -- that is not my direct role because we have our reg affairs managers, but as the regulatory toxicologist, I am aware of the major reviews and the major approvals.

Q. Do you know how many countries, as of March 2015, approved glyphosate for sale within their countries?

A. My understanding is it was over 100.

Q. Now, you have talked about the testing that Monsanto has done of glyphosate and glyphosate products with surfactants. And you've testified about the testing done by the other manufacturers of glyphosate products. And you've talked about the evaluations of the scientists at the regulators around the world.

I want to ask you if you can characterize that volume of testing of a substance. And I'm talking now as of March 2015. Is that a lot, is it a little? Give us some sense, as a toxicologist, about that volume of testing.

A. It is a lot. It is an enormous amount of testing.

Q. Is it fair to say that glyphosate, to your knowledge, is one of the most tested herbicides ever?

MR. LUNDY: Objection. Leading.

A. When --

Q. (By Mr. Hall) Let me ask a different question. Are you aware of any herbicides, active ingredients, that have been tested more than glyphosate?

A. I am not.

Q. For a moment, let's shift gears. Now, I would like to bring you up to March 2015, which you told us is the time when IARC made its classification that glyphosate is a probable carcinogen; correct?

A. Yes.

Q. You have given us some sense of the information the regulators around the world evaluated when they considered glyphosate and whether glyphosate is a carcinogen or not. Are you familiar with the information that IARC considered when it reached its classification decision in 2015?

A. Yes.

Q. How do you know what IARC considered?

A. They have on their preamble that they are going to look at information that's available to the public. We also wanted to provide them studies and reports that we knew were publicly available for them to consider in their review.

So that was our understanding, that they would be looking at publicly-available documents, studies, reports, publications, et cetera.

Q. All right. So when you say publicly-available information, IARC -- did IARC focus on publicly-available information?

MR. LUNDY: Objection. Hearsay.

A. Yes.

Q. (By Mr. Hall) How do you know that?

A. In their preamble, they talk about that.

MR. LUNDY: Jeff, let me make the objection as to IARC, and I'll hush up, because we really don't know how the court is going to rule.

So I'm going to object to any testimony about IARC as hearsay and object under Rule 801, object -- I mean, and again, I make a 703 objection because she's not qualified as an expert to testify about the hearsay opinions. But subject to that objection, I won't object again and interrupt. Go ahead.

Q. (By Mr. Hall) Is it your understanding that IARC focused primarily on public literature in its evaluation of glyphosate in 2015?

A. Yes.

Q. How do you have that understanding?

A. I read the monograph.

Q. And the monograph by IARC?

A. Yes.

Q. And in that monograph, did they describe the information they considered?

A. They had the references, yes.

Q. Now, of what importance is it to you as a toxicologist if IARC was focused only on the public literature? Why is that of any significance, if it is, to you?

A. When there's a big data set that we've talked about that all the regulators looked at, the other one is a lot of times because of -- just the nature of publishing, a lot of people don't want to publish studies that don't have any results. But --

Q. Let me interrupt you. Sorry.

A. Yes.

Q. You said there's a big data set that the regulators have.

A. Yes.

Q. Is that data set -- and that's the data provided by the testing of Monsanto and the other manufacturers of glyphosate that the regulators evaluated, including in the exhibits we've talked about today. Is that what you're referring to?

A. Yes.

Q. Is that data set published, publicly available?

A. Not readily, maybe through a Freedom of

Information Act.

Q. Well, is the -- are the Monsanto tests themselves, the actual tests available publicly?

A. The reports?

Q. Yes.

A. No.

Q. Are the actual reports the regulators considered from other manufacturers of glyphosate, are they also in the public literature?

A. No.

Q. So you -- I apologize for interrupting you.

A. No, that's fine.

Q. But you were explaining why IARC's focus on public literature is, in your view, of some significance when it's evaluating the question of glyphosate and cancer. So go ahead.

A. One, they're missing all of that other data. And the other one is a lot of time in published literature, they're usually the publications that have some sort of an adverse effect, so they're not -- a lot of publications that don't have an adverse effect are boring and they don't get published.

Q. Did IARC -- you say IARC didn't have

access to the data. Did IARC have the data related to the testing, actual testing of glyphosate by Monsanto and other manufacturers -- did IARC have access to summaries of those tests?

A. Yes.

Q. Why isn't access to the test summaries as good as access to the actual test data?

A. I would -- I think they would be, they would give informative information. To me, those publications with the summaries of the studies would then equate to the publications that they used as well in their evaluation.

Q. Well, is it better or not to have access to the actual test data as opposed to summaries?

A. It's better to have access to the actual data.

Q. Why?

A. Well, again, because it's just big volumes of data that you can look -- because someone has written that summary, so the regulators want to see that actual study to make sure that that summary is reflective of all of that data that could be thousands of pages.

So while summaries are good, it's always

nice to be able to go back and look at the actual data behind the summary.

Q. You've told us that the regulators, the EPA, the European Union, and the other countries' regulators and their scientists had access to the actual test data of Monsanto and the other companies who make glyphosate products; right?

A. Yes.

Q. Did the regulators, in the course of their evaluations of glyphosate, also have access to public literature about glyphosate?

A. Yes.

Q. Now, were you aware before IARC reached its conclusion that IARC generally focused on public literature only in its evaluations?

A. Yes.

Q. Did the fact -- or did your knowledge that IARC was likely to focus only on public literature in its consideration of glyphosate, did your knowledge before that classification came out cause you some concern about IARC's -- what IARC might find?

A. Yes.

Q. Explain why.

A. Because again, I think a big set of the

data was missing, and that IARC tends to classify many things as a carcinogen.

Q. And when you say a big class of data was missing, what do you mean missing?

A. We were talking about the studies that we submit to the regulatory agencies for their review of the active ingredient and the formulated products.

Q. And when you say missing, do you mean it's not part of the public literature?

A. Correct.

Q. Now, I've asked you about the regulators' consideration of glyphosate and whether or not it's a carcinogen before 2015, and you've told us about IARC's 2015 classification of glyphosate as a probable carcinogen.

As of March 2015, when IARC made that classification, had any regulatory agency around the world concluded that glyphosate was a carcinogen?

A. No.

Q. Now, after IARC reached its decision in March 2015, did regulators at the EPA, European Union, and other countries again look at the glyphosate test information and examine the question of whether glyphosate causes cancer?

A. Yes.

Q. Let's turn to that at this point.

MR. HALL: And before we do, let's go off the record for a second.

THE VIDEOGRAPHER: We are going off the record at 11:39 AM.

[A brief recess was taken.]

THE VIDEOGRAPHER: We are back on the record at 12:20 PM.

Q. (By Mr. Hall) Good afternoon, Dr. Farmer.

A. Good afternoon.

Q. Before we broke, we had been -- I had been asking you about the regulatory approvals before 2015, and then I asked you about the IARC classification in 2015. And I asked you some questions about what IARC reported it had considered in its classification. Do you recall that?

A. Yes.

Q. And I was asking about whether -- well, you mentioned that IARC did not have access to the actual test data of glyphosate and glyphosate products of genotox, animal tests, and other tests Monsanto and other manufacturers had done; is that correct?

A. Correct.

Q. And I was asking you about whether IARC had summary information about those tests done by Monsanto and the other glyphosate product manufacturers. Do you recall that?

A. Yes.

Q. Now, do you know whether or not IARC had access to summaries of all of the testing of glyphosate and glyphosate products done by Monsanto and other glyphosate product manufacturers?

A. I don't know if they had all of them.

Q. Do you -- what's your understanding as to whether they did or not?

A. My understanding is that they had, say, the JMPR from 2004, so there would have been some summaries from those three registrants. There was the -- I think they had the 1993 RED, so they would have had the summaries of the Monsanto studies, but I'm not -- I don't think they had all of the summaries from all the other registrants.

Q. Now, let's move ahead in the chronology to after the IARC classification of glyphosate in 2015; okay?

A. Okay.

[Exhibit 76 marked for identification.]

Q. The reporter has handed you Deposition 76. The first page is an authentication from the United State Environmental Protection Agency, and it's followed then by a memorandum on EPA letterhead dated October 1st, 2015.

Are you familiar with this document, Exhibit 76?

A. Yes.

Q. What is it, please?

A. This is the report from the Cancer Assessment Review Committee on glyphosate.

Q. What is the Cancer and Assessment Review Committee?

A. This is a group of scientists at EPA that look at the data that they need to evaluate whether glyphosate was carcinogenic to humans or not.

MR. LUNDY: Just for the record, I'm making the same objection on this document that I've made on the previous documents, that it's -- it's hearsay, and this witness is not qualified as an expert to testify about this hearsay.

And so subject to my objection, will you recognize that objection made so I don't have to say it anymore?

MR. HALL: Yes, for Exhibit 76.

MR. LUNDY: Yeah.

Q. (By Mr. Hall) Did the EPA's Cancer Assessment Review Committee -- do you have an understanding of why they evaluated glyphosate again in 2015?

A. Yes.

Q. What's your understanding?

A. It was after the IARC review in two -- in March of 2015.

Q. Does the -- does Exhibit 76 -- well, is this Cancer Assessment Review Committee sometimes called CARC, C-A-R-C?

A. Yes. Yes.

Q. Does this CARC report on glyphosate in October 2015 include evaluations of scientific studies on glyphosate?

A. Yes.

Q. Did this evaluation also include the EPA's review and evaluation -- I should say the EPA's Cancer Assessment Review Committee's -- review and evaluation of epidemiology studies of glyphosate products?

A. Yes.

Q. Did it include also review of genotoxicity

tests not only performed by manufacturers but those in the public literature?

A. Yes.

Q. What is your understanding -- what did the EPA include in this Cancer Assessment Review Committee report in October 2015?

A. That it would be unlikely to be a human carcinogen.

Q. And if we turn to Page 10. Does Page 10 contain the EPA's conclusion in the first full paragraph?

A. In the first -- yes.

Q. Can you just read that sentence?

A. In accordance with the 2005 guidelines for carcinogen risk assessment, based on the weight of evidence, glyphosate is classified as not likely to be carcinogenic to humans. This classification is based on the following weight of evidence considerations.

Q. And then the EPA goes on to explain its rationale?

A. Yes.

Q. How many EPA scientists signed this Cancer Assessment Review Committee report in October 2015?

A. 13.

Q. Are those listed on Page 6?

A. Yes.

Q. Were there any dissenting views of members on the Cancer Assessment Review Committee of the EPA to this report?

A. No.

Q. Did this CARC review, this EPA Cancer Assessment and Review Committee report, help to inform Monsanto's view that glyphosate and glyphosate products do not cause cancer?

A. Yes.

Q. How?

A. Again, you had experts who are experts in evaluating these studies for cancer. They looked at all the data, the epidemiology, they looked at the animal studies, and they looked at the genotoxicity from other manufacturers, and many of them -- and again, over time a new group of people looking at the data set once again came to the same conclusion.

MR. HALL: Need to go off the record for just a second.

THE VIDEOGRAPHER: We are going off the record at 12:28 PM.

[Discussion off the record.]

[Exhibit 77 marked for identification.]

THE VIDEOGRAPHER: We are back on the record at 12:28 PM.

Q. (By Mr. Hall) Dr. Farmer, you now have Deposition Exhibit 77 in front of you. First page is another EPA authentication, and then the second page has the title glyphosate issue paper, evaluation of carcinogenic potential, EPA's Office of Pesticide Programs, September 12th, 2016.

Are you familiar with Exhibit 77?

A. Yes.

Q. What is it?

MR. LUNDY: Let me make my objection before she starts testifying that -- I'll make the same objection under 703 and 801, that this is a hearsay document. She is not qualified as an expert, and therefore shes cannot testify under 703 as to this document. But subject to your agreement that my objection is continuing on any questions with this, I will project again. You agree?

MR. HALL: Okay as to Exhibit 77.

MR. LUNDY: Thank you.

Q. (By Mr. Hall) What is Exhibit 77, Doctor?

A. This is the EPA's Office of Pesticide

Programs, their glyphosate issue paper, and their evaluation of the carcinogenic potential of glyphosate.

Q. What is the EPA's Office of Pesticide Programs?

A. That is the group within EPA that evaluates the safety of pesticides.

Q. Does the EPA's Office of Pesticide Programs include a different group of scientists than those on the EPA's Cancer Assessment Review Committee, the report we just looked at, Exhibit 76?

A. Yes.

Q. What is your understanding of the purpose of why the OPP issued this report, this evaluation in 2016?

A. Glyphosate was undergoing registration review with EPA, which, as we talked about, is the periodic review, when the IARC review and classification came out, and then the CARC, as we talked about, did their analysis on the carcinogenicity of glyphosate, and so now this office is incorporating the CARC review into their review as well of the carcinogenic potential of glyphosate.

Q. Beyond incorporating the CARC review into this 2016 OPP evaluation, did the OPP on its own

consider additional evidence?

A. Yes.

Q. Did the OPP evaluation include its own evaluation of the testing of glyphosate and glyphosate products done by Monsanto and other glyphosate manufacturers?

A. Yes.

Q. Did the scientists at the EPA's Office of Pesticide Programs also consider and evaluate epidemiology studies addressing glyphosate use?

A. Yes.

Q. Did they evaluate -- those scientists evaluate the genotoxicity testing of glyphosate and glyphosate products?

A. Yes.

Q. What was the EPA's Office of Pesticide Programs' conclusion in its September 2016 report, Exhibit 77?

A. That it was not genotoxic and not carcinogenic.

Q. Did the EPA Office of Pesticide Programs' conclusion in 2016 that glyphosate is not genotoxic or carcinogenic help inform Monsanto's views that glyphosate and glyphosate products do not cause cancer?

A. Yes. Again, it built on having another group of scientists from a regulatory agency look at the data once again. The data again included other registrants as well as that in the open literature, and they came to the same conclusion that had been before IARC and after IARC.

[Exhibit 78 marked for identification.]

Q. Dr. Farmer, you have Exhibit 78. First page is an authentication of the EPA, and then the next page is titled revised glyphosate issue paper, evaluation of carcinogenic potential, EPA's Office of Pesticide Programs, December 12th, 2017.

A. Yes.

Q. Are you familiar with this document?

A. Yes.

MR. LUNDY: I'll make the same objection for Exhibit Number 78, that it's hearsay and -- under 801, and that she is not a qualified expert under 703 in which to testify about this hearsay. But subject to your agreement that my objection will be continuing as to any questions about this document, I won't interrupt her further.

MR. HALL: Okay for Exhibit 78.

MR. LUNDY: Okay.

Q. (By Mr. Hall) What is Exhibit 78, Dr. Farmer?

A. This is a revised glyphosate issue paper from the EPA's Office of Pesticide Programs on the evaluation of the carcinogenic potential of glyphosate.

