SUPERIOR COURT OF CALIFORNIA

COUNTY OF ALAMEDA

BEFORE THE HONORABLE WINIFRED Y. SMITH, JUDGE PRESIDING

DEPARTMENT NUMBER 21

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COORDINATION PROCEEDING SPECIAL TITLE (RULE 3.550) ROUNDUP PRODUCTS CASE	**JCCP No. 4953**
THIS TRANSCRIPT RELATES TO: Pilliod, et al. vs. Monsanto Company, et al.	**Case No. RG17862702** **Pages 1295 - 1532** **Volume 11**

Reporter's Transcript of Proceedings

Thursday, March 28, 2019

Reported by: Kelly L. Shainline, CSR No. 13476, RPR, CRR
Court Reporter

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I N D E X

Thursday, March 28, 2019

Thursday, March 28, 2019 9:09 a.m.

(Proceedings commenced in open court outside the presence of the jury:)

THE COURT: Good morning, everyone.

ALL: Good morning, Your Honor.

THE COURT: Just before we bring the jury in, I have a few things to say.

Have a seat, counsel.

The rules of the courtroom are that all electronics are turned off at all times during proceedings. There are no exceptions. If anyone feels that they can't comply with that rule, I will have to ask you to leave. That will be the rule through the entire trial. No electronics.

So please reconcile yourself to that rule and figure out how you can do your business or anything else without turning electronics on.

I want to thank you for your cooperation. I know there are lots of people in the courtroom. There probably will be every day, but it's really important that you comply with that rule. I think it's even posted in the hallway. No courtroom in this building are electronics allowed to be on.

So just before I bring the jury in, I don't think I really want to have this conversation in front

of jurors, but I would appreciate it if you would comply with the rule.

Thank you. You can bring the jury in.

(The following proceedings were heard in the presence of the jury:)

THE COURT: So, ladies and gentlemen, first of all, can everybody see clearly and see me? If you have any difficulty seeing counsel table or is your sight line impeded in any way? I want to make sure everybody's chairs are adjusted so that they can see.

So here we are. Good morning. Thank you for arriving on time. I really appreciate your cooperation. As I said earlier, it's important for everybody to arrive on time because we can't get started unless we are all here and ready to go.

So before we get started with opening statements and counsel is ready to start their case this morning, I just want to know by a show of hands if anyone in the jury has seen anything about Roundup in the last 24 hours in the news?

Yes, sir. So you have seen something?

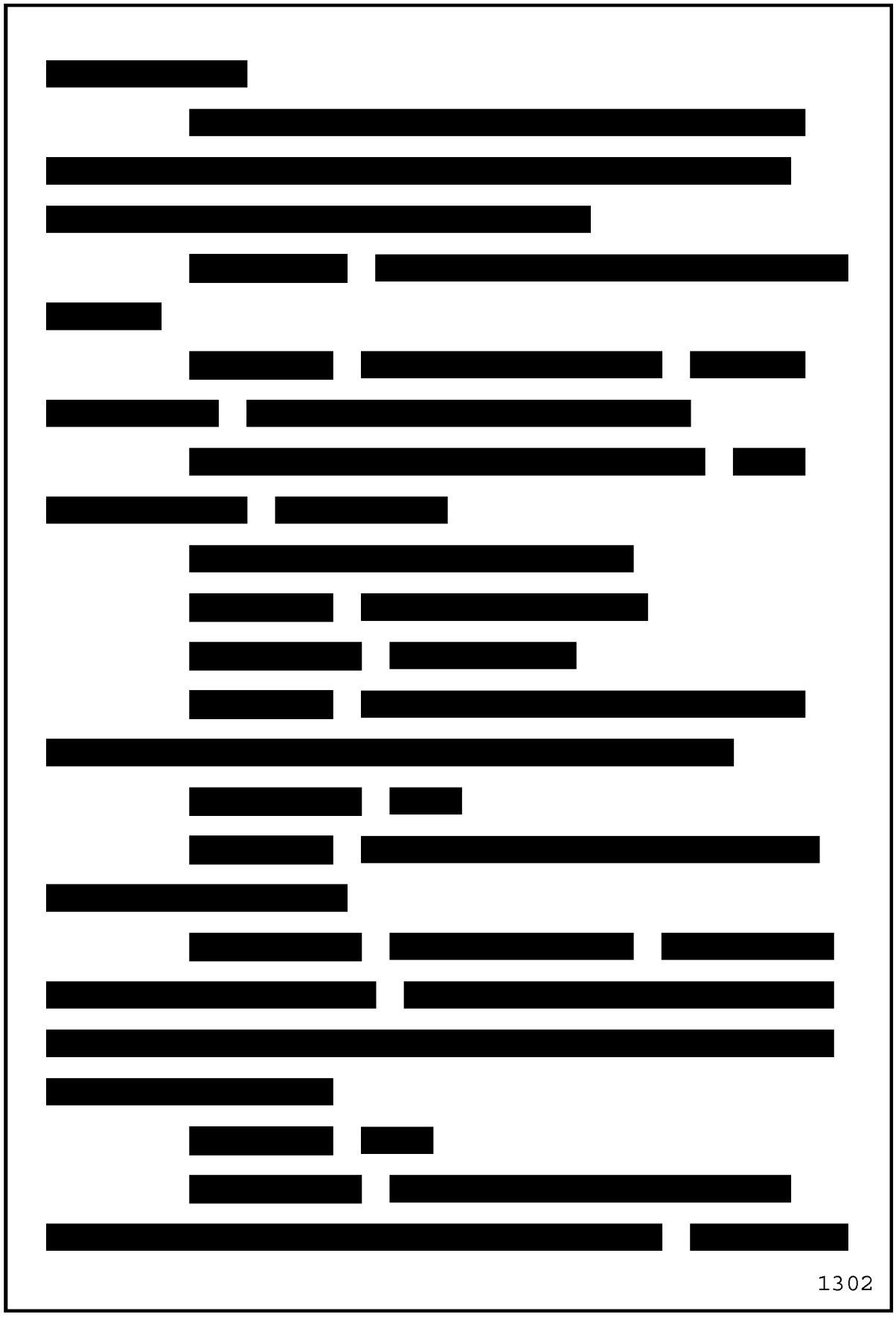
JUROR NO. 5: I have.

THE COURT: Okay, that's fine, just yes or no, just raise your hand if you've read anything about Roundup in the last 24 hours in the news.

So I'm going to ask just wait a minute and I know this is difficult but I'm going to ask the jury to go back in the jury room and we're going to take a few minutes to have a conversation. Okay. Thank you.

(The following proceedings were heard in chambers, out of the presence of the jury:)