Q. Do you have an understanding of why the EPA issued this -- the EPA Office of Pesticide Programs issued this revised issue paper?

A. Yes.

Q. What is that?

A. There was a scientific advisory panel that was convened in I believe it was December of 2016, and this then incorporated that input from the SAP, the Scientific Advisory Panel.

Q. The Scientific Advisory Panel you're referring to -- what is that?

A. It's a group of outside scientists, scientists outside of the EPA, to come in and review what they had done, and then to provide feedback for them.

Q. Is it a panel of scientists who gave their views on the EPA's prior evaluations of glyphosate and whether or not glyphosate is carcinogenic?

A. Not on the prior review. I believe it was

only on the issue paper, the original one in -- before we saw this one.

Q. The prior -- by prior review, I meant the 2016 Office of Pesticide Programs --

A. Yes.

Q. -- report.

A. Yes.

Q. And that was Exhibit 77?

A. Yes.

Q. So in 2016, the EPA's Office of Pesticide Programs issued its evaluation of glyphosate, Exhibit 77, which you just described; right?

A. Yes.

Q. And then did the EPA convene this Science Advisory Panel of independent scientists to offer that panel's opinion?

A. Yes.

Q. And then does Exhibit 78 then report on that Scientific Advisory Panel's evaluation?

A. Yes.

Q. All right. Did this -- does this report, Exhibit 78, include the evaluation of the -- all the testing -- well, the testing by Monsanto and other manufacturers of glyphosate and glyphosate products as

to genotoxicity and whether or not it's carcinogenic?

A. Yes.

Q. What is the conclusion of the EPA's Office of Pesticide Programs in this December 2017 report?

A. It's not genotoxic and unlikely to be carcinogenic.

Q. Did this revised EPA Office of Pesticide Programs revised issue paper, in which they considered the Scientific Advisory Panel's input, that group of independent scientists, did their conclusion as to -- that glyphosate was not genotoxic or carcinogenic help inform Monsanto's views that glyphosate and glyphosate products do not cause cancer?

A. Yes.

Q. Explain how, please.

A. Well, you had the original issue paper reviewed by a panel of outside scientists, and they were able then to incorporate their comments and review and the office of OPP once again came back with that information and input too, that it wasn't carcinogenic or genotoxic once again.

Q. Why is that significant to Monsanto?

A. It's consistent. As we're seeing time and time again, people review the same data, different

scientists look at it, they get different input, and so it's different people over time looking at data that was developed over many, many years, very consistent in how they interpret the data, and then very consistent in their conclusions of not genotoxic and not carcinogenic.

[Exhibit 79 marked for identification.]

Q. Dr. Farmer, you have Exhibit -- Deposition Exhibit 79, and it's titled EFSA, European Food Safety Authority, conclusion of pesticide peer review, and it refers to glyphosate in the title. Are you -- let me put the Bates numbers in. It's MONGLY01418304 through 01418410.

Are you familiar with this document?

A. Yes.

MR. LUNDY: I'll make the same objection on Exhibit Number 79 that I've made on the previous exhibits, that it's hearsay, and that she is not qualified as an expert to rely on this hearsay to give opinions that she's been giving throughout the deposition under Rule 703. And so if you'll acknowledge that as a continuing objection, I won't make it again.

MR. HALL: I will for Exhibit 79.

MR. LUNDY: Thank you.

Q. (By Mr. Hall) What is Exhibit 79, Doctor? Well, did I ask you -- are you familiar with it?

A. Yes, I am familiar with it.

Q. What is it?

A. This is the conclusion of the peer review on the pesticide risk assessment of the active substance glyphosate, it says in the title, by EFSA, the European Food Safety Authority.

Q. What's the date of this conclusion?

A. This is 2015. I'm trying to look at the actual -- October -- I can't tell the date.

Q. Is it your understanding this is after March 2015?

A. Yes.

Q. Tell us a bit about who EFSA is, this European Food Safety Authority. I don't think we've heard that yet.

A. So that is a regulatory authority that represents Europe. Each country then would have their own regulatory authority. As we saw in the document where we had the rapporteur member state as Germany, Germany has its own regulatory authority. EFSA then is the umbrella over all of the regulatory authorities in

Europe.

Q. How does EFSA's review of glyphosate relate to the European Union review that was performed in the first incidence by Germany and Czechoslovakia that you referred to earlier?

A. So this -- what happens is when you have a substance like glyphosate, a country is then charged -- as we saw, the rapporteur member state -- to put the review and summarize all the studies and review the data and put that together. Then it's given to EFSA and EFSA then takes that, and as it talks about, it's a peer review, so all the other countries get to look at what that rapporteur member state wrote, and they get to review it and comment on it.

Q. So the rapporteur state we're talking about was Germany -- and I misspoke -- the co-rapporteur was Slovakia?

A. Slovakia.

Q. And that was Exhibit 75; right?

A. Yes.

Q. Is -- and that was the renewal assessment report that you testified about earlier. Is Exhibit 79 then a peer-reviewed evaluation of Exhibit 75?

A. It's the conclusion of the peer review.

Q. And by peer review, what does that mean here? What's your understanding of that?

A. That the other member states, their scientific experts got to then review what was written by the rapporteur member state.

Q. So does Exhibit 79 contain the evaluation and conclusions of a different set of scientists in Europe than those who reported in Exhibit 75 the European document put together by Germany and Slovakia?

A. They were the same.

Q. They were the same scientists?

A. No, they were different scientists. I'm sorry.

Q. A different group at EFSA is peer-reviewing the Germany work?

A. Yes. Yeah.

Q. Does Exhibit 79 contain the evaluation of this group of scientific peers as to the testing by Monsanto and other manufacturers of glyphosate and glyphosate products?

A. Yes.

Q. What was the conclusion reached by this EFSA peer review in 2015?

A. Unlikely to pose a carcinogenic hazard to

humans.

Q. And that's referring to glyphosate?

A. Yes.

Q. Did the conclusion of this group of peer review scientists in Europe in 2015 that glyphosate is unlikely to pose a carcinogenic hazard to humans -- did that inform Monsanto's view that glyphosate and glyphosate products did not cause cancer?

A. Yes.

Q. Explain how.

A. Once again, we have another group of scientists who are evaluating the data that would be looking -- supporting the evaluation of carcinogenicity and genotoxicity, and they again looked at all the same data that people had before, a new group of scientists, and have consistently come up with the same conclusion.

[Exhibit 80 marked for identification.]

Q. Dr. Farmer, I want to ask you about Deposition Exhibit 80, which you now have. And it's titled pesticide residues in food, 2016, toxicological evaluations, sponsored jointly by FAO and WHO.

Are you familiar with Exhibit 80?

A. Yes.

Q. What is it?

A. This is a evaluation by a special session of the -- what we call the JMPR, the joint meeting of the FAO and the WHO panels.

Q. Earlier you testified about the JMPR's evaluation in 2004; correct?

A. Correct.

Q. And you told us that JMPR is the arm of the World Health Organization with primary responsibility for evaluating the safety of pesticides; is that true?

A. Yes.

Q. And are they -- does Exhibit 80 reflect their evaluations of glyphosate in 2016 after IARC came out with its classification?

A. Yes.

Q. Did --

MR. LUNDY: Let me make my objection now as to any questions about Exhibit 80 that she's relying on inasmuch as under 703 she's not a qualified expert to rely on hearsay evidence, and pesticide residues, which -- it's another un-Bates-stamped document -- or is it? Is that JMPR -- is that a Bates stamp number at the -- I don't think it is. At the bottom of it.

But anyway, she's relying on this, and

under 801 it's hearsay. Subject to my objection, if counsel will agree that that objection will be continuing, I won't object again on questions involving Exhibit Number 80.

MR. HALL: Okay for Exhibit 80.

[The pending question was read by the reporter.]

Q. (By Mr. Hall) And again, in Exhibit 80, is the JMPR, this arm of the World Health Organization, evaluating the scientific test data from the genotoxicity testing and animal testing of glyphosate and glyphosate products done by Monsanto and other manufacturers of glyphosate products?

A. They would be more looking at the glyphosate.

Q. Okay. And why is there a slightly different focus? This is -- it says -- it refers to food in 2016.

A. Yeah, they are looking at the safety of the active ingredient, and then the residues that would be found in commodities that would then be made into food.

Q. All right. And did they report an evaluation on the question of whether glyphosate is a

carcinogen to humans?

A. Yes.

Q. What was their conclusion?

A. That it was not.

Q. Did this conclusion by the JMPR in 2016 that glyphosate was unlikely to be a carcinogen or a risk of cancer to humans inform Monsanto's view that glyphosate and glyphosate products did not cause cancer?

A. Yes.

Q. How?

A. Once again, you had another complete group of scientists looking at all the data after IARC, and so they could consider what IARC looked at as well as looking at the data, looked at the data consistently like everyone else has and has consistently came to the same conclusion that it wasn't carcinogenic.

Q. Did the JMPR in Exhibit 80 have a different set of scientists than those involved in the EFSA review in Exhibit 79 -- and in fact those involved in any other of the regulatory reviews we've talked about?

A. They had -- I think there was one who was involved in the JMPR twice, but the other ones to my

knowledge were new and different.

[Exhibit 81 marked for identification.]

Q. Dr. Farmer, the reporter has handed you Exhibit 81. First page is on the letterhead of an organization called the European Chemicals Agency, and it has ECHA.

And that is a -- the first page appears to be a authentication -- or I'm sorry -- yeah, it's an authentication that an official opinion, official report follows. And the report is titled ECHA, E-C-H-A, committee for risk assessment opinion, and it has a lot of words and it includes glyphosate. And it says it's dated March 15th, 2017.

Are you familiar with this document?

A. Yes, I am.

Q. Who --

MR. LUNDY: Let me make my objection for the record on Exhibit Number 81 that it's a hearsay document under 801, that she's not qualified as an expert to give an opinion and rely upon hearsay evidence under 703, 701, 702.

So that's my objection. If you'll -- counsel, if you'll make it -- acknowledge it as continuing, I won't interrupt you during the series of

questions on Exhibit Number 81.

MR. HALL: Okay for Exhibit 81. I don't think I asked a question at this point, so if I did, I withdraw it.

Q. (By Mr. Hall) First, who is ECHA, E-C-H-A? Is that pronounced -- am I pronouncing it right?

A. Yes. ECHA. Yeah. This is another agency within the European Union, and they are now looking at what has come out of the EFSA peer review as to whether this substance should be, as they talk about it, classified in some way, and then how that would affect the labeling of that product.

Q. So this is a European organization that is evaluating the peer review done by EFSA in Exhibit 79?

A. Yes.

Q. And you're familiar with Exhibit 81?

A. Yes.

Q. And is this -- did this involve a review of glyphosate by yet another group of scientists?

A. Yes.

Q. And did they review the testing data, genotoxicity and animal testing and other testing of glyphosate and glyphosate products by Monsanto and

other manufacturers of glyphosate?

A. Yes.

Q. What conclusion did this -- did ECHA reach in 2017 on the question of whether or not glyphosate is a carcinogen?

A. They concluded that there was no -- they did not need to classify it for carcinogenicity.

Q. Did ECHA also include epid -- I'm sorry. Did ECHA also evaluate epidemiology studies concerning glyphosate and glyphosate products?

A. I believe they did. I don't know for sure.

Q. Let me see if I can refresh your memory on Page 52.

A. Oh, yes. Uh-huh. Yep.

Q. ECHA did --

A. Yes, they did.

Q. -- did evaluate epidemiological data concerning glyphosate products?

A. Yes, they did.

Q. Did this conclusion by yet another group of scientists in 2017 as to -- on the question of whether glyphosate is carcinogenic, including the review of epidemiology studies of glyphosate

products -- did that help inform Monsanto's view that glyphosate and glyphosate products did not cause cancer?

A. Yes.

Q. How did it do that?

A. As you can see, the European Union, you have three steps that you have to go through. You have to go through the rapporteur member state review. You have to go through the EFSA state review. You have to go through the EFSA peer review, then you have to come to ECHA.

So each group and organization is looking at that same data and asking is that conclusion still consistent at each of those levels, and then once they get to ECHA they conclude that you don't need to classify that.

So again, it informed us that the data is consistent across the studies, it's consistent across the years, and it's consistent when it's evaluated with all kinds of different scientists from different organizations.

Q. I've been asking you about these evaluations of glyphosate -- glyphosate products after the IARC classification in 2015. Beyond those that

you've testified to so far after 2015, have there been other regulatory groups, scientists, other regulators in other countries who also looked again at the question of whether glyphosate is a carcinogen after the IARC classification?

A. Yes.

Q. What are some of those countries?

MR. LUNDY: Objection. Hearsay.

A. You can look at Canada, Korea, Japan.

Q. (By Mr. Hall) Are you familiar with the regulatory evaluations by those other countries in connection with your work at Monsanto?

A. Yes.

Q. Now, you had previously told us in addition to Monsanto there were five other manufacturers of glyphosate in the last 15 to 20 years or so who have also done their own testing, independent of Monsanto, of genotoxicity testing and animal testing of glyphosate and glyphosate products; correct?

A. Yes.

Q. Did there come to be another company who also -- that also began selling glyphosate products that also did that kind of testing?

A. Yes.

Q. Where was that company?

A. It was in Japan. We found it through the Japanese review.

Q. And did the Japanese regulators consider testing done by that seventh manufacturer of glyphosate products in connection with its review after 2015 of glyphosate?

MR. LUNDY: Objection. Hearsay.

A. Yes.

Q. (By Mr. Hall) All right. I'm going to shift gears again, Dr. Farmer. I want to go back for just a minute to Exhibit 68, which is the chart titled surfactants, genotoxicity studies conducted by Monsanto. And you walked us through the contents of that chart earlier; correct?

A. Yes.

MR. LUNDY: Bear with me just a second.

MR. HALL: Sure.

MR. LUNDY: Let me get this out. Thank you. Go ahead.

MR. HALL: You all set?

MR. LUNDY: Yeah.

Q. (By Mr. Hall) And you told us -- you walked through the information, Exhibit 68. I want to

ask you, were you involved in preparing the chart, the information in that chart, Exhibit 68?

A. Yes.

Q. Are you familiar with all of the genotoxicity studies of surfactants that are listed in that chart?

A. Yes.

Q. Were you able to verify the correctness of the information about those studies that is presented in Exhibit 68?

A. Yes.

Q. And you say you're familiar with those studies. Did you review those studies in the course of your work at Monsanto --

A. Yes, I --

Q. -- as a regulatory toxicologist?

A. Yes, I have.

Q. Is that chart to the best of your knowledge an accurate report of the genotoxicity studies done by Monsanto on surfactants?

A. To the best of my knowledge.

Q. All right. Let me hand you Exhibit 69, which is a chart titled formulated products, genotoxicity studies, conducted by Monsanto. And

earlier you walked us through the contents of that chart. I want to ask you, were you involved in preparing that chart?

A. Yes.

Q. The studies there that are listed, the genotoxicity studies of formulated products, are you familiar with those studies?

A. Yes.

Q. Did you -- did you verify the accuracy of the information about those studies that's presented on Exhibit 69?

A. Yes, to the best of my ability.

Q. And you said you're familiar with the studies. Are those studies that you have reviewed in the course of your work for Monsanto as a regulatory toxicologist?

A. Yes.

Q. Is Exhibit 69 an accurate chart listing -- does Exhibit 69 present an accurate account of the information related to genotoxicity studies conducted by Monsanto of formulated products?

A. To the best of my knowledge.

Q. Move to a different subject now, Dr. Farmer. You used the word stewardship early on when

you were describing your role as a regulatory toxicologist for Monsanto. Remind us again, please, what do you mean by stewardship?

A. So we talked about there were two buckets. The regulatory side, we're required to do things for our regulators for our products. And then there's another side called product stewardship, and the first baseline of product stewardship is follow all rules and regulations.

And then the next one is what do we do above and beyond that, and that's what we mean by stewardship.

Q. And when you say two buckets, are you referring to the two primary areas of your role as a regulatory toxicologist at Monsanto?

A. Yes.

Q. And that's regulatory and stewardship?

A. Yes.

Q. Let me show you a document that you were asked about by the plaintiff's lawyer. It's marked as Deposition Exhibit 23. And it is a April 2002 e-mail thread that involves you and others at Monsanto; correct?

A. Yes.

Q. And you're familiar with this document?

A. Yes, I am.

Q. When you were asked questions by the plaintiff's lawyer, you referred to a four-part stewardship program. Do you remember that?

A. Yes, I do.

Q. I want to ask you about those -- the four parts there. If you turn to Page 2 of Exhibit 23. That's part of an e-mail that you sent to Dr. Heydens and Richard Dirks; correct?

A. Correct.

Q. And in that e-mail you talk about the stewardship program for glyphosate as a four-part strategy.

Do you see that?

A. Yes.

Q. And I want to walk through those four-part -- those four parts. First let me ask you, is this e-mail the first time that four-part strategy was referred to?

A. No, I think they've always had those stewardship points, but I was kind of putting more of a formality to it, but they had always been in some form.

Q. And I want to walk through each step in

the strategy. The first one is to publish relevant toxicologic, ecotoxicological, and human information about glyphosate in the peer-reviewed literature, like Williams, Geisy, Acquavella.

Do you see that?

A. Yes.

Q. What is that referring to as part of the stewardship program, this publishing of relevant literature?

A. As we had talked about, we had our regulatory studies that are not available for -- out in the public as they exist. But we wanted then people to know what were the findings of those studies -- how were those studies conducted and what were the findings.

And so that's why we then had the Williams and the Geisy. Williams was human health, Geisy was ecological, and then Acquavella was the farm family exposure study, talking about what we knew about how farmers were exposed to glyphosate.

So we wanted to get our regulatory information out there, and as we had new data, new information, we wanted to make that publicly available to all of those who wanted to take a look at it.

Q. Williams, Geisy, and Acquavella refer to articles that were published by -- published about Monsanto testing data of glyphosate?

A. Yes. And there were others. This is just an example.

Q. And why was it important to disseminate this information about glyphosate testing to the world? That's what you're doing when you're publishing; correct?

A. Uh-huh. Uh-huh.

Q. Why was that part of the stewardship program?

A. Glyphosate is used worldwide. A lot of people have questions and curiosity about it, and we wanted to make sure that we had our information out there for people to take a look at. They may not be able to get into the EPA website to look at the RED, so we wanted to be able to have another form that they could be able to get access to our information.

Q. And when you say access to the EPA website to look at the RED, what are you referring to?

A. So when we talked about the EPA registration eligibility document, a lot of just the general public, that's not somewhere where they would

go to look for that kind of information, so we wanted to be able to have these kinds of articles for people to use across society.

Q. The second part of the four-part testing after publishing toxicological and other information about glyphosate was reviewing -- you wrote review the literature regularly for glyphosate findings and respond when appropriate. Hardell, Stocco, and some others you list there. What is that referring to?

A. As we talked about, glyphosate, glyphosate products were widely used, and a lot of people had access to do testing with them and we were interested in what people were finding, and could we also communicate with them and contribute to information about what they were learning, and learn about what they were discovering as well.

Q. In your view why was it important for Monsanto to review the literature about glyphosate and studies done by others?

A. I think two reasons. One, we wanted to know what they were finding so that we would be aware of it, and another is sometimes there would be some misinformation or other things that were being published that didn't have the full picture of

information, and we felt it was important to be able to watch all of that.

Q. Part 3 of the four-part strategy you wrote about in this e-mail is establishing a scientific network of prestigious --

THE VIDEOGRAPHER: Do you want me to zoom in?

MR. HALL: Sorry.

Q. (By Mr. Hall) Scientists in key world areas and provide them the latest information about glyphosate. We have epi -- that's epidemiology?

A. Yes.

Q. Tox, toxicology. Exp. What's that?

A. Exposure.

Q. Exposure. Repro/dev?

A. Yeah, reproductive and developmental toxicology.

Q. Clinical tox experts. What are you referring to there, establishing this network of prestigious scientists?

A. I think there's two things to look at with this. One was to have them give us their opinion of what they thought the data was, what we could do to improve it, give us their input, their evaluations, and

the other one is they would be available if there were questions by others around the world and they would also have information to be able to interact with others and communicate the science.

Q. Part 4 is assess data gaps and fund appropriate research, and then it refers to three things that I'm not sure what they refer to. So why don't you explain what Part 4 is?

A. So the three things you're looking at there -- the FFES is the farm family exposure study. We recognize that while --

Q. Sorry, before you even get to that --

A. Yes.

Q. -- describe what assess data gaps and fund appropriate research means.

A. What we would do is we would look out there and ask is there any information that's missing that we think would contribute to the overall understanding of our product, and so that would be considering looking at data gaps.

Q. All right. And now, what do FFES, MON 35050, and Stocco refer to?

A. So FFES -- sorry -- farm family exposure study, and then Stocco was an author of an in vitro

study, and then MON 35050 was a formulation that there were some studies conducted with that.

Q. All right. And so let's take them one at a time. What is the farm family exposure study?

A. Well, we had information on people who use it as part of their job, what we would call occupational exposure. We did not have exposures to farmers on what their exposure would be when they're using it on their farm.

So that was recognized, we felt, as a data gap -- what was the exposure that farmers had. So we participated with a task force and helped fund that particular exposure study.

Q. Did that fill that data gap?

A. Yes, it did.

Q. All right. MON 35050. What does that refer to?

A. That was a formulation that was used by some authors in Italy. They had injected the test material, the formulation, 35050, directly into the abdomen of the animals, and we felt the results of those studies were because the formulation, which is not a relevant round of exposure to people to have it directly injected into their abdomen -- what would

happen if you gave it to them orally.

Q. So Monsanto conducted its own tests that tried to replicate the Italian study you're referring to?

A. Replicate it and then to do the oral exposure.

Q. And was that a study required in any way by regulators?

A. No.

Q. What does Stocco refer to?

A. That is an author of an in vitro study, and there were some effects on cells that were in vitro, and we believe that the results of that effect were due to the surfactant in our formulated product, and so we worked with a professor at another university where we tested the product without Roundup -- without glyphosate in it, and then we tested other surfactants and found we had the exact same response.

Q. Did Monsanto, in your experience of Monsanto, follow each of these four steps as part of its stewardship program?

A. We did.

Q. Were you personally involved in that?

A. Absolutely.

Q. Over what period of time has Monsanto participated or implemented and followed this four-part stewardship program?

A. Stewardship is -- product stewardship has been around way before I got there. I think I formalized it, because that was kind of for me to do that that way, but it was followed again before me without this formalization. This is how I was working with it, and it's continued through today.

MR. HALL: Let's take a break.

THE VIDEOGRAPHER: We are going off the record at 1:11 PM.

[A brief recess was taken.]

THE VIDEOGRAPHER: We are back on the record at 1:32 PM.

Q. (By Mr. Hall) Dr. Farmer, you've testified this afternoon about various regulatory evaluations and conclusions done after IARC's 2015 classification; right?

A. Yes.

Q. And this included Exhibit 76, which is the EPA CARC evaluation?

A. Yes.

Q. Correct?

A. Yes.

Q. Exhibit 77, which is the 2016 EPA OPP evaluation?

A. Yes.

Q. Exhibit 78, which is the 2017 EPA IPP evaluation?

A. OPP. OPP.

Q. OPP. Thank you. Exhibit 79, the EFSA, the European conclusion, peer-reviewed conclusion from 2015?

A. Yes.

Q. Exhibit 80, the JMPR 2016 evaluation?

A. Yes.

Q. And the -- Exhibit 81, the ECHA, the European Chemicals Agency, 2017 evaluation of glyphosate; correct?

A. Yes.

Q. The reason I listed those, I wanted to ask you, as to each of those evaluations from 2015 through 2017, did you rely on those evaluations in the course of your work at Monsanto?

A. Yes.

Q. How so?

A. Again, we would look -- I would look at

them, because I knew a lot of the data I was involved in, some of the data that was put into those, and I would look at them and I would be asked questions about glyphosate safety, and I would be talking about what conclusions ECHA came to or the JMPR, so I would use them on a routine basis in terms of, again, supporting our understanding of glyphosate safety with the confirmation from all of those other agencies.

Q. I want to move to a different topic. In the course of your career as a scientist, Dr. Farmer, have you been the author of articles published in scientific journals?

A. Yes.

Q. About how many articles have you been an author for?

A. Maybe around 20.

Q. Now, beyond those 20 articles where you've been an author, have you in the course of your career provided help, contributions, support of -- requested support of -- related to scientific articles where you were not the author?

A. Yes.

Q. And when you've been the author, have you obtained support and help in the writing of a

scientific article?

A. Yes.

Q. Give us an example of typically the kind of help you might get when you're an author of an article.

A. It can range from someone just proofreading it. We have quality assurance people that just look and make sure the numbers are transposed -- that they are not transposed, they're correct. We'll have people writing, putting in really substantial intellectual information in there or writing up their experiments in there.

So it can range from somebody just reading it to make sure it kind of makes sense, so there's a real wide range of people that participate in putting a publication together.

Q. And in your experience is it appropriate to identify as an author every person who provides help in any way or assistance to the authors of an article?

A. No.

Q. In your mind what is the difference between being the author of an article as opposed to someone who is supporting and helping the authors of an article?

A. It really is about substantive intellectual contribution within that publication. It's about the designs of the studies, it's about the conduct of the studies, it's about the interpretation of the studies, it's about the conclusions. It's really the robust intellectual input that those people put in -- are the authors.

Q. In your entire career at Monsanto, have there been any articles where you made those kind of contributions, those that qualify as authorship, where you were not identified as an author of the article?

A. No.

Q. In your entire career at Monsanto, have there been any articles where you provided the supporting role, whether you were providing information or background or writing a few sentences here or there, but not providing the substantial intellectual contribution of an author? Were there any articles where you were in that supporting role where Monsanto was not mentioned or acknowledged in the article?

A. No.

Q. Are you aware of any articles about glyphosate or Roundup in which the scientific conclusions expressed in the articles were not the

conclusions of the identified authors of the article?

A. No.

Q. I want to shift now to Dr. Parry. You were asked about Dr. Parry when the plaintiff's lawyer had a chance to ask you that. Do you recall that?

A. Yes, I do.

Q. Remind us now, who was Dr. Parry?

A. He was a genotoxicologist in the United Kingdom.

Q. And when did Monsanto contact Dr. Parry?

A. I believe it was in late 1998, early 1999.

Q. Tell us again why Monsanto reached out to Dr. Parry, this genotox expert.

A. There were four publications in the open literature that we wanted Professor Parry to take a look at for us.

Q. And why did you want Professor Parry to look at these four published articles?

A. They were articles that had concluded that glyphosate and/or a formulation was genotoxic, and we believed that just the conditions of the study had brought those results to bear, and we were interested in getting Professor Parry's opinion on the studies.

Q. By the way, you say these articles are

published. Would the EPA and regulators around the world have had access to those articles?

A. Yes, they would have.

Q. Now, you told us that Dr. Parry issued a first report in early 1999. Do you recall that?

A. Yes.

Q. Do you recall the approximate date of his first report?

A. I think it was in February, early that year.

Q. 1999?

A. 1999, yes.

Q. So this would be several months after you had contacted him?

A. Yes.

Q. Describe what that report, that first February 1999 report of Professor Parry was in substance.

A. It was really just a summary of what the authors of the publications had said.

Q. The authors of the four articles that you were describing?

A. Yes.

Q. Is a summary of those four articles what

you were looking for from Professor Parry?

A. No.

Q. Why not?

A. We were expecting a clinical analysis of the studies, how they were conducted, what was the interpretation of the data. We were looking for his critical analysis of the studies.

Q. All right. And after you got this first report from Professor Parry which was more or less a summary of the four articles, what did Monsanto do next?

MR. LUNDY: Objection to the form of the question, to leading.

A. Professor -- it made us realize that Professor Parry wasn't aware of a lot of the data that we had that would help inform him to some of the recommendations and comments he had, so we provided a number of studies for Professor Parry to look at.

Q. (By Mr. Hall) And then after Monsanto provided studies for Professor Parry to look at after his initial February 1999 report, did he send Monsanto a second report?

A. Yes.

Q. I've handed you Deposition Exhibit 43,

which the plaintiff's lawyer asked you about. And it's titled evaluation of the potential genotoxicity of glyphosate, James M. Parry. Is Exhibit 43 Dr. Parry's second report?

A. Yes.

Q. And this evaluation -- do you know the date of the evaluation?

A. I think it was later on, maybe towards April of 1999. I don't remember the exact date.

Q. If you look at the page --

A. Oh, there's something on the back.

Q. By the way, does Exhibit 43 contain things that are not his report?

A. Oh, this looks like August. Looks like August. Kind of confusing.

Q. Before we get to that -- for example, Exhibit 43 contains a documented Bates number 269 -- MONGLY01314269.

Do you see that?

A. Yes.

Q. Was that part of Professor Parry's report?

A. No.

Q. So --

A. And there's also 268.

Q. Okay. So there may be some things in addition to the report included in Exhibit 43; is that accurate?

A. Yes. Yes.

Q. Turning to Exhibit 43, the Bates number ending 270.

Do you see that?