[redacted]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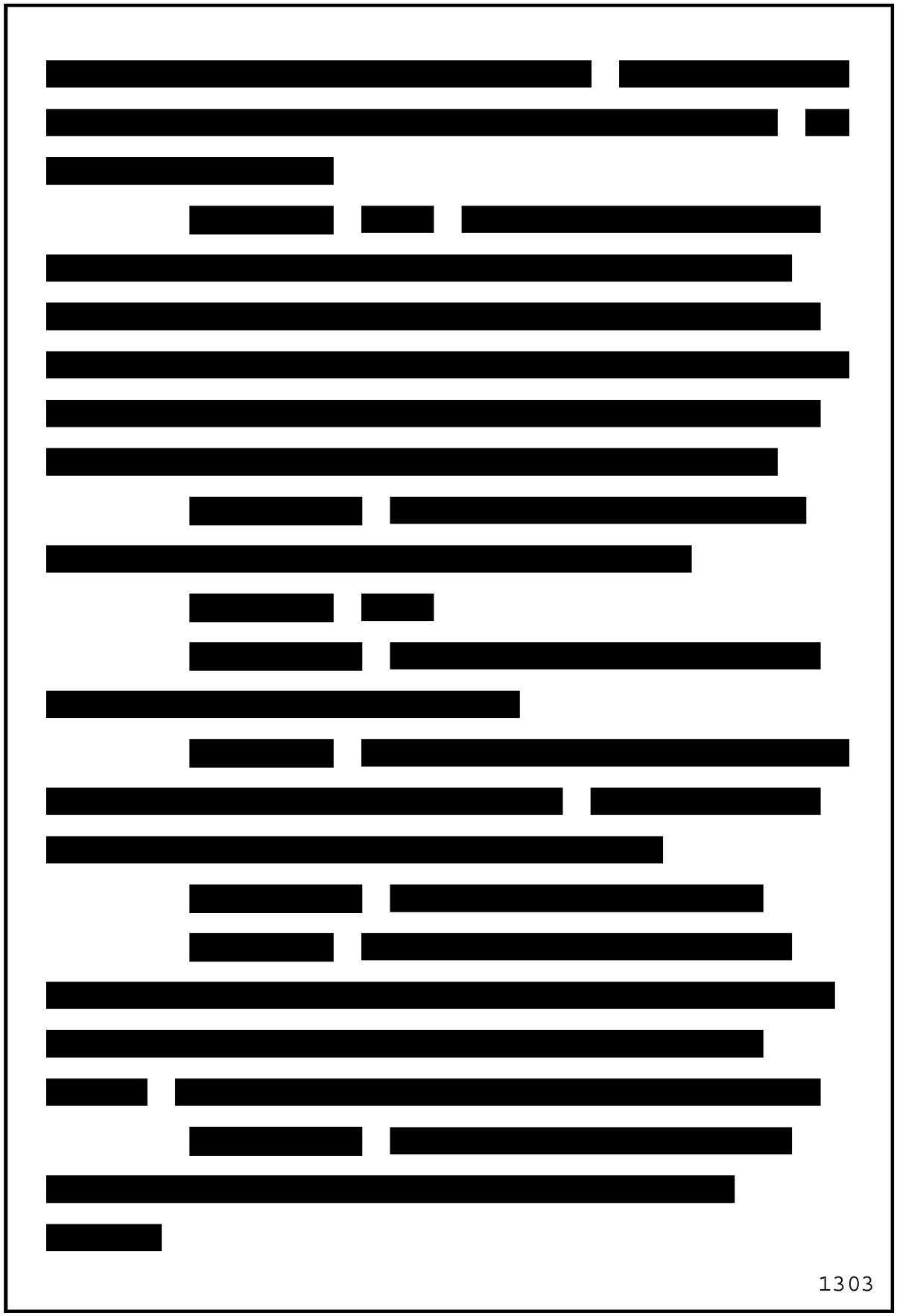
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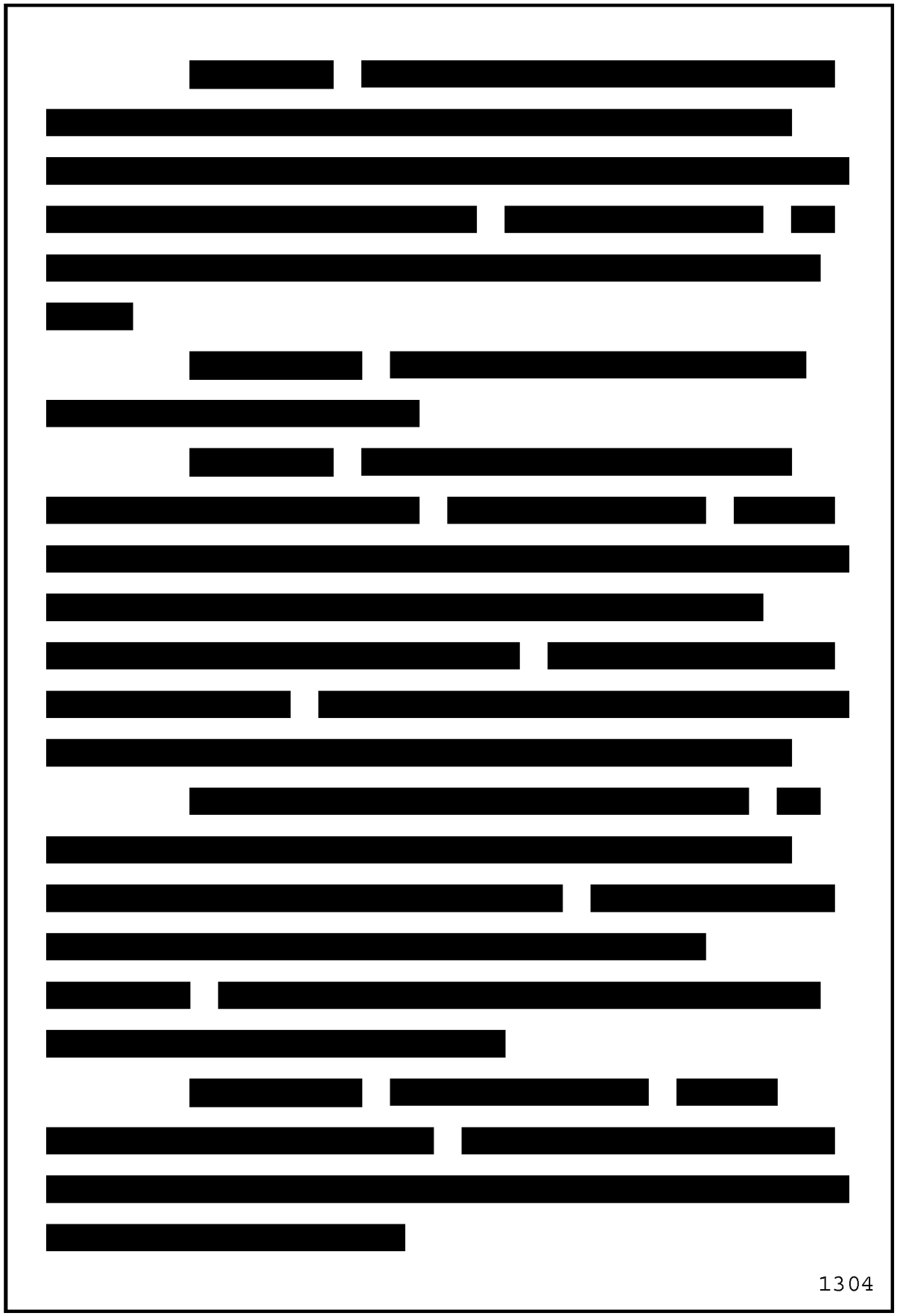
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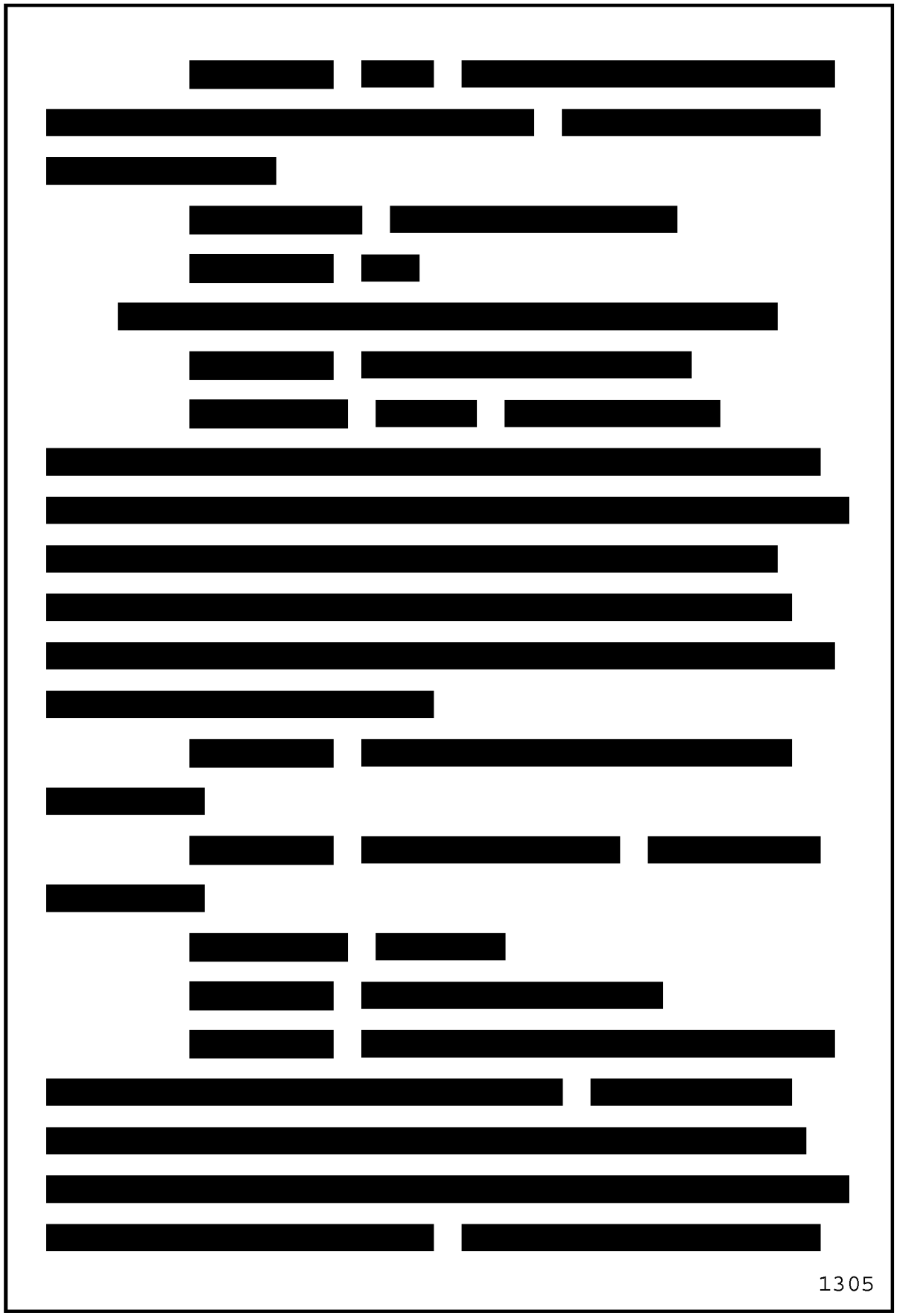
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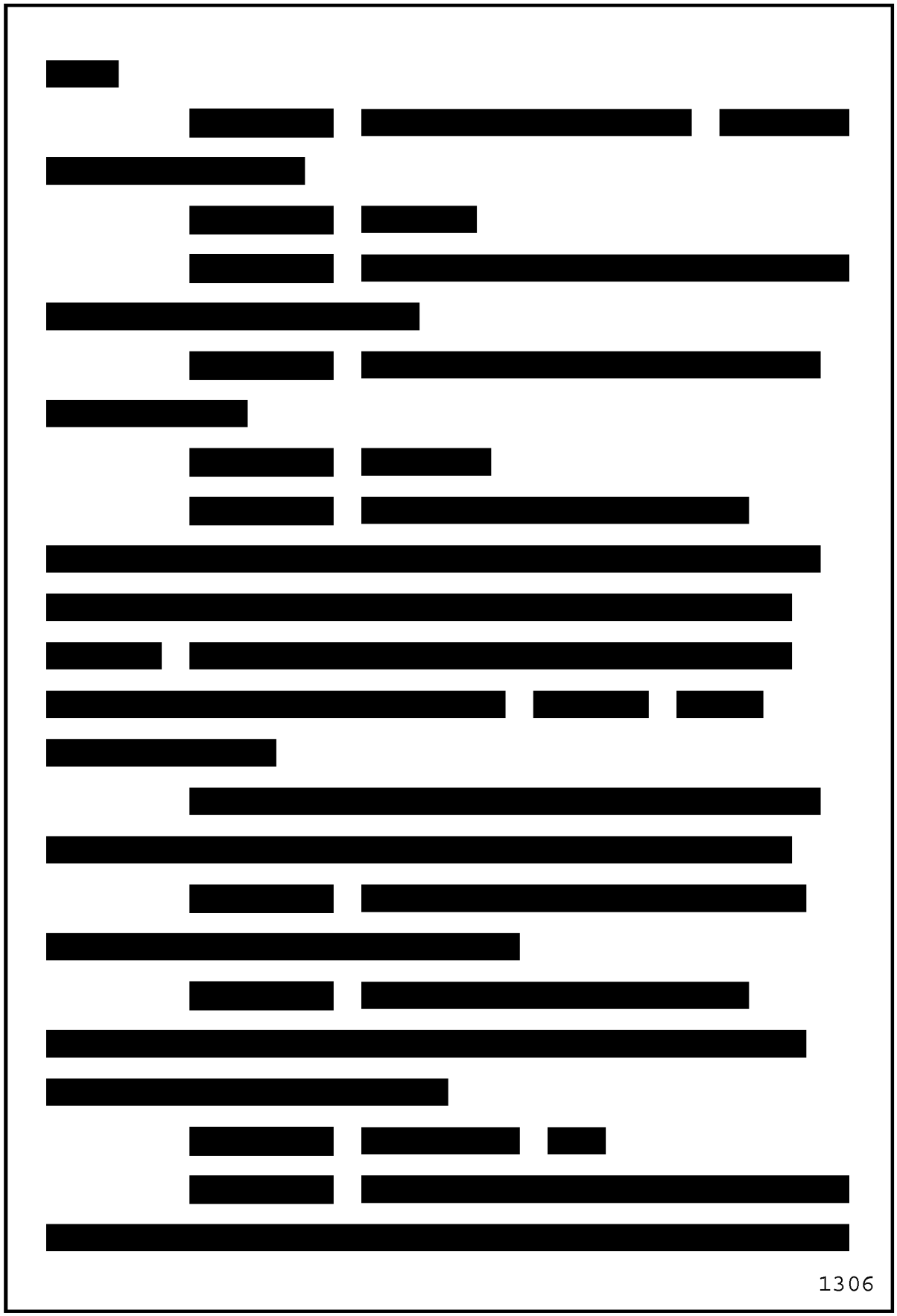
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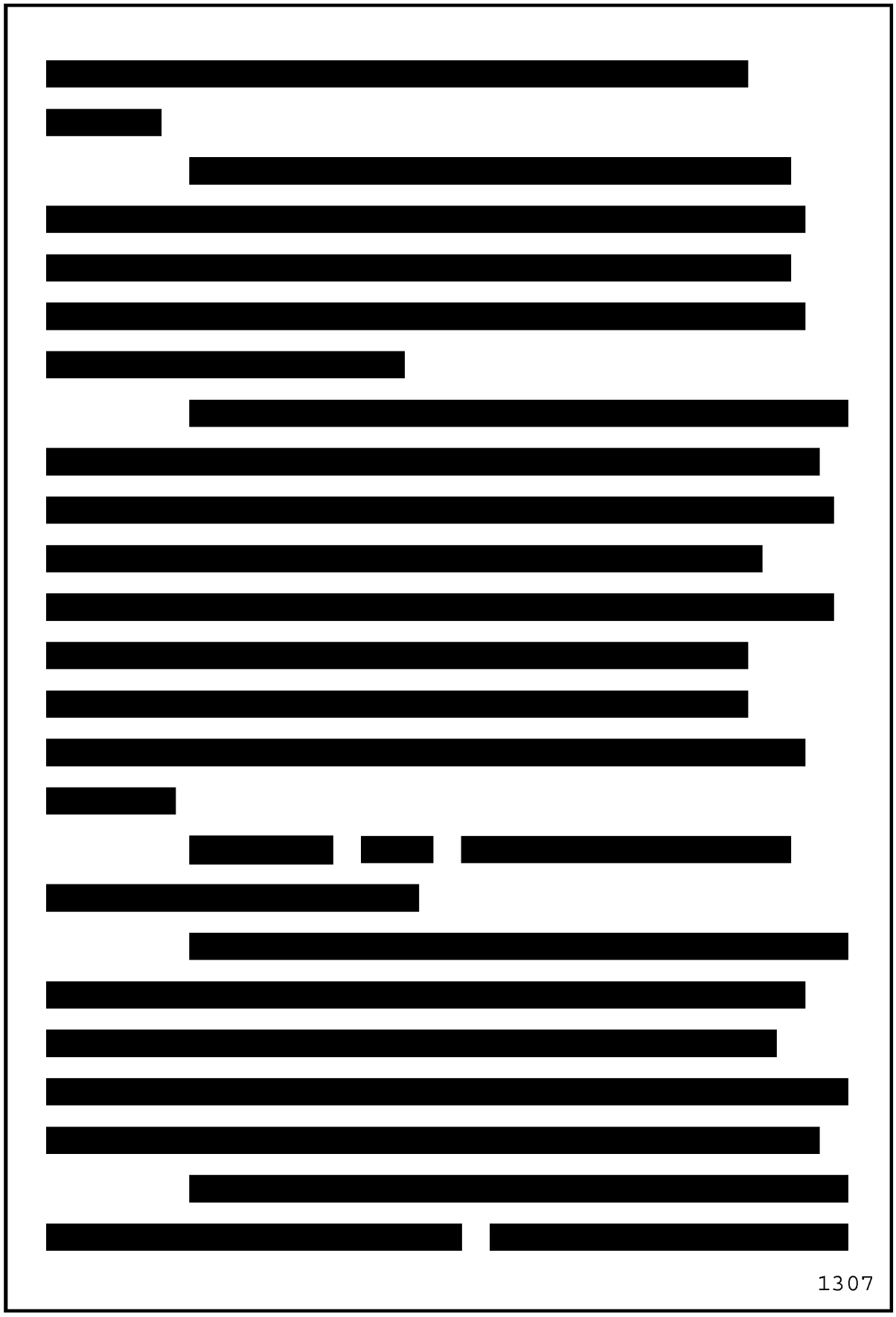
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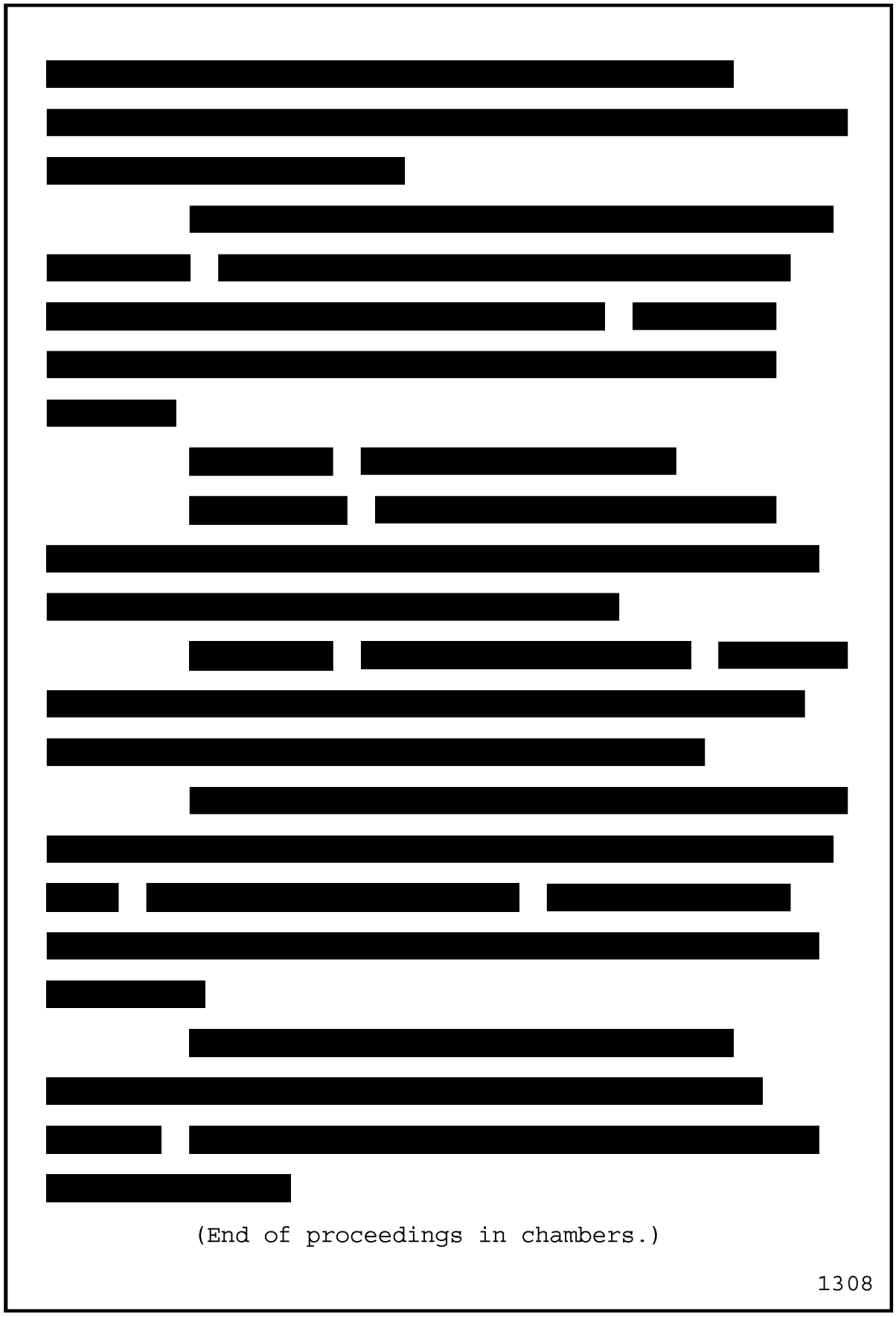

(End of proceedings in chambers.)