A. 270. Sorry.

Q. Take your time.

A. Yes.

Q. What is that page?

A. It looks like a letter to Mark Martens from Professor Parry.

Q. And it reports that his evaluation -- Professor Parry's is enclosed?

A. Yes.

Q. Does that refresh your memory as to the date of Dr. Parry's second evaluation here?

A. Yes, it does.

Q. And what is that date?

A. August of 1999.

Q. Now, in this second evaluation, this August 1999 evaluation, did Professor Parry have some recommendations?

A. Yes.

Q. Let me ask you about those. If we turn to the Bates numbers 265 in his report, it says actions recommended.

Do you see that?

A. Yes.

Q. And he lists a number of recommendations there?

A. Yes.

Q. Now, when -- did you review these recommendations when Monsanto received this evaluation in August of 1999?

A. Yes.

Q. What was your reaction when you read through -- the recommendations are listed, am I right, A through I on Pages 265 -- Bates number ending 265 and 266 in Exhibit 43. Is that right?

A. Yes.

Q. Those recommendations when you reviewed them, what was your reaction at the time?

A. Again that I think that we -- Professor Parry wasn't aware of the full extent of the data that we had in genotoxicity.

Q. Did you think that the -- some of the

recommendations made sense?

A. Yes.

Q. Had Monsanto actually done many of the things he was recommending here?

A. Yes, we had.

Q. Did Monsanto have underway some projects that would address some of these recommendations as well?

A. Yes.

Q. We'll come back to Dr. Parry's August 1999 recommendations in just a minute. Let me first ask you about Deposition Exhibit 44 the plaintiff's lawyer asked you about. Exhibit 44 is -- it contains e-mails from September -- August and September 1999; correct?

A. Yes.

Q. All right. And you're on this e-mail thread; is that true?

A. Yes.

Q. And just so we set the stage a little bit, the e-mail thread starts on Page 2 with an e-mail from Dr. Wratten to Dr. Martens and you and copying others?

A. Yes.

Q. And Dr. Wratten sends this e-mail and says to you I was somewhat disappointed in the Parry report.

This is dated August 31, 1999. Not particularly from his conclusions, but just the way they're presented.

Do you see that?

A. Yes.

Q. First, did you understand Dr. Wratten was referring to Dr. Parry's second evaluation in August 1999, Exhibit 43?

A. Yes, that was my understanding.

Q. What did you understand when he said I was disappointed in the report, not particularly from the conclusions, but just the way they're presented?

MR. LUNDY: Object to the -- to hearsay. You're asking her to interpret his mind.

Q. (By Mr. Hall) I'm asking you to interpret your mind. What did you understand?

A. It was --

MR. LUNDY: Same objection.

A. When we see reports like this, it's usually a lot more a critical analysis, a lot more in-depth information, and the formatting of it wasn't what we were used to seeing.

Q. (By Mr. Hall) And then on the next page -- is it Dr. Wilson?

A. Yes.

Q. And what was Dr. Wilson's role at Monsanto?

A. He was one of our metabolism experts.

Q. He forwards to you a comment about Dr. Parry's evaluation. It says two options, work closely were Parry -- i.e., someone other than Mark -- or get someone else.

Do you see that?

A. Yes.

Q. And you then respond, one option, I agree we need someone else to interface with Parry.

Do you see that?

A. Yes.

Q. So I first want to ask you -- when Dr. Wilson said two options, work closely with Parry, someone other than Mark -- who's Mark?

A. Mark Martens, Dr. Mark Martens, was one of the toxicologists in Europe.

Q. For Monsanto?

A. For Monsanto.

Q. And do you understand -- when you said you agree, we need someone else to interface with Parry other than Dr. Martens, why -- what was behind that?

A. It was -- we had as we were talking about

the breadth of the data, and Mark is a general toxicologist and not a genotoxicologist.

Q. Let me pause there. What was Dr. Parry, a genotoxicologist?

A. Yes.

Q. And Dr. Martens was a general toxicologist?

A. Yes.

Q. What's the difference?

A. So Professor Parry, his specialty area is genetic toxicology. Mark would know genetic toxicology on a more superficial level.

Q. And you said you agree, we need someone else to interface with Parry, and you go on to say right now the only person I think that can dig us out of this genotox hole is the good Dr. "Keer."

Do you see that?

A. "Kyer."

Q. "Kyer." Excuse me. Let me first ask you, who is the good Dr. Kier?

A. Dr. Kier was our genotox expert at Monsanto.

Q. Why did you think that Dr. Kier would be better to work directly with Professor Parry than Dr.

Martens, the general toxicologist?

A. I think that Dr. Parry's questions and comments and recommendations would be better understood by someone who knew that area as well as Dr. Parry did.

Q. So Dr. Kier and Dr. Parry perhaps spoke the same language a little better than Dr. Martens did in your view?

A. Yes. Yes.

Q. So you say the only person I think that can dig us out of this genotox hole is the good Dr. Kier. What do you mean when you said genotox hole there?

A. Well, as we talked about with Professor Parry's report, I was concerned that there was a lack -- at the very end is those recommendations -- a lack of completeness of all of the data and the science that existed to that day, and so I felt that Dr. Kier then could help point out the different kinds of studies that we had either conducted before or were ongoing that could address Professor Parry's recommendations.

Q. Did Dr. Parry's recommendations to your understanding reflect that he was not aware of other testing Monsanto had done?

MR. LUNDY: Object. You're asking the witness to testify to the state of mind on another person who's dead now, and so I'm objecting to the question.

Q. (By Mr. Hall) I'll reframe the question. Did you draw any conclusions about whether or not Dr. Parry's recommendations included steps that -- and tests and studies that in fact Monsanto had already done?

A. Yes.

Q. Did -- were you concerned that his evaluation in August 1999 in which he made those recommendations could give the impression that that work hadn't been done?

A. Yes.

Q. When you used the term genotox hole, is that what you're referring to?

A. Yes.

Q. By genotox hole, did you mean that there was some hole in the scientific knowledge or study --

MR. LUNDY: Objection. Leading.

MR. HALL: Let me finish the question if you would.

MR. LUNDY: Well, the last three questions

have been leading, so I'm objecting now.

MR. HALL: But you know what? That doesn't give you the right to interrupt, so --

MR. LUNDY: Finish your question and I'll make my objection.

MR. HALL: Let me speak. Let's not interrupt each other; okay?

[The pending question was read by the reporter.]

MR. LUNDY: Objection. Leading.

MR. HALL: Do you want to say it again?

Q. (By Mr. Hall) By genotox hole, what did you mean?

A. I was not concerned that there was any doubt that glyphosate was not genotoxic or the formulations or their surfactants. It was -- there was information missing for Professor Parry to take a look at.

Q. When you got the recommendations in his August 1999 evaluation, did you take a close look at them?

A. Yes.

Q. Now, when the plaintiff's lawyer asked you questions, and -- about Monsanto's interactions with

Dr. Parry, do you recall whether he asked you anything about any interactions with Dr. Parry after September 1999?

A. Not that I remember.

Q. Did in fact Monsanto continue to work with Dr. Parry after September 1999, after receiving his recommendations in the August 1999 evaluation?

A. Yes.

Q. What happened next?

A. We continued to work with Professor Parry over the next year or two, and then a meeting was set up to talk with Professor Parry in person about the different responses to his recommendations.

MR. HALL: Need to go off the record for just a minute.

THE VIDEOGRAPHER: We are going off the record at 1:53 PM.

[A brief recess was taken.]

THE VIDEOGRAPHER: We are back on the record at 1:55 PM.

Q. (By Mr. Hall) After Monsanto received Dr. Parry's recommendations in August 1999, did Monsanto take steps to consider and address the recommendations?

A. Yes.

[Exhibit 82 marked for identification.]

Q. Showing you Exhibit 82, which is a kind of oversized four-page chart titled Dr. Parry's recommendations, 8-18-99. What is this chart?

A. As you had mentioned earlier in the report, there were letters of recommendations A, B through -- I think it was I. And so what this is talking about is --

MR. LUNDY: I'm going to interrupt you to make an objection. This is not a document that's been produced, and she's going to testify about something that is a hearsay document that hasn't been produced, and --

MR. HALL: That's all you need to say, isn't it?

MR. LUNDY: All right. So I object to any questions about the document --

MR. HALL: Yeah. The speaking objections don't really -- if you just give the basis of your objection, we'll get through it quicker.

MR. LUNDY: All right. I'll do that. It's hearsay. It's contrary to the court's order. It hadn't been produced. It's not Bates-stamped. All of those are my objections.

[The pending question was read by the reporter.]

Q. (By Mr. Hall) What is this chart, Exhibit 82, Dr. Parry -- Dr. Farmer? Excuse me.

A. This has Dr. Parry's recommendations of A through -- I think it's I, included on here, and then as we talked about, we continued to work with Professor Parry and look at what data we had that would be responsive to each of those points.

Q. Does Exhibit 82 provide in the bold quotes next to letters A through I the actual recommendations by Dr. Parry in August 1999?

MR. LUNDY: Same objection.

A. Yes.

MR. HALL: You can have a standing objection for Exhibit 82 along the lines --

MR. LUNDY: All right. Any question regarding this document I'm objecting.

MR. HALL: Right, and it's a standing objection to 82.

MR. LUNDY: Thank you.

Q. (By Mr. Hall) I think you said it includes Dr. Parry's actual language of his recommendations in A through I from August 1999?

A. In the bold, yes.

Q. And generally what is the information -- just to orient us as to the chart, what is the information provided after each of the bold quoted recommendations of Dr. Parry?

A. Those were information that was -- studies or information existing at that time that would address that particular recommendation, and then below it you can see that following that there would be -- these studies continued ongoing and they would -- we would have studies that would continually over time still address Professor Parry's recommendations.

Q. Let's break that down a little bit. As a general matter after each recommendation, is there -- are there listed studies that address the recommendation?

A. Yes.

Q. And there is for some of the responsive information below the recommendations a line that says that it divides the information, and it has 8-18-99, for example, in response to Recommendation A/B on Page 1.

A. Yes.

Q. What does that line, 8-18-99, indicate?

A. So the studies above the line were studies that were available at the time when we were working with Professor Parry that addressed his Endpoints A and B. Those below the line are studies that have been generated over years following with Professor Parry that would still then be addressing his points in A and B.

Q. And 8-18-99 indicates the date of Dr. Parry's recommendations?

A. That was the August -- yes.

Q. Now, who prepared this chart, Exhibit 82?

A. I worked with the lawyers on this.

Q. Right. Who is -- who put together the content of the chart?

A. That would have been me.

Q. Did you check each of the entries --

A. Yes.

Q. -- on Exhibit 82?

A. Yes.

Q. Let's walk through the chart, and at some level of detail, and you can just describe, please, what the information represents. First, let me ask you -- Recommendations A and B on Page 1 of Exhibit 82 are combined together. Why does the chart include both

A and B in that first entry?

A. It just is representing all of the different studies that are involved in in vitro cytogenetic studies.

Q. Were A and B, his recommendations, related to each other?

A. Yes. He had -- one was in vitro cytogenetic data on the glyphosate formulations, and then he talks about in vitro micronucleus studies in human lymphocytes, and that's another type of a in vitro cytogenetic study.

Q. Did the information that's provided below Recommendations A and B -- it's in three different buckets, it looks like. Cytogenetic assays?

A. Yes.

Q. In vivo test for chromosomal aberrations in mammals.

Do you see that?

A. Yes.

Q. And studies evaluating DNA damage. Those three areas.

Do you see that?

A. Yes. Yes.

Q. Why the three buckets? What is this

information -- how does this information at a general level address Dr. Parry's Recommendations A and B?

A. What he was talking about at the very top was cytogenetic data. We can have studies that are in vitro, like we talked about before, and we can have it in mammals. He also talked about he wanted to have --

Q. Dr. Farmer, excuse me. Slow down a little bit for our court reporter.

A. Oh, pardon -- I'm so sorry.

Q. Go ahead. Sorry to interrupt.

A. Professor Parry talked about providing in vitro cytogenetic studies, those that are in petri dishes. There are other studies that are in vivo that provide the same information in a whole animal.

Q. As a general matter in the field of toxicology, all things equal, is in vitro superior to in vivo evidence, in vivo superior to in vitro, or does it matter? Can you generalize?

A. In vivo would be considered a higher order of study.

Q. Why is that?

A. It's in a whole animal, and whole animals have the ability to do repair as well as everything else, and how the test material might get to them. So

it's considered a more robust assay.

Q. Than in vitro, which is --

A. Than in vitro.

Q. -- in a petri dish?

A. Yes.

Q. Is that why you included in vivo information in response to Recommendations A and B?

A. Yes, because we really did more in vivo studies than we did in vitro studies back in those times.

Q. All right. Moving to the third page, which is -- includes Recommendations C and D. Do those list below those recommendations work that was available to Monsanto or that Monsanto did addressing those recommendations?

A. Yes.

Q. Why for Recommendation E of Dr. Parry is there an N/A there?

A. Because he did not recommend any additional work for that particular endpoint.

Q. What was that endpoint? What do you mean by endpoint?

A. He said he did not recommend repeat of any sister chromatid exchange studies. As you see, he said

there was -- the data that we provided him will take priority over that.

Q. Tell us at a general level what the information following Recommendation F shows.

A. So he had recommended doing a COMET assay, and we had other assays that we believed would address the same endpoint. We didn't use a COMET assay, but we had other assays that responded to the same endpoint.

Q. Why didn't you use a COMET assay?

A. In our experience in that time, the COMET assay didn't have a guideline, it wasn't a robust protocol, there were some -- you could put 30 minutes on a StairMaster and get a positive COMET assay, so we felt that the studies that we had were a better study at that time to respond to his endpoint.

Q. What were the studies that you had at that time?

A. We --

Q. What kind were they?

A. Yeah. They -- you can see down there the Shirasu study was one of them, in 1978 had been done before. It's a type of a bacterial assay. And then there was another study in Li and Long that addressed that same endpoint.

Q. Were the types of assays used in the information below Recommendation F superior, the same as, or inferior in quality to COMET assays, in your view?

A. I would say at that particular time that they were better than.

Q. For G and H they is N/A. Is that because in G and H he really didn't have any recommendations?

A. Correct.

Q. Then on the last page is Recommendation I, which is provide comprehensive in vitro data on surfactants. Describe that information generally and explain to us why you have both in vitro data and in vivo data in Chart 82.

A. His recommendation was provide the comprehensive in vitro data on surfactants of which we did have a number of studies, but as we talked about a minute ago, we felt that the whole animal study was a more robust study, and we had a lot of studies -- we had a number of studies on that that we provided for him as well.

Q. Does Exhibit 82 contain an accurate summary of testing that is in your view responsive to the recommendations of Dr. Parry that existed both

before and after August 1999?

MR. LUNDY: Object to asking her a legal -- I mean, an expert opinion on this.

MR. HALL: Go ahead.

MR. LUNDY: For all the reasons I've stated earlier. That's my objection.

A. Yes.

Q. (By Mr. Hall) Now, you said Dr. Parry continued -- I'm sorry, Monsanto continued to work with Dr. Parry after September 1999.

[Exhibit 83 marked for identification.]

Q. Handing you Exhibit 83, which is a two-page series of e-mails, Bates number MONGLY02626553 to 6554. These are e-mails from February 2001.

Are you familiar with these e-mails, Dr. Farmer?

A. Yes.

Q. Did you receive them back in February 2001?

A. Yes.

Q. Now, this is about a year-and-a-half after Dr. Parry's August 1999 report?

A. Yes.

Q. And some two -- more than two years -- is

it more than two years after you originally contacted him?

A. We started around late 1998, early 1999.

Q. And at the top the subject line says meeting Professor Parry, February -- 15 February 2001.

Do you see that?

A. Yes.

Q. And do you recall receiving a report of a meeting with Dr. Parry that Monsanto had back in February 2001?

A. Yes.

Q. All right. Let's turn to the second page of Exhibit 83, which is an e-mail from Richard Garnett to you and others at Monsanto. Who is Richard Garnett?

A. He was our reg affairs manager in Europe.

Q. And he's reporting on this meeting with Professor Parry; is that correct?

A. Correct.

Q. And he -- I want to just walk through this report of this meeting with Professor Parry. He reports to you and others that the overall tone of the meeting was positive after a negative start, because Professor Parry found the tone of the Williams and Cantox paper to be very dismissive of other

researchers' work and overdefensive in his attitude.

The presentation of the results of the MON 3505 study changed the mood because it clarified certain effects found in the Bolognesi and Peluso papers.

Do you see that?

A. Yes.

Q. I want to see if we can translate that from toxicology to language that those of us who aren't toxicologists could better understand. You mentioned earlier this MON 3505 study, and it's referred to here as changing the mood because it clarified effects found in Bolognesi and Peluso.

What are Bolognesi and Peluso papers, first of all, referred to there?

A. Those are two of the four studies that we asked Professor Parry to review the first time we contacted him.

Q. And what did the MON 3505 study -- what was it? Remind us again what is that. Who did it and what is it?

A. It's the code, the MON number for our Italian formulation.

Q. And the study is a study by whom?

A. So this was a study -- we were -- we didn't believe there was --

Q. First question, sorry. Who did this study?

A. Monsanto.

Q. Monsanto did this MON 3505 study?

A. Yes.

Q. What did the MON 3505 study address?

A. We wanted to know how the findings in the Bolognesi study and Peluso studies, how they came out the way they did.

Q. And those were two of the four studies that when you saw published in the literature caused you some questions?

A. Yes.

Q. And at a general level, what was it about those studies that caused you to wonder about them and to reach out to Dr. Parry?

A. They were showing there was some evidence of genotoxicity and another endpoint we would call oxidative stress, but the interesting part for us, one we wouldn't normally see those findings, was that the animals were injected this formulation directly into their abdomens.

Q. As opposed to eating the material?

A. Yes.

Q. And why does it matter if the animals -- or why did it cause you to wonder about these tests if the animals were injected in the abdomen with glyphosate as opposed to eating it?

A. We had always based on the data concluded that glyphosate and the formulations were not genotoxic, and so we felt it was just the conditions of the study, the injection into the abdomen, as to why they were getting the findings that they were getting.

Q. And what did the MON 3505 study address as it relates to these Bolognesi and Peluso papers where the animals were injected in the stomach with glyphosate?

A. One of the things that we did is we repeated their study. We actually injected the formulation directly into the abdomen of the animals, but what we did also is we did an evaluation of the condition of the animal's abdomen, and we found that there was -- there was gunk, is all I can -- stuff sitting on the livers and the kidneys of the animals.

We then did an evaluation of the condition of those livers and the kidneys and found that they had

been damaged by that precipitation by this white material that had been sitting on both of those organs.

And we believed that the findings that they were getting from the liver and the kidney that were representing genotoxicity were really secondary to the liver and the kidney being hurt by the physical presence of that material just sitting on them.

Q. Was that a result of the fact that they had been injected in the abdomen with the glyphosate?

MR. LUNDY: Objection. Leading.

Q. (By Mr. Hall) Well, explain -- why did you reach the conclusion that it was -- the cell damage observed was the result of the material on the surface of the cell as opposed to something else?

A. Because then we repeated the study, and we gave it to them orally and we did not have the same results.

Q. There was no genotoxicity as a result of that study?

A. We did not see damage of the livers and the kidneys, no.

Q. Did you have an understanding why -- well, first of all, the MON 3505 study, was that done as a result of Dr. Parry's recommendations?

A. No, we had started doing that prior to Professor Parry.

Q. Was he aware that Monsanto was doing that study when he init -- when he provided his recommendations in August 1999?

A. I do not believe he was aware.

Q. Do you have an understanding of what Dr. Garnett meant when he said the results of that study changed the mood within the meeting with Dr. Parry?

MR. LUNDY: Objection. Hearsay. Asking her to testify to the state of mind of another person.

A. I think Professor Parry was pleased to see that we had undertaken that study and repeated the study, did a different study, and were able to explain the findings.

Q. (By Mr. Hall) Moving down in Dr. Garnett's e-mail. He lists some results, and I just want to ask you about a few of the results, the main ones. When he listed the results of this meeting with Professor Parry, to your understanding what were the most significant ones that you saw here?

A. I think the very first one that says acceptance that glyphosate is not genotoxic.

Q. What other results of this meeting with

Dr. Parry did you find significant, to your understanding of glyphosate?

A. The recognition of the difference of the toxicity between the IP or intraperitoneal and oral routes.

Q. And that has to do with the MON 3505 study --

A. Yes.

Q. -- 35050 study that you just described?

A. Yes.

Q. All right. Any other significant results to your understanding as it relates to glyphosate and genotoxicity testing in this summary?

A. The last one, no longer requested any studies on the final formulation.

Q. All right. And did you understand these results reflected Dr. Parry's views at the conclusion of this meeting?

A. Yes.

Q. Now, after this 2001 meeting occurred with Dr. Parry, did you happen to see Dr. Parry yourself at any time?

A. Yes.

Q. Tell us about that.

A. I was at a symposia I think around in 2002 at Greene's College in the UK. Professor Parry was an invited speaker.

Q. He was an invited or was not?

A. He was an invited speaker to present on genotoxicity, and I had an opportunity to see him at that meeting.

Q. How was your interaction with Dr. Parry at that --

MR. LUNDY: I'm going to object insofar as she's going to testify about anything that he said inasmuch as he's dead, it's hearsay and it's not admissible, and in violation of due process as we can't interview him, talk to him, or depose him.

[The pending question was read by the reporter.]

Q. (By Mr. Hall) How was the -- describe the interaction with Dr. Parry that you had in 2002.

A. It was very cordial.

Q. Dr. Farmer, I want to ask you now -- in your more than 25 years of working as a toxicologist at Monsanto, how do you assess the quality of the scientific work you have been involved in and seen at the company related to glyphosate and glyphosate

products?

MR. LUNDY: Object insofar it calls for an expert opinion. She's not qualified. Subject to my objection, she can answer.

A. Could you repeat --

Q. (By Mr. Hall) I'll ask the question again. Based on your 25 years, more than 25 years of working as a toxicologist at Monsanto, and your many years of working with glyphosate and glyphosate products, I want to ask you to describe for the jury how you assess the quality of the scientific work you were involved in at the company and you saw firsthand as it related to glyphosate and glyphosate products.

MR. LUNDY: Same objection.

A. I -- we have always acted on believing in sound science and high-quality science, and in looking at it from a broad perspective, I'm very proud of what we've done because I do believe it has been high quality and very solid science.

MR. HALL: I have no further questions at this time. Thank you, Dr. Farmer.

THE VIDEOGRAPHER: Going off the record?

MR. HALL: Yeah.

THE VIDEOGRAPHER: We are going off the

record at 2:19 PM.

[A brief recess was taken.]

THE VIDEOGRAPHER: We are back on the record at 2:33 PM.

QUESTIONS BY MR. LUNDY:

Q. Dr. Farmer, my name is Hunter Lundy. I think we met for the first time back in September of last year when I sat through the first day of your deposition taken by Mr. Brent Wisner. Do you recall that?

A. I do now that you mention it.

Q. And then there was a second day and then there's today when your counsel has asked you questions up until almost 2:30; is that correct?

A. Let me see what time it is. Yes.

Q. Between the September deposition and today, how much preparation have you done to answer the questions of your counsel and to prepare for our recross?

A. I met with them a couple of times.

Q. And you're aware as we're sitting here that Mr. Wisner is next door taking the 30(b)6 deposition of Monsanto, who they produced Mr. Bill Reeves as the witness?

A. I've been told that.

Q. Have you had any conversations with Mr. Reeves in preparation for your deposition?

A. No.

Q. Have you had any conversations with him about anything since before September and today?

A. Kids and family and work, but not about this.

Q. Well, work involves Monsanto, doesn't it?

A. Yes.

Q. And so what is your relationship with Mr. Reeves in your work atmosphere?

A. I'm in the product safety center, and he is in the regulatory policy and scientific affairs group.

Q. Was that the previous group that you were in before you were moved to the product safety, or is that the -- have you been in the group that you're in now always?

A. I had been in the stewardship group before.

Q. Is there still a stewardship group?

A. Yes.

Q. And who heads that up now?

A. I believe it's -- the job that I had?
Q. Yeah.
A. Darrel Armstrong.
Q. And was he a Bayer person or a Monsanto person?
A. He was a Monsanto person.
Q. When you went to the new department that you're in now, was that a promotion or a lateral move?
A. It was a slight promotion.
Q. I want to go back to a couple of exhibits that you were questioned on. I want to start with what was marked as Exhibit Number 44 originally in the first day of deposition. Let's go to the top of that. Can you see that?
A. I --
Q. -- part of it where it says --
A. I can't read that from here.
Q. You can't read it from there?
A. No.
Q. How's that? Can you read it now?
A. Yes. I have a little bit of a difference in my eyes, so I see a little bit of double vision from far away.
Q. Can you see it now?

A. I can do -- yes, it will take me a while, but I can do it.

Q. So there's an e-mail from Alan to you on September the 2nd, 1999.

Do you see that?

A. Yes.

Q. And Alan Wilson was the -- he's the genotoxicologist that you discussed a while ago?

A. I'm sorry. Can you repeat that?

Q. Is he the genotoxicologist?

A. Who?

Q. Alan Wilson.

A. No.

Q. He's not? Who is Alan Wilson? What's his --

A. He was our metabolism expert.

Q. And so who was the genotoxicologist that you mentioned a while ago?

A. Larry Kier.

Q. Incidentally, did Larry Kier help you in the preparation of Exhibit Number 82?

A. No.

Q. So you didn't involve a genotoxicologist in preparing your exhibit that -- one that your lawyers

helped you prepare for today?

A. I was the one who talked about the genotox studies in there. I did not talk to Larry about that.

Q. But you all got Larry involved to interact with Dr. Parry when you were unhappy with his first report; is that correct?

A. I wouldn't say that we were unhappy with Dr. Parry's report. We wanted to be sure that we had Professor Parry -- all the information that he needed.

Q. Let's read the e-mail. It says if Larry has the time that would be great, but be careful we don't get into another Cantox situation. That could take some time wordsmithing and reaching consensus.

Do you see that?

A. I see that.

Q. So what kind of wordsmithing and reaching consensus did you all have to do in the Cantox situation?

A. I don't know what Alan meant by that.

Q. So you didn't ask him when you got this e-mail?

A. I don't remember.

Q. I certainly think it would be valuable to resolve points of clarity. Maybe you should invite

Parry to St. Louis to get him more familiarized with the complete database.

Do you see that?

A. I see that.

Q. And neither you nor Alan Wilson knew how to spell Dr. Parry's name, did you?

A. This is Dr. Wilson's e-mail.

Q. Well, look below. It's yours. You spelled it the same way, didn't you?

MR. HALL: She can't -- we're going to go to that? If you're going to refer to another part of --

Q. (By Mr. Lundy) Well, if you look at your e-mail that you responded to Alan --

MR. HALL: We can't see it, sir.

MR. LUNDY: Sorry. How's that? Can you see it now?

A. Yes.

Q. (By Mr. Lundy) You all didn't know Dr. Parry?

A. Yes, we -- I did not know Professor Parry at that time personally, but Mark Martens did.

Q. And you agree that both you and Alan Wilson didn't know how to spell his name?

A. Unfortunately we did not have the correct spelling of Professor Parry's name.

Q. And then in responding to Mr. Wilson's e-mail to you, you said one option, I agree we need someone else to interface with Parry. Right now the only person I think that can dig us out of this genotoxic hole is the good Dr. Kier. Did I pronounce that right?

A. No.

Q. Is it "Kerr" or "Keer"?

A. "Kyer."

Q. "Kyer." So I got it wrong just like your counsel did. Other option, I'm concerned about leaving Parry out there with this as the final project, his final impressions. If you remember his report, he was looking for work for a graduate student. I wonder if this evaluation was his or someone else's.

Do you see that?

A. I see that.

Q. What did you find out when you talked to him, whether or not it was his report or a graduate student's report?

A. I didn't ask him.

Q. Now, you did have a meeting with a number

of other scientists with him after he issued the second report, didn't you?

A. There were other people that met with him later on, yes.

Q. And you never asked him if the first report was from him or a graduate student?

A. I was not involved in that meeting.

Q. It says maybe -- the next sentence says maybe you, Bill, Larry, Steve, and I can get together to figure out where and how we go from here. Steve's opinion of the report was pretty clear. He also suggested as an opinion (sic) to drop Parry.

Do you see that?

A. I do.

Q. So what was -- what did Steve say?

A. About what? I'm sorry. I don't understand.

Q. Well, it says Steve's opinion of the report was pretty clear. He also suggested as an option to drop Parry. So what was Steve's opinion?

A. I think we read it a little bit, that he wasn't -- he was comfortable with his conclusions but thought that the formatting and the style he wasn't happy with.

Q. Are all of Steve's opinions reflected on this e-mail of August 31, 1999?

MR. HALL: You know, if you're going to ask her about that, I want to get her a copy of it, because right now she can't see the full e-mail.

MR. LUNDY: I'll just hand her that one.