(Proceedings resumed in open court in the presence of the jury at 9:30 a.m.)

THE COURT: All right. So ladies and gentlemen, we're going to get started this morning.

As I indicated when you were sworn in the other day that we would start with opening statements. First, the plaintiffs' counsel will introduce themselves and make opening statements on behalf of the plaintiffs. And then defense counsel will do the same.

So Mr. Wisner.

MR. WISNER: Thank you, Your Honor.

PLAINTIFFS' OPENING STATEMENT

MR. WISNER: May it please the Court.

Hi. My name is Brent Wisner. I'm the attorney that represents Alberta and Alva Pilliod in this lawsuit in their historic fight against Monsanto.

Now before I get into my opening statement, I want to introduce you to my team. It takes a team to take on a company like Monsanto, and they haven't been here for this whole process because of seating issues. So I want to introduce you to them very quickly.

I'm Brent. Obviously you've met Mr. Miller.

MR. MILLER: Nice to see everybody again. Good morning.

MR. WISNER: And then the rest of the team is

mostly in the audience. We have Pete Miller, Mike's brother. This is Curtis. This is Pedram, he works for me, my right-hand guy. He's also a wandering poet on the side. Mark Burton right here. That's actually my parents. Steve Brady right here. Michael Baum, he's my boss so look impressed. Nancy Miller, that's Mike's wife. And then Bobby, where are you? Bobby Kennedy, he's one of my mentors and he's been working on this case for a few years.

So that's our team. And what we're doing right now is something called an opening statement. Now the purpose of the opening statement -- and the Judge -- Judge Smith has explained this earlier, is to sort of give you an overview of the evidence you will see, right? This itself is not evidence, nor is it argument.

So the purpose of this is I'm going to show you some evidence and walk you through what we plan to show you in this trial and hopefully convince you that Monsanto is liable for damages for my clients.

And, you know, what's really interesting, I think it's really important to look at the evidence, to really start off looking at it, you know, step back, looking at it from this sort of broader perspective if you can.

And when you do that, the evidence will show

that this case is really about choice. It's about the right of every single person in this courtroom, including my clients, to make a choice about what chemicals they expose themselves to. And part of making that choice is knowing if a chemical causes cancer. We have that right. And nobody has a right to take that right away from us.

That's why in California -- and Judge Smith will -- she will instruct you on the law at the end of this case. But in California, if you sell a product and you know or reasonably suspect that that product can cause cancer, you warn. You give the consumers the right to make a choice. They have to know if it causes cancer before they buy it.

And if you don't, if you fail to do that obligation and because of that failure people get hurt, then you pay for the consequences. That's how it works.

So this case is about two people, Alberta and Alva Pilliod, who are taking on one of the largest chemical companies in the world, Monsanto.

This case is about their blockbuster product, Roundup -- it's a pesticide, it's a chemical used to kill plants -- and whether or not this product can cause cancer.

The evidence will show that starting about

40 years ago Monsanto knew that it could cause tumor in animals. They knew it. And starting 20 years ago, they knew that it would cause a specific type of cancer called non-Hodgkin's lymphoma.

The evidence will show that for the last 45 years they have not warned that this product can cause cancer.

And you don't have to take my word on this. In 2015 the California EPA determined -- California's EPA -- that glyphosate, the main ingredient in Roundup, was a chemical known to the State of California to cause cancer. That was almost four years ago.

Not knowing that it had this risk, you will learn that Alva and Alberta sprayed a lot of Roundup. This is actually a picture of Mr. Pilliod with the Roundup product that he still had in his garage.

You'll hear that actually when they found out about the problem with cancer, that they took all the Roundup, took it to a hazardous waste dump. But this is what got left over. They missed it, it was in the back of their shed. This is actually what they used.

And you're going to learn that over 35 years, Mr. and Mrs. Pilliod sprayed a lot of Roundup. They had four separate properties, one in Livermore which is their main home where they sprayed it in their house --

around their garden area. They like to do gardening in these raised sort of garden pylons that they do stuff and they spray in between and around the pool and everywhere else.

And they also had three different properties over the years. Out in Spring Valley.

Is that right? Valley Spring.

And they owned and took care of these properties over the course of about 35 years. And you'll learn that some of these pictures are actually from those properties, that they sprayed it 35 years, weekly, essentially.

In total, based on the estimates that we can gather, you'll hear that they sprayed approximately 1,500 gallons of this stuff.

To give you context of what that means, if you have an industrial-sized sprayer and you're spraying it full blast, that's about 20 gallons in an hour. So we're talking about magnitudes greater than pretty much any person is normally exposed to.

And they'll tell you -- this came up during voir dire, during the part where we asked you questions and some jurors talked about this -- they read the label and they followed it. They'll tell you and they'll take the stand and they'll explain that this label says

nothing about wearing a mask, nothing about wearing a chemical apron, a Tyvek suit, gloves. In fact, they'll tell you that they understood the product was so safe you could spray it in a T-shirt and shorts.

And the reason they believed that, we'll show you, is because that's what Monsanto's commercials show. They show people out there with a gun, like a western sound (indicating), wearing T-shirts and shorts. And that's what they watched and they believed it was safe.

Well, ladies and gentlemen, you are going to learn that both of my clients have cancer. They both got a type of cancer called non-Hodgkin's lymphoma. They both got a specific subtype of cancer called non-Hodgkin's lymphoma. We're going to talk a little bit about what that means in a second.

To give you a context of what that means, according to the American Cancer Society, about 1 in 127 men in their lifetime -- so if you live to 90, right, 1 in 127 people will get this type of lymphoma, and for women about 1 in 162. That's just by themselves.

But if you do the probability of both of them getting it just by chance, just by random chance alone, not because of Roundup, because of something else, it's 1 in 20,000. This is important because you're going to

hear testimony from various witnesses in this case, including a doctor that actually treated both the Pilliods.

When we asked her, "What do you think caused it?"

She says, "Well, this is so unlikely, it must be an environmental exposure, a chemical, Roundup."

You're going to learn that this is not the first lawsuit that's been filed. We talked about this a bit even during jury selection. And you're going to learn that there's been over 200 cases filed against Monsanto by people who allege that their exposure to Roundup caused non-Hodgkin's lymphoma, and that was before Mr. Pilliod stopped spraying in 2017.

What we're doing here is really kind of like putting together a puzzle. This is what I always explain to jurors, is that the opening statements are like the front cover of the puzzle. Okay? It's the picture. It's what this case should look like when we're done.

The actual case, plaintiffs' case and Monsanto's case, that's taking the pieces of the puzzle out of the box and starting to organize them.

The closing argument is our attempt to take those pieces that we've taken out of the box and put it

together and hopefully look like the picture we started with in openings. This is what I'm doing now.

And then there's deliberations. And that's when you go back, you guys talk, look at the evidence, discuss it, consider it, and ask which picture looks more like the one I saw in openings and in closings. Is it like the one the plaintiffs said or is it like the one that Monsanto said?

Throughout this trial you're going to hear testimony from our experts. And we have compiled some of the most amazing experts in the entire planet. People who a lot of them actually have never been experts in litigation, but were so moved by the evidence related to Roundup, they chose to testify against this company.

The first is Dr. Christopher Portier. He is probably -- and I think you'll learn this when you see his testimony -- he knows more about Roundup and whether or not it causes cancer than anybody else on the planet. He's read everything. Well, he's read all the science, I should say.

He's going to go through all the different aspects of the science, which I'm going to go through with you in a minute. He's going to be our first live witness. You'll be hearing from him starting on

Tuesday.

And then you're actually going to hear from Dr. Beate Ritz. She is a scientist out of UCLA, my alma mater actually, and she's a medical doctor as well as a Ph.D. And she actually is teaching every day. She teaches students about something called epidemiology which is the study of diseases in human populations.

You're going to hear from Dr. Dennis Weisenburger. He is a pathologist at the City of Hope where he diagnoses people who have non-Hodgkin's lymphoma every day. He's also probably one of the most world renown experts specifically on non-Hodgkin's lymphoma and specifically on the studies related to humans and non-Hodgkin's lymphoma. He's a personal author on many of the publications that you're going to see throughout this trial.

You're going to hear from Dr. Chadi Nabhan. He is a physician, an oncologist from the University of Chicago. He had the privilege to meet both the Pilliods and review them and actually look at their case and tell us whether or not their cancer was likely caused by Roundup or something else.

You're going to hear from Dr. William Jameson. He is in many ways -- he's been in government most of his life. He's the guy who does rodent studies, and

he'll walk you through a lot of the stuff that he did. But more importantly he's going to talk to you about something called IARC, the International Agency for Research on Cancer. And I'm going to get into that much later, but it's an important part of this case.

You're going to hear from Dr. Charles Benbrook. He's a Ph.D. He is essentially an economist, and he's been studying glyphosate use and its patterns in the United States and the world for decades. He actually helped -- you'll hear this -- he actually helped write some of the legislation that governs pesticides to this very day.

You're also going to hear from Dr. William Sawyer. He's our absorption guy. He's going to walk us through how Roundup actually gets into the body and into our systems. And he's going to explain how the chemical reactions occur that allow that to happen.

You're also going to hear from Dr. William Pease. He's a Ph.D. right here in Berkeley. He's an assistant professor there. And he actually was a huge part of the legislation and process that governs how California assesses whether or not things cause cancer. He's going to come here and talk about that.

And finally, you'll also hear from Dr. Gregory O'Shanick. He is a medical doctor, a psychiatrist, and

specializes in brain injuries. And he's going to talk to you specifically about how the cancer has affected both the Pilliods in their brains and how it's affected them physically.

So here's the roadmap. This is the road we're going to be walking today through this opening statement. And I'll just let you know the plan is for this thing to go for about two hours. And there will be a break in the middle. Okay. So don't worry. If you have to use the restroom -- if you have to use a restroom, start wiggling, okay, and I'll ask the Court to take a break.

But this is the roadmap for today. And the first question we're going to answer is: What is non-Hodgkin's lymphoma? Because it's actually an important part of this case.

And then we're going to ask: What is Roundup? What's actually in the product that people are using every day? What is Monsanto? What is this corporation and how long has it been around and who are you going to hear from at that company?

The one big question is this one we're going to spend the most time on: Does Roundup exposure actually cause cancer? Does it cause non-Hodgkin's lymphoma? I'm going to walk you through all the science

on that today, and that's actually going to take the bulk of our time today.

Then there's going to be a question of whether or not Roundup was a substantial factor in causing Alva and Alberta's non-Hodgkin's lymphoma.

The words "substantial factor" is a legal term. The Judge will define that for you at the end of the trial. And I don't want you to make decisions about that just yet because you're not supposed to make any decisions until the end.

But "substantial factor" essentially means that it was something that contributed to the development. Right? It doesn't have to be the only factor. It doesn't have to be, you know, the biggest one. It just has to be one of the things that led to the cancer. The Judge will explain this and we'll argue this much more in detail at the end of the trial.

We're going to talk about what are the Pilliods' damages? What are they actually suing for? What does it take to make them whole? You know what, that's a wrong question because you can't make them whole. What's the amount of money that they should be awarded to compensate them for their injuries?

And the last question will be: Should Monsanto be punished? And that's something called

punitive damages. And that's really more about Monsanto and what they've done.

So we'll start off with NHL. It's non-Hodgkin's lymphoma. And so non-Hodgkin's lymphoma specifically refers to the lymphatic system. Okay. Now the lymphatic system is in our bodies and it's kind of like the drainage system for our body, kind of sucks out the toxins and flushes them out of our bodies.

And because of that -- and some of you with medical training might actually be able to explain it better than I can -- but because of that it actually goes through almost all aspects of our body. It goes into our brain, it goes throughout our body.

And so when we talk about lymphoma, we're talking about a cancer that occurs because of the lymphatic system. And what that really means is we're talking about blood, okay, blood cancers, because the lymphatic system is intimately related with the blood system in our bodies. It's also important to recognize that the lymphatic system, you know -- well, we'll get into that later. I don't want to spend too much time on that.

About 1 in 47 people throughout their whole lifetime get lymphoma. Okay. That's not the subtype that they have, but the general umbrella of the disease

of lymphoma.

Now one of the things you'll hear frequently is that lymphoma is a common cancer. And that's true in the whole universes of all cancers. But it's only about 4 percent of cancers. Nothing compared to breast cancer, colon cancer, pancreatic cancer, colon cancer. Those are much more common cancers. But it's up there. I mean, it's 4 percent. So of all the cancers in the world, it does occupy 4 percent of cancers.

There are many, many subtypes. But they're really divided for the most part between B-cell and T-cell. Okay. They're the type of blood cells that are mutated and having problems. And the type we're talking about here is a B-cell lymphoma, which I'll talk about in a second.

And all non-Hodgkin's lymphoma can either be aggressive or indolent, all right, meaning they can be something that's going to potentially kill you or something that you can probably manage and deal with through either surgery or some other non-chemotherapy type of treatment.

The kind that we're talking about today is something called diffuse large B-cell lymphoma, or DLBCL. It is one of the more common types of non-Hodgkin's lymphoma, but it's -- you know, it's still

pretty uncommon. Approximately 1 in 150 people will get it through their lives depending if you're a man or a woman. And it's considered very aggressive. It is an aggressive cancer. And typically when you get diagnosed, you get chemo the next day because it will kill you if you don't stop it immediately.

There are a lot of success stories with NHL. But it's an aggressive type of cancer. It can be systemic. Right? So we talked about how the lymphatic system is throughout our body, and if you have mutation, you can actually have cancer popping up all over your body. And that's one type called systemic.

But also you can have lymphoma in specific organs. Right? And for example, you could have one that targets the nervous system, the brain.

You're going to learn that Mr. Pilliod had DLBCL that was systemic throughout his whole body. And I'm actually going to show you just how much that was at the end of this presentation.

Mrs. Pilliod, in some ways, had a more sinister type of cancer because it occurred in her brain. You're going to hear that she had a tumor appear in the middle of her brain. It actually came back twice. And you'll hear from her own treating physicians that she's alive today is a miracle. It's actually just

unbelievable.

But the problem is when you have a tumor in your brain, it causes brain damage. And because of that -- and I don't know if you've seen but Mrs. Pilliod has a hard time walking around and standing. She loses her balance very easily.

Incidentally, you'll also learn about Mr. Pilliod's neurological problems caused by his cancer treatment as well, but we'll get into that later.

One of the things you'll have to pay attention to, and this is something that, you know, can be said and glossed over, is when, for example, someone says it's a common cancer. Well, it's not that common. Okay. So you know the numbers now.

Another one that you're going to hear -- and this is a very deceptive statistic unless you actually know what it means -- and that is: Most lymphomas people don't know the cause of. Right? Seventy, eighty percent will say people don't know what caused their lymphoma.

And the reason that statistic -- and you'll hear testimony about this -- is because when doctors are treating a person who comes in with DLBCL, they don't sit down and do a systematic evaluation of what caused the cancer. They get them into chemo the next day.

They got to save their life. Doctors are there to treat their patients. Rarely do they have the luxury of sitting down and working through what were the exposures, what were the circumstances, the heredity, all the different things that you need to consider what caused a specific person's cancer.

So if someone says to you 80 percent of lymphomas are unknown, the first question you should ask is: Well, how many of those actually had a systematic evaluation? And if that question isn't answered, then the first question is misleading. Keep that in mind as you hear the evidence as it comes into this trial.

Non-Hodgkin's lymphoma generally has been steadily rising since 1975. This is statistics from the National Cancer Institute. It's called the SEER's data. And it's really important to sort of look at it during the entire history and scope of Roundup.

For example, if you were to cut this off starting, let's say, right here, right, it would look like trends are going down. And I'll show you in a second how you can manipulate overall statistics to say the story you want.

But generally lymphoma has been increasing since 1975. That is the sort of 30,000-foot discussion of what lymphoma is, and you'll get a lot more about it

from our doctors.

The important thing to know, though, is that the mutations that cause lymphoma occur in the bones. And so it's one of the really hardest ones to diagnose in some ways because you don't really see it until it's everywhere because you don't get into the bone very easily.

All right. That's NHL.

What is Roundup? This is actually a photo of Roundup used by the Pilliods. We still actually have a bottle of it. Everyone's had a chance to see this. This is a photo of it.

And if you zoom up on it, you actually see what it says. It says the active ingredient is glyphosate. That's 52 percent of the product. And then the rest of it, about half of it, is other ingredients.

Let's talk about what glyphosate is and then we'll talk about what those other ingredients are.

So glyphosate has actually been around for quite a while. It was first developed in the 1950s. And it was actually not used -- had nothing to do with treating or killing plants. It had to do with cleaning out industrial boilers.

And the reason for that is glyphosate is a molecule that has the ability --

Can I get that bottle of water?

(Discussion off the record.)

MR. WISNER: Glyphosate is a very small molecule. And it actually mimics very much a common molecule that I'm sure you've heard of called glycine. And because of that, it binds to a lot of things very easily.

And so it was actually used to clean out industrial boilers because it could cling to the metals and the particles within the boiler to help flush them out. That's what it was used for, for the first 30 years until some fancy scientist realized, hey, it kills plants. And that became the blockbuster product Roundup.

In the 1970s, they realized it could kill plants. They rush it to market. And it was put on the market in 1975, sold originally as Roundup.

But there are other ingredients within Roundup. So what are these other ingredients? The first is something called a surfactant. Okay. And a surfactant is a substance that allows something to spread over a surface area.

So we have an example right here. So the bead on the far left, the orange bead, is without any surfactant. And the middle one has some surfactant.

And the one on the right has a lot of surfactant. And as you can see, the liquid spreads out. And that's really important for a substance like a pesticide because it allows more absorption in the leaf. Right? It allows -- the greater surface area, the more can get in. And so there is a component of Roundup that is a surfactant.

There are many types of surfactants. You are going to learn that there are harmless ones that exist in our soaps and our shampoos. But there are also some very harsh chemical-level-grade surfactants. And you're going to hear testimony that the ones that are in Roundup are not the ones in soap or shampoo. This is the stuff used in industries.

The other component of these other -- so here's the surfactants. They help you penetrate the leaf.

And this is -- I forgot about this whole portion.

And what you're going to hear, this is actually Dr. Sawyer's specialty, is when you spread out the Roundup across the skin -- your skin actually isn't perfectly -- it has lots of holes in it. Okay. Every hair follicle actually has -- kind of goes into the skin. That's actually right there, that's a hair

follicle. They are sweat ducts right here.

And so the more spread out you are over the skin, it increases the ability for the substance to get into it. And you're actually going to hear there's even more to it. For example, there's surfactants and chemicals that are in Roundup cause irritation. And when you cause irritation, it increases blood flow to the skin which in itself further accelerates the absorption. So it's a kind of combination synergistic effect for how it can penetrate the body.

And as you'll see -- Dr. Sawyer will walk you through this -- but as it comes in, it actually can seep through all these different parts of the body and it gets right into the lymphatic vessel which is where lymphoma starts.

Another thing you're going to learn is because of the unique properties of glyphosate and Roundup, it actually, even after you wiped off your skin, it creates something called a dermal reservoir under your skin. So even if you wash it off, there's still Roundup under your skin and it's actually continuing to deliver a dose. You're going to hear testimony about that. And Monsanto's actual own studies show this.

All right. The next thing that's in Roundup, and these are just contaminants. These are things that

happen as part of the manufacturing process. And in Roundup there's a host of contaminants. There's formaldehyde, NNG, 1,4-dioxin, arsenic, ethylene oxide. These are all substances, ladies and gentlemen, that we know cause cancer. There's no real dispute about that.

Now the amount that's in each Roundup is unclear, but it is in there. We know that it's in the product and it combines with glyphosate and the surfactants as part of the product.

And then the remaining part of the product is water. We can all agree water is fine.

So that's Roundup. And it's really important that you know this distinction. And I will try my best to make sure I say "glyphosate" when I talk about glyphosate and "Roundup" when I talk about Roundup.

But people often get mixed up. Okay. People will say, oh, this study -- this study looked at glyphosate. Well, no. Did it look at glyphosate, the technical product, or glyphosate, what we call Roundup? And you really have to make that distinction and it's really important. Because as you can see, there is an important distinction between just Roundup and glyphosate. Right? Roundup is more, has a lot more going on.

Roundup use has steadily increased since 1974.

I mean, it's just gone up and up and up. And in fact, you're going to hear testimony that the volume of glyphosate and Roundup sprayed in our society dwarfs any pesticide ever in the history of mankind. It is ubiquitous.

And you're going to hear testimony from the people who have studied this very issue who say that it's so ubiquitous that it makes it very hard to study. Because when you study anything, you want to have people who have been exposed and you want to have people who haven't been exposed. But finding people who haven't been exposed, truly haven't been exposed, is actually fairly difficult. It's pervasive.

And, you know, one of the things that people like to do is something called an ecological study. Right? And that's where you compare general trends. Okay. You know, for example, I can tell you that ice cream consumption is directly correlated with people drowning. It is. Did you know that?

But we know that ice cream -- eating ice cream doesn't cause drowning. Right? It's because in the summer people go swimming, and when people swim they drown. So you have to be careful when you start doing these general trend analyses and you have to be careful about making sure there's nothing complicating the

story.

So, for example, I could probably put together a pretty sweet argument saying: Look at Roundup use. Look at NHL rates. They are just -- they just look so similar. Gosh, it must be causing all the NHL.

But that's not really a fair assessment because there's so many things that have changed since the 1970s. Even things that have changed in the last 10 years. And if you don't consider all those things, it's not science, it's just telling a story that you want to tell.

Here's an example of how I can use this to tell the other story. Right? Let's say we cut off all the data from 1996, just ignore everything before, just look at that data. Well, now suddenly these trends, they don't look so similar. In fact, you could argue: Look at all this Roundup use. It's been going up for, what, 20 years, and yet NHL is going down. It clearly isn't causing NHL.

You have to be careful about how you look at this kind of data and be attentive that ecological comparisons can be misleading.

There is a way to study populations. I'm going to walk you through that in just a second. There's an actual way to do it. It's called

epidemiology. But this is not epidemiology. This is something else.

So that's Roundup.

What is Monsanto?

Well, Monsanto is a chemical company based in St. Louis, one of the biggest in the world. In 2018, their net worth was $7.8 billion. In 2017, their net sales of agricultural chemicals was 3.7 billion and its profit on the sale of chemicals -- this is just chemicals -- was 892 million. That's profit.

In 2017, Monsanto spent $1.6 billion on research and development. And why that's relevant is because we're going to talk a little bit this morning about what Monsanto did and a lot about what they didn't do.

These are the people from Monsanto that you're probably going to hear from. Right now we're in the process of kind of figuring out which videos -- these are all by video. Right? There's no live human being from Monsanto that I can bring into this courtroom. Unless Monsanto is willing to do it, I have to do it all by video taken over the last couple of years.

And so these videos, we're going to show you. And some of them are going to be -- you know, they're all pretty damn compelling. But we're going to figure

out which ones to play right now. And so I can't promise you you'll see all of them.

But I do want to run you through the cast of characters because they're going to come up even in other people's videos that you do see.

So the first is top dog. This is Hugh Grant, chief executive officer. He was the CEO for Monsanto for the last 15 years. And he was in many ways the engineer behind the success that is Monsanto as we know it today.

You're going to hear from Dr. Bill Reeves. He is Monsanto's corporate representative. What that means, he's the person -- when I say to Monsanto, "Hey, I want you to give me someone who will speak for your company. So stop hiding behind the -- I want the person who speaks for the company." This is the guy they gave me. You're going to hear testimony from him.

This one we're playing. Okay? You're going to hear testimony from him. I cross-examined him for quite a while. And he spent over 400 hours preparing for that day. You're going to hear about that.

And so put that in -- that's 10 weeks of full-time work preparing for that one day of testimony. Oh, it was actually two days. So you're going to hear from him.

These are some characters you're going to hear a lot about. First is Dr. Daniel Goldstein. He's a medical doctor from Monsanto. He calls himself the Monsanto pediatrician. He's a pediatrician.

You're going to hear from Dr. Donna Farmer who's a self-proclaimed product spokesperson for Monsanto, specifically for Roundup.

You're going to hear from Dr. Michael Koch, Dr. Bill Heydens. Both of these were intimately involved with Roundup safety and the product on the market. And they were both Dr. Farmer's bosses at various times, to get a sense of who's who here.

You're going to hear from, hopefully, Dr. Mark Martens. He is a researcher and toxicologist from Europe. And he was involved in a lot of the Monsanto toxicology, and you're going to hear an interesting story that I'm going to tell you about in a minute.

You're going -- you're not going to hear from either of these. I know that for sure. Dr. Acquavella, Dr. David Saltmiras. These are toxicologists and epidemiologists. They're sort of the researchers for Monsanto. And Dr. Acquavella carries the claim to fame of being Monsanto's only epidemiologist they've ever had on staff. And apparently he left in 2004. So for the last, what, 15 years, they have not had an

epidemiologist at the company notwithstanding the $1.6 billion budget.

You're going to hear from Sam Murphey, hopefully. He's part of a mass rapid media response lead. So his job is to respond to the media and represent the company about its position about things. And you're going to hear a little bit about that.

And you might hear from both of these. I'm pretty sure you'll hear from Mr. Guard. He's the guy who runs the lawn and garden marketing and labeling for the company. That's the kind of products that Mr. and Mrs. Pilliod used.

Steven Gould, we may play his video. It's not clear yet we will. But he was the regional account manager for California, Nevada, Hawaii, Alaska. He was in charge of the distribution right here.

So that's Monsanto.

Now we have the big question. We're going to spend a lot of time in this trial talking about this very issue, and that is: Does Roundup cause non-Hodgkin's lymphoma?