Q. (By Mr. Lundy) Are all of Steve's opinions reflected on that August 31, 1999, e-mail?

MR. HALL: Objection. Foundation.

Q. (By Mr. Lundy) If you know.

A. All I have is what Steve wrote here.

Q. At the time of your September the 2nd, 1999, e-mail to Alan Wilson, Monsanto had already received the second report of Dr. Parry?

A. I believe that's what this is referring to.

Q. The second report?

A. Yes.

Q. So you had the first report and you had the second report when you wrote the e-mail that says we need to dig our way out of the genotoxic hole; is that correct?

A. That's what I wrote there, yes.

Q. Let me ask you about this document here.

What lawyers prepared this document for you, this Exhibit Number 82?

MR. HALL: Objection. Argumentative.

A. They didn't prepare it for me. I worked with them on preparing that.

Q. (By Mr. Lundy) And where did you do this work?

A. I did it in my office, pulling out the different recommendations and looking what different studies that we had that -- at that time and looking at some e-mails that we had that we discussed what would be meeting the recommendations of Professor Parry.

Q. Were they in your office working with you in your office or were you all e-mailing each other back and forth, or how did the creation of this document come about?

A. They were not sitting in my office. I have a cubicle, so we would sit together and go over hard copies and discuss it, and I would point out different things and recommend movements and say what fit in what bucket and how it should be displayed.

Q. And what lawyers were you working with on this?

A. I worked with one of them from

Hollingsworth.

Q. And who was that?

A. Joe Altieri.

Q. Anybody else?

A. No.

Q. Who in your office was working on this?

A. No one.

Q. Just you?

A. Yes.

Q. You didn't have any help from anybody else?

A. No.

Q. Did you type it?

A. I had typed an original format, and that has been typed since that time -- retyped.

Q. So the original preparation you did, was it edited?

A. No, we discussed different formats, and then we came to this decision that this would be the formatting.

Q. And so what was your format that you prepared?

A. It was more of an Excel spreadsheet with just lines across it versus something like this, but

it's an evolution that -- the input of the studies in here, those are mine, and what then is attributed to each of Professor Parry's recommendations is my recommendations for those.

Q. Now, Dr. Parry is deceased, is he not?

A. Unfortunately, yes.

Q. Do you know when he died?

A. No, I don't.

Q. When did you see him and have this cordial meeting in the UK? When was that?

A. I believe it was around 2002.

Q. I'm going to go back to -- let me look at -- I'm going to show you Exhibit Number 23.

MR. HALL: Excuse me for just a minute. Do you mind if I take these here, then maybe I can find them as you go and show the witness, help you along the way?

MR. LUNDY: Okay. That might work.

MR. HALL: Is that 23?

MR. LUNDY: Yes.

[Discussion off the record.]

MR. HALL: Go ahead. Thanks.

Q. (By Mr. Lundy) And would you go to the first page of Exhibit 23?

[Discussion off the record.]

THE VIDEOGRAPHER: Okay, good to go.

Q. (By Mr. Lundy) In terms of hierarchy, who was Bill Heydens to you?

A. Let's see. When was this? 2002? He was probably head of the product safety center at that time. So --

Q. Would you -- so he would have been your boss?

A. I wouldn't report directly to him. I reported to someone else, and he would have been head of the product safety center.

Q. So your boss would have reported to him?

A. Bill and I, at times we would go back and forth between reporting to him and not reporting, so if that were the time frame, that would be what would happen, yes.

Q. I notice that in the e-mail to you on April the 25th of 2002 from Bill Heydens, he says your last comment hits exactly where I'm coming from. We discussed the situation with Holson and DeSesso and concluded, not surprisingly, that we are in pretty good shape with glyphosate but vulnerable with surfactants.

What I've been hearing from you is that

this continues to be the case with these studies. Glyphosate is okay, but the formulated product and thus the surfactant does the damage. We had a low-risk strategy to generically deal with the issue but couldn't implement for budgetary reasons.

Do you see that?

A. So that's --

Q. Did I read that accurately, Dr. Farmer?

A. I'm sorry. Could you read that again then for me, please?

Q. Your last comment hits exactly where I'm coming from. We discussed the situation with Holson and DeSesso and concluded, not surprisingly, that we are in pretty good shape with glyphosate but vulnerable with surfactants.

What I've been hearing from you is that this continues to be the case with these studies. Glyphosate is okay, but the formulated product and thus the surfactant does the damage.

Do you see that? Did I read it accurately, Dr. Farmer?

A. You read it accurately.

Q. And what damage were you talking about?

MR. HALL: I object because those weren't

her words. You just read from someone else's e-mail.

Q. (By Mr. Lundy) What damage was Bill Heydens talking about? I'll rephrase the question.

A. I think you have to refer down to the last -- you say my last comment, so I think it's important that we put that back into context with that statement that you just read.

Q. Well, tell me, what damage was he referring to?

A. If you read down below here, these are talking about in vitro petri dish studies with cells.

Q. So those studies were reflecting damage caused by the surfactants; right?

A. In petri dish experiments, and what we find is surfactants -- as we talked about earlier today, soaps and shampoos do the same thing.

Q. I'm only interested in knowing what studies Monsanto did to test the surfactants. And obviously that's what he was commenting on, and obviously these are studies that you all did that you're referring to; am I correct?

A. No, they weren't.

Q. Who did them?

A. If you look down here, you see referring

to a sea urchin study, we're referring to a Stocco study. So those are not the studies that he's talking about there. Those weren't our studies he was referring to.

Q. That was in 2002; right? This memo that he sent to you?

A. This e-mail?

Q. Yes.

A. Yes.

Q. Was it in response to -- and it was in response to your e-mail of April 25, 2002?

A. Yes.

Q. And he was concerned about studies that showed problems with surfactants?

A. These studies in the bottom in my e-mail that were not Monsanto studies that were surfactant studies in petri dish experiments.

Q. And this -- the Exhibit 68 that you presented here today that's not Bates-stamped and has never been presented to us before today, you indicated that these were studies conducted on the genotoxicity by Monsanto of surfactants; right?

A. May I see it again, what you're referring to? Yes.

Q. Okay. So in 2002, Mr. Heydens is concerned about studies being performed by other people that show what I would call adverse effects as a result of surfactants, or as he says damage. Is that correct?

A. He's talking about very specific studies in my e-mail that I'm talking about.

Q. And in the exhibit that you produced today, 68, shows one study conducted by Monsanto on the genotoxicity of surfactants in the year 2009, and no other studies on this whole chart were conducted after you had gotten a comment from Dr. Heydens, am I correct, about the damage from these other studies?

MR. HALL: Object to form.

A. I'm sorry. I'm not understanding your question.

Q. (By Mr. Lundy) Okay. Well, let me lay the chronology. He's concerned by studies that he sees causing damage from surfactants; am I correct?

A. Of these --

MR. HALL: Objection. Foundation. Go ahead.

A. Of these studies that I'm discussing below, in petri dish experiments, because it's the condition by putting the surfactant on those cells in

the petri dish, the surfactant acts on unprotected cells in the petri dish.

Q. (By Mr. Lundy) Did you answer my question? He was concerned --

MR. HALL: Objection. Argumentative.

Q. (By Mr. Lundy) -- about the damage caused by the studies reflecting the surfactants; am I correct?

MR. HALL: Objection. Argumentative. Asked and answered.

A. In these specific petri dish experiments that he's talking about.

Q. (By Mr. Lundy) Okay. And after having received this in 2002, there's only one study shown on Exhibit Number 68 conducted by Monsanto on any surfactant to determine the genotoxicity of the same; am I correct?

A. But the endpoints in these studies weren't genotoxicity, and we did another study -- as we talked about, he's referring to my last comment. He said repeat the Stocco study, and one gen with the surfactant was another.

So he wasn't talking about genotoxicity in this particular e-mail. These are two separate things.

Q. So what other studies has Monsanto done on surfactants, other than the ones that you've produced right here on this list?

A. Well, these -- these are genotoxicity studies.

Q. Right. And Exhibit 69 was the product --

A. That's form --

Q. The genotoxicity studies on the product?

A. Formulated product.

Q. All right.

MR. HALL: So is your question what other surfactant studies did Monsanto do other than genotoxicity?

Q. (By Mr. Lundy) Let me just rephrase it. Were there any other genotoxicity studies done by Monsanto other than these shown on Exhibit Number 68?

MR. HALL: On what?

Q. (By Mr. Lundy) On surfactants.

A. On the surfactants?

Q. Yeah.

A. These are our surfactants that we've done our genotoxicity testing on.

Q. Are there any others that aren't shown on this chart?

A. Not that I'm aware of.

Q. The MON 8080 -- is that testing done on POEA?

A. No.

Q. What testing in there is on POEA?

A. POEA, we sometimes interchange that with MON 0818.

Q. There's POEA surfactant studies for genotoxicity that are not on that chart, aren't there?

A. Not to my knowledge. POEA and MON 0818 are used interchangeably. Now, there may be other manufacturers that have done testing on a polyoxyethylene alkylamine that I'm not aware of, but those would represent what we did.

Q. Well, I'm only interested right now in Monsanto's. So the MON 0818, is that a POEA study?

A. It's -- yes.

Q. Are there any POEA studies here that are conducted on rats or mice for genotoxicity?

A. Yes.

Q. Which one?

A. The mouse micronucleus.

Q. And you're saying -- you say you use them interchangeably, but -- so this is a POEA study; right?

A. A lot of people use it, unfortunately, interchangeably.

Q. Is this a -- was the POEA surfactant that was used in Europe discontinued in the U.S.?

A. Not to my knowledge.

Q. Now, who prepared the chart, 68?

A. I worked with the lawyers.

Q. The same lawyer as the other chart?

A. Yes.

Q. And who chose the studies?

A. I did.

Q. And what did you use as the basis to choose the studies?

A. There's a variety of lists that I looked at that I was able to document that those were the studies that we had on the genotox.

Q. And you looked -- and say that again. What did you look at to determine that these are the studies that should go on Exhibit Number 68?

A. We have a list of all the studies we do with our formulated product, so I was looking for those that had the genotox in the title.

Q. Well, this is --

MR. HALL: What -- go ahead.

Q. (By Mr. Lundy) -- surfactant. I'm looking at 68.

A. Oh, I'm so sorry. I have a list of these that I've used for -- I'm sorry. I apologize. Yeah, I've had a list of these that I've used for years, and that's how I came up with these, my list of studies.

Q. And when you say you have a list, what kind of list?

A. As toxicologists, when we have different studies, we have kind of an Excel spreadsheet that talks about this MON number and what studies we have conducted with that.

Q. When did you prepare that chart?

A. It's been a few weeks we've been working on this.

Q. And how about 82, Exhibit Number 82? When was this generated?

A. About the same time.

Q. And you knew you were going to use it in conjunction with your deposition today?

A. Yes, I did.

Q. Same thing as Exhibit Number 68?

A. Yes.

Q. When did you prepare Chart Number 69 --

Exhibit Number 69?

A. It was in the same time frame.

Q. You knew you were going to use it in your deposition today?

A. Yes, I did.

Q. And then how did you go about pulling these studies for the formulated product?

A. Again, I had a list of the MON numbers that have different studies that are conducted with the formulations, and I could identify the titles of the genotox studies.

Q. Neither 68 or 69 reflects a study where you were the author or the study director; am I correct?

A. I'm a study monitor. I am not working in a laboratory to conduct the studies. That's the normal process, that you would work with the study director to do those studies.

Q. So the answer to my question is no, you're not an author or a study director on any of these two exhibits; am I correct?

A. No, I'm not.

Q. Now, earlier you said you had -- you believed that you had participated in 20 -- about 20

articles that had been published in peer-reviewed literature. Have all of those been while you were employed by Monsanto?

A. No.

Q. Which ones were when you were not employed by Monsanto?

A. Oh, they have been a long time. I don't remember. If you would show me a list, I'd be happy to --

Q. Do you have a CV?

A. I do have a CV.

Q. Did you bring it with you?

A. No, I did not.

Q. So what studies did you do when you were not working for Monsanto?

MR. HALL: Studies or articles?

A. I was going to --

MR. LUNDY: Articles.

A. That were published in peer-reviewed literature?

Q. (By Mr. Lundy) Right. Right.

A. I really don't remember the articles. I could provide you the subject matter.

Q. Were they based upon laboratory studies,

the articles that you published?

A. Some were, yes.

Q. Were you the lead author on these studies?

A. No, not always.

Q. Have you ever been the lead author on a study where you performed the laboratory work?

A. I might have been on one at Wash U. I don't remember.

Q. Now, you worked in the lab when you were at Wash U., or did you teach?

A. I did a combination of both.

Q. More time teaching than lab work, or vice versa?

A. Vice versa.

Q. And did you teach -- I may be dreaming this, but I thought earlier today that you said you worked -- well, just tell me so I don't have to guess.

What area did you teach in when you were at Washington University?

A. I was teaching in a sophomore what they called a pathophysiology course.

Q. And what kind of lab were you working in?

A. It was a basic science lab in the department of OB/GYN.

Q. And what kind of lab work were y'all doing in the department of OB/GYN?

A. We were taking -- we would go and get placentas after C-sections from moms, and we would take the placentas back to the lab, and we would isolate the cells, and we would put them into culture, and we would evaluate the health of those cells in different conditions.

Q. And what kind of conditions?

A. They would be under -- if you look at a petri dish, you can coat it with different coverings. So sometimes it would be different types of connective tissue that's in your body, like collagen or fibrin, and look how those cells respond.

Q. Now, you indicated your husband was a physician?

A. Yes.

Q. And what kind of medicine does he practice?

A. He's a cardiologist -- nuclear cardiologist.

Q. Does he work at Washington U.?

A. Yes, he does.

Q. And when did he start working at

Washington U.?

A. 1987.

Q. And what were you doing from 1987 to 1991?

A. I was at Washington University.

Q. Did he get hired first and then you?

A. He was -- actually, I was there from 1988 to 1991.

Q. Did he get hired first and then you got hired?

A. He came down here to do a research fellowship in nuclear medicine, and I actually took a leave of absence from my job in Chicago. We thought we'd go back to Chicago and I would pick up my professorship again, and he ended up getting a very prestigious grant, so I made the decision to leave my job in Chicago and remain here in St. Louis.

Q. And then how did you migrate to Monsanto from Washington U.?

A. I was interested in, as I talked about before, in the science day-to-day laboratory work. I like going beyond laboratory work. I had some colleagues of mine who knew -- I said I would like -- looking for a different job in St. Louis, a science-based job, and they recommended Monsanto.