One of the things you're going to hear about is what we call the three pillars of cancer science. I think this is largely indisputed. I don't think we're making anything up here. Right? There's three general

categories of scientific information that we look at to see if something causes cancer.

The first one -- and this is what's done before any product ever hits the market -- is they have to study cancer in animals, primarily rodents, mice and rats. They have to do a long-term cancer study to show that it's not causing tumors in these animals.

And there's some complications about how you do animal studies I'm going to talk about in just a second.

The second pillar is something called cell studies. And this is when we get down on a cellular level. What is Roundup or glyphosate doing to the actual cell at a microscopic level? Is it causing mutations? Is it doing what we expect it to do if it's actually something that causes cancer? But we're going to be looking primarily at its effect on DNA. Because cancer is a mutation and mutations happen when you mess with DNA.

The last pillar -- this is an important one -- is epidemiology. I mentioned this already a couple times. And this is actually -- you know, we have the benefit, because Roundup has been on the market for over 45 years, of going around the world and looking at people who are spraying it, people who were exposed to

it. And we can do that and study, okay, those people who are spraying, are they getting cancer compared to the people who are not. And there's a way of doing that scientifically, and it's called epidemiology. And we're going to talk about what the data shows for that.

It's really absolutely important, this is underlined four times, something you have to remember, by all means you have to look at all three pillars of science. Right? If you have someone who just looks at one and ignores the rest, you're going to miss the picture. You have to look at all three.

And every one of our experts that's going to talk about whether or not Roundup causes cancer has done that. They've looked at all of the data on all three pillars. And it is a massive amount. We're going to try to get through it in about 25 minutes. So let's see if we can pull that off.

Let's start off with the animal studies. These are done in rodents. Okay. And the reason why they're done in rodents is for a couple of reasons. The first is that rodents share significant amount of DNA with us, over 95 percent.

They also -- and this is really important -- they absorb toxins, metabolize and excrete it in the same way that humans do. And that's one of the reasons

why rodents are considered the standard model for looking at whether or not something causes cancer.

In fact, you are not allowed to sell a product in the United States like a pesticide unless you've proven it not to cause cancer in rodents. So that's a bar. You cannot even do it. So it's the beginning of the science. It's where you start looking at the issue.

Interestingly enough, mice, specifically mice are actually used to study lymphoma. It's pretty interesting that the correlation here is pretty direct. They're actually used to develop drug treatments for lymphoma because of the way that mice get lymphoma is so similar to humans. And that's one of the reasons why they're used specifically for lymphoma, in addition to everything else, but they're specifically used for lymphoma treatments.

When you're looking at these studies, you're looking for basically five characteristics. Okay. And the way these studies work, it's kind of simple, I mean, basically you have -- you have four groups -- well, I want to say that -- you have four groups, one that doesn't get anything. This is all under laboratory conditions. They're completely isolated. Air-conditionings controlled. Water levels, everything, fully controlled experiment. You have one group that

gets no exposure. And then you have three groups of animals that get increasing levels of exposure, okay.

And so you have the groups that are exposed to glyphosate or Roundup and the group that is not. And just for what it's worth, there has never been one of these studies done on Roundup. It's always just glyphosate. We'll get to why that's really important in a second.

So you have these four groups. And then you look and see, okay, in these groups, are they getting tumors? Right? Are the animals that are being exposed to glyphosate getting more tumors? And if they are, and these are the things you consider, then you say it's oncogenic which means it induces tumors in animals. And that's a really important fact because if something is oncogenic, it essentially means it's carcinogenic. That's how the science works.

We look for increase in numbers. Right? Obviously the more exposure you get, the more number of tumors. You want to see a sort of dose response. Replication. Are you seeing the same tumors pop up in study after study after study?

Dose response. I just talked about that. Are you seeing more tumors in the high-dose group than the tumors in the small-dose group?

Are we seeing across species? All right. Are you seeing it in different strains of mice, different genetic strains? Are you seeing it in rats and mice? Seeing the replication like that across species is a very strong indication that there's actually something causing tumors, specifically glyphosate.

And another really important one is called rare tumors. Right? So in these studies, just to give you a concept, you have 50 mice per group -- or 100 mice per group, really. Okay? And if you're talking about a cancer that occurs in 1 out of 150, or even rarer, 1 out of 500, 1 out of 600, to be able to actually have enough tumors to actually study the issue, you would need like 100,000 mice to do it right. That is inhumane. Right? We're not going to experiments on 100,000 mice. That's not okay.

And so what they do in these studies is they expose them to a lot of the product in an effort to see how many tumors are there. So if you see one or two, it doesn't mean anything. But if you start seeing a trend, that shows you something. So that's really important to consider.

We talk about rodent studies. There's two categories. Right? There's glyphosate and Roundup. So let's start off with glyphosate. These are the studies

that have been done on the rats and mice that relate to glyphosate. These are our tumor charts, so to speak. And I'm going to walk through them in a second.

I'll start off with the rat studies. There's been seven rat studies. And as you look through here, on the top we have the name of the study. So Lankas, Stout and Ruecker, Atkinson, Enemoto. And we have the dates when they were completed.

And our experts will walk you through this chart and explain what everything means when he comes to testify next week. But, you know, some of them have different issues, like for example, Atkinson is limited, and he'll explain what that means.

And then the three on the right are gray because they're a different strain of rats. Okay? So we have four in one strain, three in another, seven total rat studies. And we have the tumors that they were seeing in those animals that were exposed to glyphosate listed out at the bottom. That's how you read this chart.

And you can see there's replication. Right? We have thyroid tumors. We have pretty consistent skin tumors across the board. And the one -- and I'm not going to spend too much time on the rats because the mice studies are pretty overwhelming. But we have this

very -- we have these tumors. And our experts will explain that this shows that it's causing tumors in animals. That's what this is showing.

The mice study -- and by the way, this is a very rare tumor. And it's a kidney tumor. The reason why I point that out is because now I want to show you the mice. Because the mice data is pretty compelling.

First of all, we have three of these kidney tumors found in three different studies of mice. And for a kidney tumor, we're looking at -- this is the mouse kidney. You can see right here these little yellow sort of animated things. These reflect what would be a kidney tumor in a mouse. They're also called renal tumors. So renal tumor, kidney tumor, are really referring to the same thing.

What they found was three different findings of kidney tumors, which this is a very, very rare finding. The concept of it, the likelihood of seeing one kidney tumor in a mouse just by random chance is 1 out of 400. They saw 12 out of 800. That is a 600 percent greater rate than historical rate.

So this tells you this isn't just chance. Okay. This tells you that this is something happening to these animals who are exposed to glyphosate.

Probably the most important finding, though,

is the lymphoma finding. In every single mouse study that has been done on glyphosate, they have found malignant lymphoma. Every single one. This is the animal study that's used to study lymphoma. They found it in every single one.

Lymphoma can appear throughout the body. Here's an example of one happening right here. I think the spleen, I'm not sure. But this shows clear evidence across the board that glyphosate exposure causes lymphoma in mammals. That is what the evidence will show.

Now, okay, so one of the things that's sort of interesting here is this study right here, 1983, it's the only study that Monsanto has ever done in mice. Well, that's not true. They've done two. But it's the only valid study they've ever done in mice. That was 1983. What is that? 35 years ago.

And so a question you should ask yourself is why. Why hasn't Monsanto -- why was the first one in 1983? Right? It's been on the market since 1974. I told you you have to do these studies before it's allowed on the market. How is the first one in 1983? It doesn't make any sense.

And to explain that, you're going to have to learn about something called IBT, Industrial Bio-Test

Laboratories, and the scandal that occurred in the 1970s.

In 1971, Monsanto's toxicologist, Paul Wright, who worked at Monsanto, he leaves Monsanto. He begins working at a laboratory called Industrial Bio-Test Labs.

Shortly after he arrives, they begin the first mouse study on glyphosate. Okay? He's there for about two years, a year and a half. Remember, these are two-year-long studies. He leaves in October of 1972. And he goes back to Monsanto. So he was at Monsanto, goes to IBT, and then comes back.

Shortly thereafter they complete the first mouse study on glyphosate. And then they submit it to the EPA. Relying on that one study which showed no tumors at all from any animals exposed to glyphosate, it was completely negative across the board, they approved it based on that single cancer study in mice.

A couple years later the truth comes out. The FDA and the EPA discover that IBT, and specifically Dr. Wright, engaged in widespread scientific fraud, invalidating that one study that had supported its registration in 1974.

Despite learning this, the evidence will show that Monsanto took no action to take this product off the market. More importantly, they took no action to

tell consumers who might have decided to use the product in 1978 that the one study they had was based on scientific fraud.

This is important because in 1982, a loving couple, Alva and Alberta Pilliod, started using Roundup. And they're going to testify unequivocally that if they had known about this, they wouldn't have touched it. They will testify that if they had known that there was no study that supported its safe use, they wouldn't have used it.

And it wasn't until a year later after they started using Roundup that they finally had another mouse study. And this study had its own problems which I'll explain to you in a second.

So the evidence will show that Monsanto profited on the sale of Roundup even though they had no valid cancer study. And the evidence will show that had Monsanto disclosed the IBT scandal to consumers like the Pilliods, they never would have used the product.

The product started in fraud, and the evidence will show that's still going on today.

All right. So that's 1983.

Now I'm going to tell you that that's the only mouse study Monsanto has ever done. So the next question is, well, hold on a second. Why haven't they

studied it again in mice? You know, all this controversy about whether it causes cancer. Why don't they just do a study?

Now I'm going to help try to answer that question. And that relates specifically to this kidney tumor.

So in the original study, what they found -- this is how it's analyzed. So look at the kidney tumors. And what they found was there was no tumors in the control group. So the animals that had no exposure to anything, there was no kidney tumors. There was none in the low-dose group. There was one in the mid-dose group and three in the high-dose group. Again, putting that in context, they're seeing 4 out of 250 animals as opposed to what you would expect to see is 1 out of 400. So it's a 640 percent greater historical rate.

This is a highly, highly significant trend. It was so significant, in fact, that when the EPA got the study in 1985 -- this is the EPA document itself, you see it's dated 1985 -- they concluded in accordance with EPA proposed guidelines, the panel has classified glyphosate as a category C oncogen. Based on the one mouse study that had been valid -- this has been on the market for 10 years now. Right? The one study they finally get that's valid, it causes cancer.

So what happens next? And you're going to see this a lot, this process that I'm going to walk you through, this is a theme in this case. You're going to learn that Monsanto sat down with the EPA to fix things.

The evidence will show that in February 22nd, 1985, this is two weeks after they classified it as an oncogen, there was a meeting held between Monsanto executives and the EPA. This is a memo from Monsanto documenting that meeting.

And one of the people that was the most outward spoken person was this guy named Fred Johnson. Fred Johnson's meeting with the FDA -- I'm sorry -- EPA. And he asks, and this is a quote that they've provided in their internal memo: Short of a new study or finding tumors in the control groups, what can we do to get this thing off group C?

Why is that? What is he asking?

So, again, I showed you this chart. Right? I showed you 0013. This is a highly significant finding. And EPA's classifying it as an oncogen. But if you toss in a new tumor in the control group, it flattens out the curve. It makes it no longer a risk.

So what he's asking is: Hey, if we can find a tumor in the control group, it would be cool. How do we get this thing off a class C?

Shortly after this, Monsanto higher-ups -- I mean, two weeks later -- three and a half weeks later, they issue a memo and they state:

> As you know, Roundup is an extremely important herbicide in agriculture in the U.S. and around the world. Monsanto is concerned that even the initiation of formal regulatory action would have serious negative economic repercussions.

One of the things that you won't see in the document, and the evidence will make just pretty clear, is a single Monsanto employee saying, "Holy crap, we've got a cancer-causer out in the market. We got to pull it off." You ain't going to see that.

You're going to see statements like, "Well, we can't have this, this is going to affect our bottom line."

So they hire Dr. Marvin Kuschner. He is a reputable, very impressive pathologist, he's a guy who reads kidney slides. And we have this memo from Monsanto dated April 3rd, 1985, so a few days -- a week later.

> Senior management at the EPA is reviewing a proposal to classify glyphosate as a class C possible human

carcinogen because of kidney adenomas in male mice.

That's that -- the kidney findings.

Dr. Marvin Kuschner will review the kidney sections and present his evaluations of them to EPA in an effort to persuade the agency that the observed tumors are not related to glyphosate.

This is April 3rd, 1985. And they're saying: We're going to hire this guy who's going to help persuade the EPA.

There's a problem, though. April 3, 1985, Dr. Kuschner didn't even get this slide. That's his signature. 1985. Monsanto is hiring a pathologist to review the slides, and they already know what his conclusion is going to be.

Well, lo and behold, Dr. Kuschner finds a tumor in the control group. This is the letter that they sent to the EPA from Monsanto. It says, in summary, Dr. Kuschner's review of the section revealed the following findings to confirm the presence of one mild mid-dose and three-dose tumors in the male mice. So those are the ones we talked about. Confirmed they were right. In addition, he discovered tumor in control mouse that had not been previously reported.

So what happens? He breaks the curve. Dr. Kuschner finds the tumor to get this off of class C.

There is a fairly lengthy back-and-forth to the EPA about this, and I don't want to spend all day talking about it. The evidence is going to come in and you'll see it.

But you'll learn that after over a year of fighting with Monsanto about this, the EPA issues a registration of Roundup. And they simply say, you know what, in order to fully address this question, the agency is requiring that this study be repeated with a larger number of animals in each test group so that the statistical power of the study can be increased.

So they're saying, listen, do it again, beef up the numbers so we can just answer this question once and for all.

The evidence will show that Monsanto has never done that study. The evidence will show that Monsanto refused and to this day has never conducted another mouse study on glyphosate.

And probably the most important piece of evidence is that since they did that, other people have. And every single time it's been done, they've found malignant lymphoma every single time. Across species and across genders, they're seeing lymphoma in mice.

So the animal evidence, when we look at just glyphosate, it shows rare tumors and it shows lymphoma.

So what about Roundup? Right? Had there been any animal studies in Roundup to look at it? You know, even Roundup, the thing people are actually being exposed to in the real world and see what happens.

Well, there hasn't been.

This is Dr. Donna Farmer. This is an e-mail you're going to see in evidence. The subject is "Agitation Against Roundup." This is back in 2003. So this is, what, 16 years ago?

And she explains in this e-mail:

> In the U.S. we have some lawn and garden products with the Roundup name on them, but they contain other active ingredients in addition to glyphosate. And then they had different properties from glyphosate. That is why we're using the phrase "Roundup herbicides" or "Roundup agricultural herbicides." When possible, it is preferable to use the name of the product that's actually being used and the data that supports that particular formulation. The terms "glyphosate" and "Roundup" cannot be used interchangeably,

nor can you use "Roundup" for all the glyphosate-based herbicides anymore. For example, you cannot say Roundup is not a carcinogen. We have not done the necessary testing on the formulation to make that statement. The testing on the formulations are not anywhere near level of the active ingredient.

That's glyphosate.

We can make that statement about glyphosate and infer that there's no reason to believe that Roundup can cause cancer.

This is, what, how many decade ago? And their product spokesperson, Dr. Farmer, saying in an e-mail: We can't say Roundup doesn't cause cancer, we haven't tested it.

In 2009 she reaffirms this position. Another e-mail dated 2009.

Or this. You cannot say Roundup does not cause cancer. We have not done carcinogenicity studies with Roundup.

The evidence will show that for the 45 years that Roundup has been on the market, so being sold to people out there in the world, Monsanto has not

conducted a long-term animal carcinogenicity study on it.

This is something called an admission. Something that happens prior to litigation. And we asked Monsanto to admit certain facts.

This is admission number 6.

> Admit that Monsanto has never conducted an animal carcinogenicity study of any of the glyphosate-containing formulations sold in the United States.
>
> Response: Monsanto admits that it has not conducted a long-term animal carcinogenicity study on any formulated pesticide product.

Then we followed that up with another question.

> Admit that Monsanto was not precluded by any law, regulation, or ordinance from conducting a long-term carcinogenicity study on a glyphosate formula.

Admit it. There's nothing stopping them from doing it. They just haven't. The evidence will show that Monsanto refuses to conduct a long-term cancer study on Roundup.

There has been one study, though. There has

been one independent researcher who did look at Roundup. It was a study from 2010 by George and his colleagues. And what they did is they didn't do a long-term cancer study. They did something called an initiation and promotion study.

And what they're trying to do there is they're trying to figure out does Roundup promote tumors or initiate the mutation to begin with. And so they did a promotion study.

And what they did is they had a bunch of mice. And they painted Roundup, actual Roundup, the stuff you buy at a hardware store, okay, and they painted it on the mice. And they had animals that didn't have that painted on them. And they compared what happened.

Of the mice who had Roundup painted on their skin, 40 percent of them had tumors, 40 percent. Of the animals that had no exposure, not a single tumor.

That's it. That's all we got, ladies and gentlemen. The only animal study done on Roundup that Monsanto refuses to do shows that it promotes tumors.

So we have the glyphosate data in animals showing that it causes rare tumors and specifically lymphoma. And we have a Roundup study saying it promotes tumors. That's the summary of the animal studies.

Let's move on to the cell studies.

One of the phrases you might have heard is something called mechanism of action. And that specifically refers to the way in which a substance can actually cause cancer. Right? We talked about this a second ago. It's at a cellular level, what is happening.

And to understand that we have this really -- this is actually Dr. Portier's image. He's been using it since like 1975 or something so it's pretty old school. But I actually like it. It tells a story. And hopefully we'll be able to give you a more fancy version of this later.

But what we have here are normal cells. And then something happens. Okay? Something damages the DNA or affects the ability of the cell to repair, which is another way of damaging it. And that leads to a damaged cell. Then there's replication, mutate, mutate, mutates, mutates. That gets you cancer.

Okay. There are two different types of studies done to look at cell damage. One is called in vivo. That merely means in living things. All right? Whether it be in living humans. Whether it be in living rats. Whether it be in living, you know, hairy armadillos. Okay? There actually is a study on

them. That's why I mentioned that. They're studies done on actual living animals.

And then there's something called in vitro. Right? This is when we take cells from a living thing, put them in a Petri dish and we experiment on it in a Petri dish. So it's in vivo, living things. And it's in vitro, and it's in a Petri dish.

Without question, everyone will agree that data from living things is always the best data. Right? Because it tells you, bodies and animals have complex living systems, how it deals with exposure to a toxin is important.

There are two mechanisms. So we're going to come back to this in vivo and in vitro in a second. I'm just trying to sort of lay the groundwork.

There are two mechanisms that we know by which Roundup or glyphosate can cause genetic damage. Okay. The first one is called genotoxicity. It's toxic to the genome. Okay. And that has been shown it's a well-known mechanism through which a substance can cause cancer.

And I don't want to spend too much time on this, but I will with Dr. Portier. But you can have different types of genetic damage. You can break -- there's a double helix, right, for DNA. You can break

one of the strands and mismatch the chromosomes. You could have a double break. You could have chromosomes attaching to the wrong part. There's a lot of different ways that chemicals can affect the genome. That's called genotoxicity.

So let's look at the in vivo and in vitro data for genotoxicity very quickly. There actually have only been three studies in vivo. Right? And we're talking about in humans. In vivo human studies. There's actually been three studies done on human beings who were being exposed to Roundup to see if it's causing genetic damage.

It's actually kind of a disturbing fact. So in South America, there's something called aerial spraying. And they actually are dousing these places that are growing coca plants for cocaine production. And, you know, Roundup kills plants. So they're trying to kill the cocaine crops.

But there's a lot of people who live there. I mean, it's part of the fabric of that society. So there's villagers who are literally having Roundup coming down and raining on their heads. And they're getting substantial exposure.

An so this group of researchers, Paz-y-Miño, actually went out and took blood from those villagers in

these cocaine villages to find out if they had genetic damage in their body, and then they went to other villages that weren't being sprayed nearby and took blood from them and compared their blood. And the evidence showed unequivocally across the board that those people that were being doused with Roundup had significant amounts of genetic damage.

They noticed, though, that when they came back a couple years later, most of the genetic damage was gone. So it's an important piece of information for us to know. If you use Roundup one time, it might cause some genetic damage, but your body repairs. That's how bodies work. But repeated assaults, one after the other after the other, that's what gets you cancer.

This is important to remember because Mr. and Mrs. Pilliod used it for 35 years. Almost weekly. Week after week. Genetic damage, genetic damage, genetic damage until the body just says, okay, I give up, cancer.

That's Paz-y-Miño.

And there's another study by Bolognesi, 2009. This is a little bit more sophisticated on the study. So what they did is they took blood from people before they were exposed, right, knew that they were going to be exposed, and then took their blood again. And they

took their blood again. And compared the genetic damage before exposure and after exposure.

So that's a little bit better of a study because you have a baseline. Yourself, right? And again that showed people who have been sprayed after two weeks had significant amounts of genetic damage. This is what the data showed. And this is with Roundup, by the way.

So the in vivo human data for genotoxicity is just basically all positive.

Then there's the in vitro data. This is on human cells. So they take human cells, put them in a Petri dish and expose them to either glyphosate or Roundup, okay, to see if it causes genetic damage.

So the study -- so this is a chart that we put together. And we have the name of the study on the left. We have glyphosate data or Roundup -- or glyphosate formulation data, because Roundup comes in a lot of different ways, but it's with the surfactant and all this stuff. And it either studied both or just one or the other. So if they didn't study it, there's no data because they didn't study it. Right?

And when you look at the results of this, it's staggering. It's almost all positive across the board. And then you learn that most of them were in human

lymphocytes. They took human lymphocytic cells and put them in a Petri dish, exposed them to glyphosate and Roundup. What do you know? Genetic damage, genetic damage, genetic damage.

This takes us up to 2014. These are the most recent studies. Again, essentially all positive. I mean, I think there's one negative result in 2009 accompanied with a positive result. And then there's one negative result accompanied by two positive results.

So these are the publicly available studies. I don't have all of the studies that are done in the back room by industry scientists that never publish. But this has been subject to peer review. This has been the subject of people who have actually published and shown their data and made it subject to scientific scrutiny. And it's almost all positive.

Again, that was human lymphocytes. And two of them were actually -- they weren't human lymphocytes, but they were human blood. But, again, lymphoma is a blood cancer. So this is also very helpful data.

So the data is almost essentially across the board positive. This shows that glyphosate and Roundup caused genetic damage in human lymphocytes. And that's what the study shows.

It will also show -- and this is a really

interesting study. Dr. Sawyer is going to talk about this. There are some old studies that looked at absorption and what happens to the glyphosate and Roundup that gets into our bodies.

And it turns out about 20 and 30 -- about 20 years ago they discovered that most of it comes out. Either you pee it out, poop it out, that's how most of the glyphosate gets out of your body. But some of it does remain. And the stuff that remains appears to accumulate in the bones. So, again, it's where lymphoma starts.

The second mechanism that we're going to discuss is something called oxidative stress. And that is sort of an interesting thing. So oxidative stress, on itself, not a bad thing. Oxygen is part of living systems. Right? Everything needs oxygen to live and metabolize energy to function.

But oxygen is actually a pretty wild molecule when it's not attached to anything. Right? It's very volatile. Has anyone ever tried to burn pure oxygen? It's very explosive.

And the reason for that is because it likes to bind to things. It likes to attach to things, most notably hydrogen to create water. Right? That's why we have so much of it on our planet.

Oxidative stress is when something is happening that's allowing free oxygen radicals to populate in your cell. It's actually called a free radical. Maybe you've heard that before. That's why people take antioxidants. Right? It helps reduce oxidative stress and improve the immune health. Again I'm talking about immune disease.

So oxidative stress is a known mechanism for causing DNA damage which then leads to cancer. And, again, we have to look at both the in vivo and in vitro data. And there's actually no data in living humans. So no one has actually exposed human beings to Roundup or glyphosate that are living and tested to see what their oxidative stress levels are. So we don't have that data.

But we do have Petri dish data. And this is all the human Petri dish data on oxidative stress. Again, essentially across the board. There's one study that was negative for glyphosate but positive for the formulation. Dr. Portier will actually point this out and says this is pretty strong evidence that the formulated is more toxic than just glyphosate.

There's one study that -- the question mark. Dr. Portier will explain that one. He's going to say, listen, they said it was positive, but I don't like it.

So Dr. Portier doesn't just take the positive results. He critically analyzes each study. He just didn't think that one -- he didn't feel comfortable with calling it positive.

Again, one of them was a human lymphocytes and two were in human blood. Again all positive.

So the data again is positive.

Ultimately the evidence will show that glyphosate and Roundup cause oxidative stress in human cells.

I think we just covered cell studies. This might be a good time, Your Honor, to take a short break.

THE COURT: Yes, this is a good time.

We're going to take a 15-minute break, and we're going to resume at five of the hour. Thank you.

(Recess taken at 10:39 a.m.)

(Proceedings resumed in open court in the presence of the jury at 10:59 a.m.:)

THE COURT: Mr. Wisner, you may resume.

MR. WISNER: Thank you, Your Honor.

All right. Hi, again.

So the next question I have at this point now that we've gone through animal studies and talked about the cell studies is: Did Monsanto know that glyphosate and Roundup were genotoxic and induced oxidative stress?

Now these are something I call the Parry affair. And I actually started writing these up here, and I meant to do that throughout the opening, but I kind of got distracted. So I'm going to try to keep up my stuff here.

We'll call this Parry affair. Okay. All right.

So in the mid 1990s, a series of studies came out. They were called Rank, Bolognesi. That's a different one than we talked about earlier. This is an earlier cell study done in a Petri dish. Actually it was done in mice. I'm sorry. Peluso and Lioi. These are all studies that came out in the '90s -- late '90s, like 1997, 1999.

And they were all on Roundup and they were looking specifically at genetic damage and oxidative stress. And they were -- genotoxic activity with glyphosate in its technical formulation of Roundup. So we're looking at some of the questions that we're dealing with here.

And they were all positive, each one. And this caused Monsanto to hire Dr. James Parry. He was a genotoxicologist from England, very well respected, well-known. And unfortunately he's passed away. But at the time, he basically had written a textbook on

genotoxicity. He was the guy.

And you can see it in Monsanto's own words. This is an internal e-mail where they discuss what they're going to do with Dr. Parry, at least initially.

Well, Dr. Parry is a recognized genotox expert. What is not known is how he viewed some of the, quote, nonstandard endpoints, such as -- and I won't describe what that means, you can just ignore that, our experts will explain what those tests are later -- endpoints evaluated in the genotox article by Rank, Bolognesi, et cetera.

Therefore it was recommended that before we ask him to get more deeply involved, reviewing all the literature, glyphosate data, represent us as a consultant with regulators, et cetera, we would ask him to review a subset of the articles.

It was proposed that Mark Martens -- that's Dr. Martens right there, he was in Europe -- would contact Dr. Parry and ask him for the peer review of the articles by Rank, Bolognesi, Peluso, and Lioi showed you. Based on a strategic genotox papers a decision would be made as to expanding or terminating his involvement.

Interestingly enough, down here -- so this is EU. You see that this is EU. That's referring to the

European work. And an NA at the bottom refers to North America. And you can see the same discussion, they talk about a guy named Dr. Gary Williams on genotox issues might be used in Europe on a contingency basis. So he's the backup in case things don't work out with Dr. Parry.

So Dr. Parry reviews the studies. And he actually issues a report. And this is the first paragraph of his report.