Q. Now, you indicated today that you use Roundup around your house maybe three times a year?
A. Uh-huh.
Q. Where do you buy your Roundup?
A. Either at Home Depot or Lowe's.
Q. Are you buying a one or two percent glyphosate?
A. I'm not very good at mixing and loading all these things, so I buy an RTU, yes.
Q. So you're not buying a commercial grade?
A. I have had commercial grade, but I don't buy it. I used it one time to try to kill my neighbor's bamboo that was coming up in my yard, because you need a higher concentrate to be able to do that.
Q. Where did you get it?
A. A colleague of mine. He bought some that I was able to get from him.
Q. So where did your colleague get it?
A. He bought it.
Q. From where?
A. It might have been one -- he has a farm. So it would have been out in -- like in a dealership, because you can buy those products out in dealerships.

Q. He had a pesticide license?

A. He -- no, you can buy that.

Q. I'm asking, did he have a pesticide license?

A. No.

Q. And so you got some commercial grade so you could try to kill some bamboo in your neighbor's yard; right?

A. No, not my neighbor's yard. That was coming up into my yard.

Q. You indicated earlier that you -- was it your son or daughter's future in-law that needed some instructions on how to use Roundup?

A. It was my future daughter-in-law, and it wasn't instructions; it was talking about the product, and how it's used, and how efficient and effective it is on his farm.

Q. And when did you have that conversation?

A. It was December 22nd.

Q. Of this year?

A. Uh-huh.

Q. Did you tell him about the IARC finding of a probable carcinogen?

A. No.

Q. Did you tell him about the jury verdict in Los Angeles -- or excuse me, San Francisco -- in the Johnson case against Monsanto for Roundup?

A. No.

Q. Why not?

A. It wasn't a subject that we were talking about. We were talking about the efficacy of the product.

Q. Earlier today you said that glyphosate had an LD of -- was it LD50 for glyphosate?

A. There is an LD50 for glyphosate, yes.

Q. And what is the LD for Roundup?

A. It's similar to that for glyphosate.

Q. No, what is it? What's the formulated product LD?

A. It's around 5,000 milligrams per kilogram.

Q. When you say around, is that what it is or not?

A. Typically it's greater than 5,000, because the animals, we don't give 50 percent of the animals -- lethal dose to 50 percent of the animals with Roundup, so they call it greater than 5,000.

Q. And so what's the LD for the surfactant?

A. I believe it's around 1,250 milligrams per

kilogram.

Q. Is that for all the surfactants or just some of the surfactants?

A. Right now the one that's coming to mind is the MON 0818.

Q. Did you -- since you've been at Monsanto since 1991, have you participated in, other than a project monitor, as an investigator or participant or leader in conducting any of the animal studies, either mice or rat studies or any other type of animal studies?

A. I would have been a study monitor on other studies.

Q. A study monitor on animal studies?

A. Yes.

Q. Is a study monitor kind of like a project manager on a construction site?

A. No.

Q. So what do you do, you just look at what they're doing?

A. No.

Q. Tell me what you do.

A. A study monitor is then going to get the guidelines from the regulatory agencies so we know

what -- how the study has to be conducted. We will contact our business group, they will get a contract set up with that laboratory, we will get a proposal for the cost of the study, they will give us a protocol that we will review.

And once that is all in agreement then I will work with our test material people to provide -- to send the test material to them, work with other chemical analysts to give a certificate of analysis that they have evaluated what test substance we're going to be giving to the laboratory, because it's very important that we know exactly what is being tested in those studies.

And then once all that is done, the manager, my director will sign off on the job to do it, because we have expenditure of a lot of money sometimes. I will then sign the protocol, and then the study director at that laboratory will be the one that will pull all of their people and resources together to conduct that study.

MR. HALL: I'm sorry to interrupt, but for the court reporter, if you could just try to talk a little slower, Dr. Farmer.

A. I'm sorry. I'm sorry.

BY MR. HALL: Go ahead.

Q. (By Mr. Lundy) So you don't write the protocol; am I correct?

A. No.

Q. And you don't conduct the study; correct?

A. Correct.

Q. But you have the right to edit the protocol; am I correct?

A. Yes.

Q. And you have the right to edit the results of the study; correct?

A. We have the -- yes, we can look at it.

Q. So you've edited animal studies in years past, haven't you?

A. We have commented on them. We have -- as the sponsor, we have the right to review them, and it will be up then to that study director and the pathologist whether they accept our suggested comments or not.

Q. I noticed in Exhibit Number 83 -- let's see if I can -- on the results of -- this is Bates-stamped Number MONGLY02626554.

Do you recall testifying about this document a while ago?

A. Yes.

Q. And this is the memo that Richard Garnett did to you and others after y'all had your meeting with Professor Parry?

A. Yes. Well, I wasn't in the room with them. That was just Mark and -- Dr. Garnett and Dr. Martens were in the room.

Q. It's -- in response to your -- to counsel's questions, you didn't emphasize this as a significant event, but I marked it that accepted that we as an industry cannot undertake testing of the surfactants which are the property of other suppliers.

Do you see that?

A. Yes.

Q. Why was that a point that y'all feel like y'all had to convince him of?

A. I don't re -- I wasn't there for the conversations with Professor Parry.

Q. Throughout the deposition today you answered questions repeatedly at counsel's request that you -- Monsanto was making its decisions and relying on what these regulatory bodies in the U.S. and even in the European Union were making.

And my question is, were you speaking for

Monsanto today or were you speaking for Dr. Donna Farmer?

A. Could you do me a favor? Could you repeat that question? There was a front part to that that I'm not sure I understood.

Q. No, I'll rephrase it. Repeatedly today in response to your counsel's questions you said Monsanto relied upon these regulatory bodies' decisions, particularly on exhibits -- let me find it -- like 76 through 81, in believing that their product that they were producing was safe and noncarcinogenic.

Do you recall answering those questions today?

A. I remember talking about what the conclusions of the regulators came to, that it wasn't carcinogenic.

Q. Do you recall answering his questions yes, Monsanto relied on all of those studies in believing that their product was safe?

A. It contributed to -- we already believed that, and as I said, it confirmed and supported what we had concluded about glyphosate.

Q. And my question is, were you speaking for Monsanto this -- earlier today, or were you speaking

for Dr. Donna Farmer?

MR. HALL: Objection. Calls for a legal conclusion.

A. I was speaking for me.

Q. (By Mr. Lundy) So why did you say Monsanto repeatedly if you were speaking for you?

A. I didn't say Monsanto.

Q. You answered every question that counsel asked you that was prefaced did Monsanto rely on that, you answered them affirmatively.

MR. HALL: Objection. Misstates the record.

Q. (By Mr. Lundy) In addition to these studies here, did you also rely on the SAP report as well as FIFRA in giving your opinions today?

A. The SAP report was included within the OPP revised issue document for glyphosate.

Q. But did you review it in preparation for your deposition today?

A. Not in preparation for the deposition today, but I have read the SAP report and I've read the revised issue paper.

Q. And did you rely on both FIFRA and the SAP report in giving your testimony today?

A. I relied on the documents that we were talking about today, the incorporation of the SAP recommendations into the OPP report.

Q. Do you agree with the SAP findings?

A. Not all of them.

Q. Which ones don't you agree with?

A. It's been a long time. I don't think that I could identify them one by one.

Q. When did you last read the SAP?

A. It was a long time ago.

Q. Have you had occasion to fly to Canada or Korea or Japan to give your opinions on the safety of glyphosate and the formulated product of Roundup?

A. Not all those countries, and not -- only one country did I do that.

Q. Which country did you do that in?

A. Canada.

Q. In Canada?

A. Uh-huh.

Q. Well, earlier today you said you spoke with Dr. Parry at a conference in the UK where he was talking about genotoxicity. What was that conference?

A. It was called I believe agricultural pesticides and cancer.

Q. And I believe you said what university it was located at. Do you recall?

A. It was at Oxford. It was hosted by Sir Richard Doll.

Q. Sir Richard Doll is the epidemiologist who said cigarette smoke doesn't cause cancer; right?

A. No. He's the one who actually found the link.

Q. Found the what?

A. He actually found the link.

Q. In your questioning by Mr. Wisner back in September, you indicated that you had -- that you experienced a bad year where you lost a father and another relative to cancer; am I correct?

A. I did.

Q. What kind of cancer did they die of?

A. My father died of metastatic adenocarcinoma, primary tumor unknown to the liver, and my father-in-law was diagnosed three weeks after my father, died six months before my father, of a glioblastoma multiforme brain tumor.

Q. Your father-in-law did?

A. Uh-huh.

Q. How old was your father-in-law?

MR. HALL: This is beyond the scope of cross or my direct. Mr. Wisner had a full chance to go through all that.

Q. (By Mr. Lundy) Was your father a cigarette smoker?

A. He quit.

Q. How long did he smoke?

MR. HALL: How does this bear on the case?

MR. LUNDY: Well, she volunteered it.

MR. HALL: Well -- I didn't ask her about it.

MR. LUNDY: I mean, she volunteered it, and so I'm following up on it.

MR. HALL: Well, I don't know that she volunteered it, but she was asked about it in the original deposition, and it was not within the scope of my direct examination.

MR. LUNDY: Are you telling her not to answer the question?

MR. HALL: No, but I'm just asking you to respect that --

MR. LUNDY: I'm just re -- asking you to -- the same thing you asked me, just make the objection and let me move forward. It will go quicker.

MR. HALL: That's what I did. That's what I did, but you started asking me questions about it. If you ask me to explain my position, I'll do that.

Q. (By Mr. Lundy) And how long did he smoke?

A. I don't remember.

Q. Now, is it Tom Sorahan -- is that the pronunciation of his last name, the gentleman from Monsanto that was the advisor to IARC?

A. He wasn't from Monsanto, and he wasn't an advisor to IARC.

Q. So did he go to the IARC meeting?

A. Yes.

Q. And what was his position, or why was he at the IARC meeting?

A. Which IARC meeting are you talking about? He --

Q. In the 2015, when they were evaluating glyphosate.

A. He was an observer.

Q. And was he observing on behalf of Monsanto?

A. Yes.

Q. Did you choose him?

A. A number of us discussed people to

participate, which is a normal process for IARC to have observers there.

Q. Who with Monsanto other than you asked him to go?

A. I was the one in contact with him, but there were a number of us who discussed Dr. Sorahan participating as an observer.

Q. And what is his area of expertise?

A. Epidemiology.

Q. Has he had a chance to review the Parry 1 or the Parry 2 reports?

A. I don't know.

Q. Did you review them with him before he went over there?

A. No.

Q. When did you first learn that there was controversy over the "Knevezich" or Knezevich and Hogan mouse study?

A. It was really probably just after IARC.

Q. So you promoted the safety of glyphosate and the formulated product and the safety of the surfactants from 1991 until 2015, without even knowing about the Knezevich and Hogan study; is that correct?

A. I relied on the 1993 RED, and that was the

basis of my beginning of my knowledge about glyphosate, and they had put it into Group E, evidence of noncarcinogenicity.

Q. When did you learn -- or strike that.

When did you learn about Dr. Kushner and the fact that there was another effort to redo the study by slicing the tumors and looking at the subject matter in the control group?

MR. HALL: Objection. Argumentative. Misstates the record. Beyond the scope of the direct examination.

A. Again, this was prior to when I was at Monsanto.

Q. (By Mr. Lundy) Right.

A. And so again, my database that I began with was the 1993 RED, because those things had all been resolved by the time that I had taken over as the toxicologist for glyphosate.

Q. But you never had a discussion with anybody about it until 2015, is what you're saying?

A. Because, again, it had been very consistently reviewed and rereviewed by regulatory agencies around the world, and they all came to the same conclusion that it wasn't carcinogenic.

MR. LUNDY: Object to the nonresponsiveness of the answer. It simply requires a yes or no.

Q. (By Mr. Lundy) You never had any discussion with anybody in Monsanto about that until after 2015; right?

A. No, I did not.

MR. HALL: Could we take a short break? We've been going about an hour.

MR. LUNDY: Sure.

THE VIDEOGRAPHER: We are going off the record at 3:27 PM.

[A brief recess was taken.]

THE VIDEOGRAPHER: We are back on the record at 3:39 PM.

Q. (By Mr. Lundy) Dr. Farmer, I handed you the first 22 pages of the SAP dated -- stamped March 16, 2017. This is part of the document that you said you had read some time ago and considered, but you hadn't looked at it in preparation for your deposition; is that correct?

A. So this is their meetings and final report of the SAP.

Q. Right. And you said there were parts of

it that you disagreed with. I'm going to try to speed it up. If you'd turn to Page 16 of the document.

MR. JOHNSTON: What exhibit number Is that?

MR. LUNDY: Page 16 of the SAP. And I'll mark it as Exhibit 84.

THE REPORTER: 84.

MR. HALL: And is this an excerpt?

MR. LUNDY: What's the number?

THE REPORTER: Yeah, 84 is correct.

MR. LUNDY: 84.

A. It's just the first pages. It's not all of --

MR. HALL: This is just the first pages?

MR. LUNDY: It's just the first 22 pages. We can substitute the whole document later if you want to.

[Exhibit 84 marked for identification.]

Q. (By Mr. Lundy) The -- on Page 16, it says on the bottom of it, it says based on the weight of the evidence from epidemiological studies and meta analysis, the agency cannot exclude the possibility that observed positive associations between glyphosate exposure and risk of NHL suggest human carcinogenic

potential of glyphosate even though study limitations and concerns about potential biases remain.

Do you see that?

A. I see that.

Q. Do you agree or disagree with that statement?

A. Epidemiology is not my area of expertise, so I would look that there was also -- other panel members had a different opinion in the next paragraph. So --

Q. So you don't have a comment on that statement; is that correct?

A. Well, I'm not an epidemiologist. My understanding is that the epidemiology studies that are out there are not supportive of an association.

Q. Turn to Page 18. If you look about the third full paragraph, it says some panel members felt that the agency's discounting the statistically significant trends based on the idea that they were not monotonically increased was flawed.

The panel noted that a monotonic dose-response relationship is not a criterion for a positive rodent response in the agency's 2005 guidelines for carcinogenic risk assessment.

Do you see that?

A. I see that.

Q. Do you agree with that or disagree with it?

A. I think, again, this was a split between the members and the panel. So I would agree with the panel that agreed that there wasn't any evidence of carcinogenicity in the animal studies.

Q. I guess my question was do you agree that they didn't follow the agency's 2005 guidelines for carcinogenic risk assessment?

A. I would not agree with that statement.

Q. The next sentence says overall the panel concluded that the EPA evaluation does not appear to follow the EPA cancer guidelines in several ways, notably for use of historical control data and statistical testing requirements.

Do you see that?

A. I'm sorry. I got lost on that --

Q. The very next sentence.

MR. HALL: Can you just point to the paragraph? She seems to be lost, please.