> You will find my evaluation of the four papers you provided concerning the potential genotoxicity of glyphosate and Roundup. Although each of the papers have weaknesses, I've avoided a report which attempts to focus on these weaknesses. Rather I've attempted to pull out the data which provide an aid to the understanding of the potential mechanisms of glyphosate genotoxicity and indicated how you might clarify these mechanisms. It is by my experience with regulatory agencies that a positive attitude to publish data is a more productive approach than just criticizing the individual studies. Dr. Parry comes from a line of researchers,

and you'll see this similarly from our experts, where they don't just say yes or no. They don't binary everything. They look at things on a gradient scale. And they see that a study might be bad but it has something that might be useful. And they might see a study that might be great, but it has weaknesses. And everything falls on a gradient.

And this is a theme that you'll see throughout the science in this case, that if you just focus on one study, you're doing something wrong. Okay. There's too many studies here to just look at just one. You can't do that.

So Dr. Parry reviews these four. And his conclusions:

> Overall data provided by the four publications provide evidence to support a model that glyphosate is capable of producing genotoxicity both in vivo and in vitro by a mechanism based upon the production of oxidative damage.

So he looks at the data, and he goes, hey, it's genotoxic, causes oxidative stress.

Monsanto gets together and they have a meeting. Dr. Farmer is actually the author on this e-mail. That's why she's up there.

Number 4. Global experts review Dr. Parry's analysis. What is our next step?

Dr. Parry concluded in his evaluation of the four articles that glyphosate is capable of producing genotoxicity both in vivo and in vitro by a mechanism based on the production of oxidative damage. That's the portion of his report that I just read to you.

The data Dr. Parry evaluated is limited and is not consistent with the other better-conducted studies. In order to move Dr. Parry from his position, we'll need to provide him with the additional information as well as asking him to critically evaluate the quality of all the data, including the open literature studies.

As a followup, Mark -- Mark Martens -- will contact Dr. Parry and discuss with him the existence of additional data and ask him to evaluate the full package. Mark will also explore his interest, if we can turn his opinion around, in being a spokesperson for us for these types of issue.

So Dr. Martens responds, "Donna, thanks for this. It accurately reflects the situation." And he said, "I just received from Professor Parry the signed secrecy agreement."

So they have this agreement with Dr. Parry that he's bound by secrecy and they're going to give him

all this new data. Because they were going to give him the internal stuff that Monsanto had, not just the public literature which doesn't require secrecy but the internal stuff that Monsanto had conducted themselves. So they give him the data.

Dr. Parry prepares another fairly lengthy report. And his conclusion is he breaks it up into glyphosate and Roundup or formulation. He says: For glyphosate toxicity, on the basis of the study Lioi, et al., I've concluded glyphosate is a potential clastogenic in vitro. Clastogen is an agent that can induce mutation by disrupting or damaging chromosomes. It means it causes mutations, which again is a more specific term generally for genotoxicity. Okay.

He goes on: The work of Bolognesi and Lioi suggests that the genotoxicity observed may be derived from the generation of oxidative damage in the presence of glyphosate. And he has a specific evaluation of glyphosate mixtures, which is Roundup and other formulations.

The studies of Bolognesi suggest that glyphosate mixtures may be capable of inducing oxidative damage in vivo.

Now what's really interesting about this report is he actually makes recommendations. One of the

big things he explains is, hey, guys, you haven't studied Roundup enough. We don't have a full data set.

This is back in 1999. Okay? 20 years ago. Their own expert says you got to look at Roundup. Right here. "Provide comprehensive in vitro cytogenic data on glyphosate formulations." He says you need to study it.

And this is his bottom line. "If the genotoxic activity in glyphosate and its formulations is confirmed, it would be advisable to determine whether there are exposed individuals and groups within the human population and such individuals can be identified and the extent of exposure should be determined and lymphocytes analyzed for presence of chromosome aberration."

This is 1999. And it wouldn't be until about eight years later that Dr. Paz-y-Miño would actually go do this, go out into the real world and look at people who are exposed and check for genetic damage. Or Dr. Bolognesi would also do that. He's predicting the future of where the science should be. And he's suggesting that Monsanto do that.

The response. Dr. Heydens, who was at this time the boss of Dr. Farmer: Mark, all, I've read the report and agree with the comments. There are various things that can be done to improve the report. However,

let's step back and look at what we're really trying to achieve here. We want to find/develop someone who is comfortable with the genotox profile of glyphosate/Roundup and who can be influential with regulators and scientific outreach operations when genotox issues arise. My read is that Parry is not currently such a person, and it would take quite some time and money/studies to get him there."

And you know, this is -- should be read in the context of what I told you earlier that Monsanto has a $1.6 billion research and development budget.

> "We simply aren't going to do the studies Parry suggests. Mark, do you think Parry can become a strong advocate about doing this work Parry? If not, we should seriously start looking for one or more other individuals to work with. Even if we think we can eventually bring Parry around closer to where we need him, we should be currently looking for a second backup genotox supporter. We have not made much progress and are currently very vulnerable in this area. We have time to fix that but only if we make this a high priority now. Bill."

This is their response. They don't want to do it. They don't want to do the studies.

Now in a minute, Monsanto is going to come up here and try to tell you that they were able to convince Dr. Parry that they didn't need to do it, it changed his mind, or put the screws to him and changed his opinion.

But the simple fact is the evidence will show, and this is essentially undisputed, that Dr. Parry told them to study the formulated product, told them to go out and look in the real world, and they never did it. They haven't done it to this day.

Admission number 23:

> Admit that Monsanto never submitted the reports written by Dr. James Parry in 1999 on behalf of Monsanto regarding the genotoxicity of glyphosate and glyphosate-containing products to the U.S. EPA or any other regulatory authorities.
>
> Answer: Monsanto admits that after reasonable inquiry into the information that is known or readily obtainable, it has not identified any documentary evidence that the reference reports were submitted to the U.S. EPA or any other regulatory authority.

Their own expert concludes it's genotoxic and they've never given it to the EPA or anyone else, anyone else around the world.

Did Monsanto know that glyphosate and Roundup were genotoxic and produced oxidative stress? I believe the evidence will show that they did.

Now, earlier I showed you this part about Dr. Williams. Remember, contingency option. I showed you this earlier. I did that because shortly after Dr. Parry's affair with Monsanto, this article gets published. Williams, Kroes, Munro from 2000. And this is an article entitled "The Safety Evaluation and Risk Assessment of the Herbicide Roundup and its Active Ingredient Glyphosate for Humans." You see the authors, Williams, Kroes, and Munro. It was submitted to the journal article -- journal on December 6, 1999. So this is just after the Parry affair.

We have, through discovery, learned how this article came to be. And you, as a jury, get to see evidence that no one else gets to see. We've had the opportunity to look through Monsanto's documents. And here's what we found.

By the way, the article claims there was no genotoxicity. It says the exact opposite of what Dr. Parry concluded.

Here's what we found. I'm going to introduce you to a concept called ghostwriting. This is when a company writes a favorable publication and then pays a prestigious person to put their name on it.

You're going to hear testimony from Dr. Michael Koch, the nutrition lead from Monsanto, who will give you his definition. And he will tell you that when this happens it is unethical because it hides the truth. It's not science anymore. It becomes a sale, the company's pitch.

We have a document in 2015 where Bill Heydens, the guy who said we're not going to do the study that Parry suggests, Dr. Heydens writes this e-mail, and this is in 2015 and this is after a report comes out from the World Health Organization. Oh, that's right. It's about to come out and they're planning for it and that's what the title is, IARC Planning.

And they're talking about making more scientific literature to rebut this anticipated decision. And he writes down here, and I don't want to go -- it's kind of long. He says right here: A less expensive/more palpable approach might be to involve experts only from the areas of contention epidemiology and possibly method of action depending on what comes at the IARC meeting, and we ghostwrite the exposure toxin

genotox sessions. An option would be to add Greim and Kier or Kirkman -- these are all scientists -- to have their names on the publication, but we would be keeping the cost down by us doing the writing and they would just edit and sign their names, so to speak. Recall that is how we handled Williams, Kroes, Munro to do that.

This article, ladies and gentlemen, was ghostwritten. And the evidence will show that Monsanto hired an expert, Dr. Parry, who concludes internally in two separate reports that it's genotoxic, and then instead of publishing it, showing it to the world or any regulators, they ghostwrite an article that says the exact opposite.

Number five, ghostwriting.

And you can see I filled in some of the earlier ones before. The evidence will show that this wasn't the only time they did it. You're going to hear testimony that Monsanto has participated in deceptive authorships on numerous articles claiming that Roundup is safe.

All right. Let's move on to the last pillar of the studies.

The last one is about epidemiology. And this is the study in distribution of cause of disease in

human populations. There are three types of studies. Okay.

The first is called a case-control study. And in some ways these are the easier types of studies because you start off with the people who are already sick. You draw upon millions of people in a population and figure out, okay, give me all the people in this population that have non-Hodgkin's lymphoma. And then you go back in time and ask them: Hey, what were your exposures? What did you use? Did you use Roundup? Did you use other pesticides or whatever?

And then you compare those people who have a history of using the product with those people who don't and see if there's a difference. That's called a case-control study. And it draws on millions of different people.

The second type of study is called a cohort study. These are a little more difficult and tricky because instead of starting off with sick people and looking back and seeing what they were exposed to, you start off with people who are perfectly healthy. It's called a cohort. And then you have to follow them for decades to see what happens.

These studies can be very effective when they're properly done because, right, you start off with

a baseline. Everyone's healthy. See how they are affected. But they are very easily manipulated by exposure. Right? Because if over time things are changing between those people who were exposed and unexposed, it messes with the data, it makes it hard to interpret. But when they're done right, they're really fantastic studies.

Finally there's meta-analysis. And this is when you combine multiple studies together and look at what the results are when you put everything together in the same pot. There's a lot of science and complicated rules that you have to follow when you do a meta-analysis. I'm not going to go through those today. But as a rule of thumb, they bring everything together and say, okay, what does all the data combined show you.

When you look at epidemiological studies, you need to look at them on this thing called a plot summary. So what we have here is a risk ratio beginning from one which is no risk. This conceivably could go up to a million. Right? But I only have up to four here. And then zero which perfectly protected. So when you have a result, like, for example, here we have two studies and the result is right there at two, what that tells you is that the data from that study is showing you that those people exposed to let's say Roundup

are -- those people exposed to Roundup are twice as likely to get cancer. Doubles the risk. 200 percent. Okay. That's what that point means.

But nothing in any scientific discipline is that simple. There's something that goes around it. They're called confidence bounds or confidence intervals. And some of you might have statistical training, might know what that means. Frankly, I have statistical training. I still don't know what they mean.

But basically, from my understanding -- and our experts will try to explain this as simple as possible -- is they tell you how good the data is. They tell you if there's a lot of variability. If there's a lot of variability, then you have these large whiskers. Okay. And if you have really good or a lot of data, it's the small whiskers.

Okay, here's an example. When they do political polls for like presidential elections, they go, oh, 47 percent support or don't support some candidate. Right? And then they go plus or minus five points or five percent. Right? Margin of error. That's what they're referring to. They're talking about the margin of potential error that encompasses. That's a good way of thinking about it.

Now it's really important to know, though, that what the data is showing is the point. Right? That's what the data shows. This is how good or big the data set is. And just, for example, if you look at the same data from 10,000 people, it will get narrower and narrower and narrower. And if you look at it for five people, you're going to have a really wide one because it's driven by numbers.

When it crosses the 1 like this, that means it's not statistically significant. That's the phrase used. It doesn't mean it's not significant. Okay. Because it shows you a doubling of the risk. But it means you can't rule out chance completely at a 95 percent confidence level. That's what it means.

So, for example, this was an 80 percent confidence bound. It would shrink and it would be statistically significant. It's an arbitrary number that statisticians use to assess basically the quality of data.

Dr. Portier, he actually has his background in biostatistics, and he'll explain to you -- and actually Dr. Ritz will as well. She's an epidemiologist. She'll explain to you that you have to consider statistical significance, but the most important thing is the actual result.

Now if you have a substance that has no risk, okay, so this is something that doesn't cause cancer, this is how you would expect the results to look. Right? You have half the results to the right of 1 and half the results to the left of 1. Right? But the differences that you are seeing are just random variation. All right.

Conversely, if the data is all or mostly to the right or left of 1, that tells you something else. Right? Mostly to the left that means it's mostly protected, that it actually protects you against the disease. And if it's mostly here to the right of 1, that shows that it is causing a risk, that's likely a risk. Even though that everything is statistically significant, they're mostly to the right.

So this is the data on glyphosate. There have been a lot of epidemiological studies. And something should stand out immediately. They're almost all to the right. And in fact, you will hear testimony that statistical probability of this happening just by chance is essentially zero, that this shows clearly that in the human data there's a risk.

Now, different studies are significant. For example, De Roos 2003, it doesn't cross the blue line. So that's a statistically significant result. No one

can dispute that. Right?

But one of them, for example, McDuffie 2001, it does, it does cross the line. It's still to the right of 1, but it's not statistically significant.

But this is where I went back to that binary assessment of data. If you look at data and go, well, it's not significant, throw it out, you ain't doing science. You've got to look at the whole picture.

Really importantly, though, I think this is really where the rubber meets the road, all of the meta-analyses are positive and significant, statistically significant, every single one across the board. When you pull all the data together and look at the result, it shows a risk unequivocally.

Now this is never ever used, which is not a very sensitive metric. Okay? And the reason is it basically says, okay, have you ever used Roundup in your life? So if any of you had used Roundup one time, just one time, you would have been in the exposed group. You would be contributing to the risk seen here. Right?

And that can be deceptive because we're not talking about people who just used it three times in their life. We want to look at people who use it regularly, people who use it weekly for 25 years.

And for that, we have to do a more

sophisticated type of analysis. That's called -- I'm actually going to skip this one for a second and come back to it -- a dose response analysis.