Q. (By Mr. Lundy) The third -- the fourth paragraph where it says overall.

Do you see that?

A. Oh, down here. Okay.

Q. Overall the panel concludes that the EPA evaluation does not appear to follow the EPA 2005 cancer guidelines in several ways, notably for use of historical control data and statistical testing requirements.

Did I read that accurately?

A. Yes.

Q. You agree or disagree with that?

A. I would disagree with that.

Q. At the last paragraph on the Page 18, it says in the view of some panel members there are sufficient data to conclude glyphosate is a rodent carcinogen using the approaches recommended to interpret the biological significance of tumor responses in EPA's 2005 guidelines for carcinogen risk assessment.

Do you see that?

A. I see that.

Q. Did I read it accurately?

A. Yes.

Q. You agree or disagree with that?

A. I disagree with that, because again it

says however, panel members -- other panel members strongly disagree with this conclusion, finding no reliable and consistent evidence that glyphosate induces or promotes tumors in laboratory animals -- laboratory rodents.

Q. On Page 19, the first full paragraph, starting with the word the panel concluded that EPA needs to clarify its position on results from exposures that exceed 1,000 milligrams per kilogram a day, the limit dose.

Do you see that?

A. Yes.

Q. So the EPA didn't even consider doses that were higher than the 1,000 milligrams per kilogram per day, did they?

A. That was the limit dose. They just said -- asked them to clarify their position on that.

MR. LUNDY: Let's take a short break.

THE VIDEOGRAPHER: We are going off the record at 3:45 PM.

[A brief recess was taken.]

THE VIDEOGRAPHER: We are back on the record at 3:47 PM.

Q. (By Mr. Lundy) On Page 21. Dr. Farmer,

under scientific quality. It says the panel felt that the scientific quality of the issue paper could be improved. Some panel members pointed to insufficient study design details, incomplete discussions of data limitations, and use of assessment criteria that did not follow EPA cancer guidelines.

Do you see that?

A. I see that.

Q. Did I read it accurately?

A. I'm sorry, could you read it again for me to answer that?

Q. The panel felt that the scientific quality of the issue paper could be improved. Some panel members pointed to insufficient study design details, incomplete discussions of data limitations, and use of assessment criteria that do not follow EPA 2005 cancer guidelines.

Do you see that? Did I read that accurately?

A. Yes.

Q. Do you agree with that?

A. I know that the -- no, I don't.

Q. If you move up under the category that says dose-response and temporal concordance, the

Bradford Hill criteria.

Do you see that?

A. Yes.

Q. Down in the middle part of that paragraph, it says some panelists disagree with EPA's assertion that monotonically increasing dose-response relationships were required in order for doses to be considered to be compound-related, and felt that the agency could better explain its reliance on tumor responses in historical, as opposed to concurrent, control groups.

Do you see that?

A. Could you read that again? I think I lost my place.

Q. Starting with some panelists, in the middle of the paragraph. Do you see that?

A. Okay. Okay. Yes.

Q. Some panelists disagree with EPA's assertion that monotonically increasing dose-response relationships were required in order for responses to be considered to be compound-related, and felt that the agency could better explain its reliance on tumor responses in historical, as opposed to concurrent, control groups.

Did I read that accurately?

A. Yes.

Q. Do you agree with that?

A. I agree that the agency could have done a better explanation of some of those things.

Q. I'm going to turn to Exhibit Number 77, which is the glyphosate issue paper, the EPA's OPP report of September 12th, 2016. And I'm going to go to Page 141, and I'm going to put it under the -- I think you'll be able to see it.

A. I have a hard time seeing that. Can I have a copy?

MR. HALL: Yeah, I have a copy.

Q. (By Mr. Lundy) Page 141.

A. So this is the 2016?

Q. Yes, ma'am.

A. Whoops. Oops --

Q. And the second full paragraph says this analysis integrating multiple lines of evidence highlights the need for mechanistic studies to elucidate the MOA/AOP of glyphosate, as well as additional epidemiology studies and updates from the AHS cohort study to further investigate the carcinogenic potential of glyphosate in humans.

Did I read that accurately?

A. Yes.

Q. The next statement says the evaluation focused on studies on the active ingredient glyphosate; however, additional research could also be performed to determine whether formulation components, such as surfactants, influence the toxicity of glyphosate formulations.

Do you see that?

A. Yes.

Q. So what is -- since this report was issued, what has Monsanto done to research and determine what the formulation of components such as surfactants -- how they influence the toxicity of the glyphosate formulations?

A. Well, we already have data that addresses that. We have done studies, for example, with genotoxicity, we've done studies with glyphosate, we've done studies with the surfactant, and we've done studies with the fully formulated product, and they are all nongenotoxic.

Q. I don't see any studies on Exhibit 68 post-2016 when this memo -- or when this report was issued, and that's on the genotoxicity of surfactants.

A. That's because data already existed that could address this question, and there's a lot of other data that we can use to look at this. You use acute studies, where we have acute studies with glyphosate, we have acute studies with the surfactant, we have acute studies with the formulation.

So for example, the acute study with glyphosate was around 5,000 for the oral LD50. We had then the surfactant -- like POEA we said was around 1,250 milligrams per kilogram. When we did the formulation, it was greater than 5,000 milligrams per kilogram.

So we can see there that the surfactant really didn't influence the LD50 of the formulated product.

Q. Don't you -- you know we're here talking about carcinogenicity; right? We're not talking about acute exposure; we're talking about chronic exposure that causes cancer; am I correct?

A. Correct.

Q. So what kind of rodent or mice studies or long-term studies are being conducted to determine whether or not the surfactants affected toxicity of glyphosate formulations?

MR. HALL: Well, I'll object to your introduction to that question, because the sentence you're asking about is talking about toxicity. It's not talking about carcinogenicity, and her answer went to toxicity. You may not like that, but your argument is objectionable.

Q. (By Mr. Lundy) Well, the sentence is prefaced with the word mechanistic studies, so your answer is totally as to acute studies; right?

MR. HALL: Objection. Misstates her answers. She gave multiple answers on this.

MR. LUNDY: That's -- I agree. She --

MR. HALL: And the sentence you're highlighting is not prefaced by mechanistic. It starts with this evaluation.

MR. LUNDY: Highlights the need for mechanistic studies, is what the first sentence in the paragraph says.

MR. HALL: But you've been asking her about the highlighted question, this evaluation, and additional research could be performed. That's where you were asking what Monsanto has done since 2016-2017.

Q. (By Mr. Lundy) Let me ask you, what long-term chronic studies has Monsanto done or are they

doing to determine the adverse effect of the surfactants on the carcinogenicity of their formulated product?

MR. HALL: Objection. Incoherent.

A. Yeah, could you ask that another way?

Q. (By Mr. Lundy) Monsanto still has not done a long-term carcinogenicity study of glyphosate based upon formulations, have they?

MR. HALL: Objection. Same objection.

Q. (By Mr. Lundy) You can't answer that question?

A. I still am confused by what you're asking.

Q. Has Monsanto done any long-term carcinogenic studies on mice or rats using the formulated product and/or the surfactants?

A. Okay, so the first one. So let's -- what we had talked about earlier today, we have existing data --

MR. HALL: When you say the first one, do you understand the question? I'm going to object to the compound nature of the question.

A. Okay. I thought he was asking about testing long-term on the formulated product and testing long-term on the surfactants.

Q. (By Mr. Lundy) I was.

MR. LUNDY: She understood the question.

MR. HALL: Okay.

MR. LUNDY: I'm sorry you didn't. Go ahead.

MR. HALL: I'll object to the compound question.

A. So addressing the surfactants, we have -- when we looked at the cluster evaluation of the different surfactants, we have done studies that go 30 days and 90 days with the surfactants, and we don't see any indication of concern for carcinogenicity in those early studies that would lead us to conduct a chronic study.

They're not genotoxic, and all we're seeing, as we talked about earlier, we're not seeing target organ toxicity. What we're seeing is an effect on the gastrointestinal system of the animals. And in fact, as we read earlier, the EPA came to the conclusion that those surfactants were not carcinogenic.

Related to the formulated product, as we talked about, to push those really higher doses that have the surfactant in there, we would again be having

very high levels of surfactant that would be causing severe irritation to those animals.

They would possibly get very sick, and we would not be able then to interpret the results of those studies, as they related directly to any of the components, or just that the animals were generally sick.

Q. (By Mr. Lundy) So are all of the studies that are on Exhibit 68 and 69, are they 30-day or 90-day studies?

A. These are surfactant studies -- these are genotox studies, so they are not those type of studies.

Q. What do you mean not those type of studies?

A. When you're talking 30 or 60 or 90 days, those are subchronic studies, which is a different type of toxicology testing. These are specifically tests that have been developed for genotoxicity.

Q. And how long are these tests run for?

A. Well, the in vitro ones are only run for a number of hours, and some of the in vivo ones are only a onetime exposure, because what we're talking about here is genotoxicity, which is very different than the repeat dosing and subchronic studies that you had asked

about.

Q. So the genotox studies, if they're in vitro, and that's in a -- it's in a petri dish; is that correct?

A. That's what in vitro means.

Q. Right. It's in a petri dish. And that's only, what, run for a few hours?

A. It depends upon the study, but yes, it's usually an hour, sometimes it may be a day or two.

Q. And then on the formulated product, the most that any of these studies would be for a few hours are, what, for a onetime exposure?

MR. HALL: Objection. Vague.

Q. (By Mr. Lundy) I'm trying to understand your last response.

A. You're mixing up different kinds of toxicology studies here.

Q. Well, I'm asking you about the genotox in 68 and 69. What's the length of time of these studies?

MR. HALL: Objection. Asked and answered.

A. The exposure to the animals in the petri dish could be from hours to maybe 24, because cells don't really survive that long in petri dish experiments. And in the animals, they may get a

onetime injection and you may look at them over a period of days.

Q. (By Mr. Lundy) Now, going back to the subchronic carcinogenic studies that I asked you about on the formulated product and/or the surfactants. You said the longest you've ever done a study like that was either 30 days or 90 days; right?

MR. HALL: Objection. Objection. Misstates the record.

MR. LUNDY: No, I think that's what she said.

A. You're confusing studies again.

Q. (By Mr. Lundy) No, I'm leaving this away now. I'm leaving --

A. No, you talked about subchronic carcinogenicity studies. Those are two different studies.

Q. Right. I'm not talking about genotoxicity now. I'm talking about carcinogenic studies that you do on animals such as rats or mice for either surfactants or the formulated product.

How long have you conducted -- when you've done those studies, how long were they conducted for?

MR. HALL: Objection. Vague.

A. Could you ask your question again a different way, because I'm confused from your first question to your second question.

Q. (By Mr. Lundy) Well, what was the length of time of the study that you performed on an animal for either a surfactant or a formulated product?

MR. HALL: Objection.

Q. (By Mr. Lundy) You being Monsanto?

MR. HALL: Objection. Vague.

A. So on surfactant or a formulated product?

Q. (By Mr. Lundy) Either one.

A. Up to 90 days.

Q. Did you participate in the due diligence evaluation by Bayer of glyphosate?

A. No.

Q. You never talked to any toxicologist, epidemiologist, or scientist with Bayer when they were evaluating the merger or purchase of Monsanto?

A. No.

Q. And who with your department did the conversations with Bayer?

A. I do not --

MR. HALL: Objection. Foundation.

A. I don't know.

Q. (By Mr. Lundy) You don't know?

MR. LUNDY: That's all the questions I have.

MR. HALL: I'm going to be real brief, if we all just want to sit tight.

THE VIDEOGRAPHER: We are going off the record at 4:02 PM.

[Discussion off the record.]

THE VIDEOGRAPHER: We are back on the record at 4:04 PM.

QUESTIONS BY MR. HALL:

Q. Dr. Farmer, it's late in the day. It's been a long day. I'll be brief. I just want to ask you a couple quick questions about Exhibit 84 that Mr. Lundy asked you about.

And Exhibit 84 is 22 pages out of a document from March of 2017 from the EPA's SAP; is that right?

A. Yes.

Q. And he was asking you some questions about some statements in those first 22 pages of the document. Now, after March 2017 and the SAP report came out, 22 pages of which are Exhibit 84, did the EPA consider that SAP report?

A. Yes.

Q. Let me show you Exhibit 78, which you previously identified as the December 2017 EPA OPP report; is that correct?

A. Yes.

Q. All right. In that EPA report on glyphosate in December 2017, did the EPA -- did the OPP, the Office of Pesticides Programs at the EPA, address the March 2017 SAP report that Mr. Lundy was asking you about?

MR. LUNDY: I'm going to object. I mean, this is improper. I guess you'd call it recross --

MR. HALL: Just -- how about just stating your objection?

MR. LUNDY: That's what I'm doing.

MR. HALL: Okay.

Q. (By Mr. Hall) Did the EPA in that December 2017 OPP report consider and address the SAP report from March 2017 that Mr. Lundy asked you about?

A. Yes.

Q. And did the EPA in two thousand -- the OPP in 2017 in Exhibit 78 come to a conclusion about what the science showed as to glyphosate and carcinogenicity?

MR. LUNDY: Objection. Hearsay.

A. Yes.

Q. (By Mr. Hall) And what did the EPA conclude in December 2017 after having considered the March 2017 SAP report?

MR. LUNDY: Objection. Leading and hearsay.

A. Unlike --

Q. (By Mr. Hall) What did they conclude?

A. Unlikely to be carcinogenic.

MR. HALL: That's all I have. Thank you, Dr. Farmer.

THE VIDEOGRAPHER: We are going off the record at 4:07 PM.

[SIGNATURE RESERVED.]

C E R T I F I C A T E

I, JUDE ARNDT, a Certified Shorthand Reporter and Certified Court Reporter, do hereby certify that prior to the commencement of the examination, DONNA FARMER, PhD, was sworn by me to testify the truth, the whole truth and nothing but the truth.

I DO FURTHER CERTIFY that the foregoing is a true and accurate transcript of the proceedings as taken stenographically by and before me at the time, place and on the date hereinbefore set forth.

I DO FURTHER CERTIFY that I am neither a relative nor employee nor attorney nor counsel of any of the parties to this action, and that I am neither a relative nor employee of such attorney or counsel, and that I am not financially interested in this action.

_____

JUDE ARNDT, CSR, RPR

CSR No. 084-004847

I, DONNA FARMER, PhD, the witness herein, having read the foregoing testimony of the pages of this deposition, do hereby certify it to be a true and correct transcript, subject to the corrections, if any, shown on the attached page.

_____

DONNA FARMER, PhD

Sworn and subscribed to before me,

This _____ day of _____, 201_.

_____

Notary Public

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