And here's what they did -- and not all the studies did this. Okay. A few of the studies did not do this, but some of them did.

So, for example, McDuffie, they broke it down into people who use it less than two days a year and people who do use it more than two days a year. Try to ferret out the people who use it a lot. The signal through the noise. Right? And they found that if you use it less than two days a year, no risk. But when you use it more than two days a year, it's more than doubling of the risk. That's an important statistically significant finding.

Similarly in Eriksson, they did a study. Use it less than 10 days, you do have an elevated rate but it's not statistically significant. But if you do it greater than 10 days, more than doubling of the risk, statistically significant.

If you use it for less than 10 years, not too bad of a risk, very small, not significant. Use it greater than 10 years, significant and more than doubling of the risk.

Now the cohort study, the AHS study 2018, I'm

going to talk about that in just one second. But recently the study came out, I mean a month ago, and they actually did a meta-analysis on those responses. They pooled all the data for all the heavy users in all the studies and they did a meta-analysis. And they used the AHS, this data right here, both from 2018 and the earlier version of it from 2005.

It didn't change anything. It both showed an increased risk that was statistically significant. That was published just like a month ago by a group of toxicologists, actually one of them right here in Berkeley, Dr. Zhang, and her colleagues. And all three of those -- well, I'll tell you about how they got to the study because it's a pretty good story. When we talk about the EPA, I'll talk about that.

Anyway so I skipped over this one.

This is the data on their specific subtype of cancer, DLBCL. Okay? So this actually wasn't even possible until just a couple weeks ago because the data came out. We were able to actually look at what the studies that just looked at a subtype of cancer show. And they got every single one to the right. Every single one.

Now, not all of them are statistically significant, but there's one, two, three, four, five

that are. Both in cohort, meta-analysis, as well as in dose-response analysis.

And actually this NAPP study, Brazil and Canada, that's actually a pooled analysis of a bunch of data, so it's actually a pretty robust analysis. And it shows for greater than two days a year for this specific subtype, statistically significant, more than doubling of the risk.

All right. So what happens -- and this is really important. What happens if you start ignoring data? All right.

Let's say we just took everything off the table. Let's just look at this one study, the AHS. And I'm not doing this by accident. The evidence will show that Monsanto thinks that this study is the greatest thing ever. It's their favorite study. They actually talked about it in the mini-opening. You remember that across the street? They go "the biggest study ever," this is what they're referring to, the AHS. I'm going to talk to you about the study in a second.

So the AHS is a study done in North Carolina and Iowa. It was started in 1993. And it looks at professional pesticide applicators. So these are people who spray a lot of pesticides, all sorts, not just glyphosate or Roundup. We're talking the stuff that you

need respirators for and moonsuits and stuff.

So in some ways the study is deeply flawed. Right? Because it already starts out with a population that doesn't reflect regular people. People who are trained and licensed and know how to use it. And they also wear a significant amount of protective gear.

And we also know from this population -- and you'll hear evidence about this -- that the cohort in the AHS is weirdly healthy. Their rates of lymphoma are very low across the board. And their mortality rates are low. So it's not really a proper representation of society.

But in any event, it is a good study insofar as it does have a very good way of checking whether or not they have cancer because they're looking at cancer registries.

The problem, though, is it happened during a dramatic change in Roundup use. Starting in 1993 and where we stand today, where more than 20 times more Roundup is being used by farmers than before. And the problem here is that when they took the exposure assessment of these people, they took it in 1993.

And when they tried to follow up with them five years later, they lost 40 percent of them. They just didn't respond. So what you're going to hear from

the experts is that the study has some problems. Really hard to interpret because a lot of the data is called imputed. They essentially make it up using a statistical model. I'm not saying it's garbage, but darn close to it.

But I think probably the most relevant thing here when it comes to the AHS is to hear how Monsanto talks about it today versus how they talked about it before.

So today Dr. Reeves, he'll testify that it's the most comprehensive look at pesticide exposures and health risks. He is their corporate representative. I had him in deposition. I asked him this question. He said it's the best thing since sliced bread.

Well, if you go back in time and look at what they were saying about it 20, 30 years ago, it's a different story.

This is an e-mail from Dr. Farmer from 1999. And in this e-mail she's specifically discussing the AHS. She goes:

> What is a greater concern, however, is the American initiative called the AHS. AHS stands for Agricultural Health Study, a large multifaceted epidemiologic study being conducted by scientists with the

National Cancer Institute, the EPA, the National Institute for Environmental Health Sciences. It is its seventh year of data collection and soon will publish the results linking specific pesticides to various health effects. These organizations believe that farmers and their families are suffering from a variety of illnesses and that these illnesses are caused by pesticides. No bias there. The widespread, ever growing use of glyphosate caused the AHS investigators to reevaluate and give more priority to glyphosate.

I'm just going to skip the next paragraph. It says:

Many groups have been highly critical of the study as being a flawed study. In fact, some have gone so far as to call it junk science. It is small in scope. And the retrospective questionnaire on pesticide uses and self-reported diagnoses also from the questionnaire is thought to be unreliable, but the bottom line is scary. There will be associations

identified between glyphosate use and some health effects just because of the way the study is designed.

So before they get the results, they're worried it's going to show that glyphosate causes cancer. And they're saying people call it junk science, small in scope, unreliable.

So we have before, before they know the results, flawed, junk science, small in scope, unreliable, bottom line is scary. And now it's the most comprehensive look at pesticide exposure and health risk.

Simple fact is that the AHS study -- and our experts will explain -- is just one study. And it has its strength and it has its weaknesses. It had a lot of weaknesses. But I'll agree it is one study that does not show any risk. But our experts will explain that it doesn't show risk because it isn't sensitive enough to do it. It wasn't conducted in a way that could tease it out.

Because one of the things about the AHS is it wasn't about glyphosate, it was about all pesticides. It wasn't just about NHL, it was about all disease. And when you try to make it super specific to a specific disease and specific pesticide, it just doesn't work.

It breaks down.

More importantly, though, I think this is the theme that our experts will explain is if you just focus on one study and ignore everything else, that's not proper science. It's like doing archery this way. You got a target, you stick the arrow in the wall, and then you draw a target around it. That's not how you do science. Right? It's not a fair shake.

One of the other things that you're going to hear about, and this is actually really important because I heard this said in the little mini-openings that we did in the other room and I just want to make sure we got the facts up straight. The evidence will show that the AHS is not the largest study ever done. It's not even close. There's another cohort study -- well, first of all, comparing the AHS to case-control studies is silly. Right? Case-control studies draw from millions of people. Right?

So when you're comparing cohort studies, you have to compare to other cohorts. And just recently a cohort came out three times the size of the AHS, and it shows 160 percent increased risk. That is statistically significant.

So, again, it illustrates the problem of focusing on one study.

One of the important pieces of information you're going to learn is that notwithstanding Monsanto having a $1.6 billion R&D budget, notwithstanding the comments by Dr. Parry or all the studies -- the comments by the EPA or notwithstanding the IBT fraud, notwithstanding all of that, the last 45 years Monsanto has never even tried to do its own epidemiological study.

Admit that Monsanto has never conducted an epidemiological study to study, to study the association between glyphosate-containing formulation and non-Hodgkin's lymphoma.

They admitted it.

So what is it epidemiology says? It shows that Roundup causes lymphoma in humans exposed in the real world.

And I think it's really important to remember that epidemiology looks at Roundup. It doesn't look at glyphosate. Because nobody actually sprays glyphosate in the real world. They spray Roundup. So it's a unique insight as to what's happening with the actual product in the real world.

Now you're going to hear Dr. Reeves testify. And I asked him: What is the company's position about

the science? These three pillars, all three of them. I even drew it on a piece of paper.

And he said it's the company's position that there's no evidence across the board, zero, not one positive study. That's the position that Monsanto has taken.

And so I got to wondering how does that happen. I mean, I've got positive study after positive study after positive study. In no conceivable universe is that no evidence. Right?

You're going to learn about something called freedom to operate. This is not my phrase. This is Monsanto's. It is a line item budget that they use as part of their operations. They actually talk about it. They call it FTO. It's used in their own personnel evaluations. Like when you get bonuses, they have to talk about how they supported FTO.

And here's a PowerPoint presentation from 2014, specifically about lawn and garden products, which are the very products that Mr. and Mrs. Pilliod used. And they talk about how we have to have a winning argument.

As you can see from this illustration, you can see the blue blocks which are pushing the scales in one direction and now they have to put on these red ones to

balance it out.

And I will submit to you, ladies and gentlemen, and the evidence will prove this out, that those red blocks are exactly what we've been talking about. Ghostwriting various studies, and not conducting formulated product studies. And they explain how they win the argument.

One, actively tell our story. Build the right relationships -- well, actively tell our story, that's ghostwriting. Build the right relationships. That's the Parry affair. Well, I guess that wasn't a right one. Right? Because he came out against them. So I guess -- I guess Williams would be the right relationships.

Let nothing go. Discomfort to the opposition.

Now, as you can see in this FTO discussion, there is no mention of protecting people. There's no mention of studying our product to make it safe. You won't find that in the documents in this case.

You're going to see dozens and dozens of examples of this in evidence for the next month. But I'll give you one example. I may give you two examples, but one short one.

To the Eriksson study, it comes out in 2008, and it shows a doubling of the risk for overall NHL. It

shows a 236 percent increase for greater than 10 days. And it shows a 226 percent increase for greater than 10 years. So it shows a clear signal there's something wrong with Roundup and non-Hodgkin's lymphoma.

Here's how they respond to it internally. So this is an e-mail from Dr. Farmer, 2008, shortly after the publication. And she gets an e-mail that says study shows herbicides increase of non-Hodgkin's lymphoma, and if you look through it, it's discussing the Eriksson study.

She writes:

> Nassar, thank you for forwarding this. We've been aware of this paper for a while and we knew it would only be a matter of time before the activists pick it up. I have some epi experts reviewing it. As soon as I have that review, we'll pull together a background to use in response.

Here is their bottom line:

"How do we combat this?"

Combat it. And she actually pasted the bottom line right here. The bottom line that they want to combat is avoid carcinogenic herbicides in foods by supporting organic agriculture, and on lawns by using

nontoxic land care strategies that rely on soil health, not toxic herbicides. That's discomforting the opposition.

All right. So I'm going to put up here FTO.

All right. One of the important things you're going to learn about in this case is something called the International Agency for Research on Cancer. It is a part of the World Health Organization. It's been around since the 1970s. They are the premier scientific institution for assessing if something causes cancer.

It's the kind of thing that if you're invited to, you put it on your résumé right at the top because it's a huge honor. They invite independent scientists from around the world and they engage in an exhaustive collaborative effort to assess whether or not things cause cancer. It was developed in the 1970s specifically because companies had been bamboozling regulatory agencies for so long.

MR. ISMAIL: Your Honor, this is becoming awfully argumentative.

MR. WISNER: I'll move on, Your Honor.

So the International Agency for Research on Cancer, I'll just give you a quick update about it. It's leading experts on cancer. And there was a panel brought together to look at glyphosate specifically.

And invited 17 independent scientists from the EPA, California EPA, and worldwide universities. And I'll talk to you a little bit more about that in a second.

They spent six months reviewing all the peer-reviewed science about glyphosate and Roundup. And held a week-long meeting where the science was debated and discussed. And they ultimately give it a classification. That's how the IARC process ends. They give it a classification.

There are currently four types of classification. There used to be five, but they recently got rid of the last one because they realized it doesn't make any sense.

The first one is it causes cancer in humans. Definitively. No question. Get out of town if you want to dispute it. The second one is a probable human carcinogen. And I'll explain in a minute. You'll actually hear, by the way, from the guys who participated in that IARC are going to testify in this case. They're going to tell you what they did and the scientists are going to explain how they got there.

But probable human carcinogen means, yeah, it causes cancer, but it's not definitive in the sense of 100 percent.

And then there's 2B, it means possible.

There's a high likelihood that it causes cancer, but we don't know for sure.

And then number 3 is we don't know, we can't say it causes cancer.

They used to have a fourth one which is it doesn't cause cancer. But you're going to hear testimony about this. They realized that that category doesn't make any sense because you can't prove something doesn't do something. Right? Because you're proving a negative. So that's subsumed in category 3.

You're going to learn that about of the thousand or so things that they've assessed throughout the last 40-50 years, only 12 percent ever get to the first category, only 8 percent get to the second highest category, about 31 percent get a possible, and about half just get we can't tell.

So this is a very deliberative process. It's not like anything they've looked at they label as carcinogenic. They're very thoughtful about it.

And you'll actually learn that before it's even brought up for consideration, it has to already have been shown to be a reasonable probability within the scientific literature. They don't just look at anything. Right? They actually look at things where there's science behind it.

So this group decided in October of 2014 they're going to look at glyphosate and look at Roundup. And Monsanto found out about it. And there's a whole bunch of documents that you're going to see related to how Monsanto dealt with this, but I'm just going to focus on a few.

So here's an e-mail from Daniel Jenkins to William Heydens, Michael Koch is on the e-mail. You're going to hear from both of them. They're both going to testify via video deposition. And Daniel Jenkins says: Hey, I spoke to the EPA, and he's talking about a bunch of stuff. And Daniel Jenkins, by the way, is their liaison. That's why he spoke to EPA.

That is, IARC, they are sending delegates trying to get names that are knowledgeable, rely EDSP -- that's endocrine disruption -- an oncogenicity standpoint. The findings of -- by IARC would likely be impactful of their analysis. So whether or not IARC is impactful to EPA's analysis, I don't know. This is what this guy is reporting to these two.

Here's how Dr. Koch responds. He actually sends the e-mail to Heydens, and he says: Regarding IARC, precisely what we didn't want to hear.

And then Dr. Heydens responds: Yes, I'm sitting here pondering this as we speak. The

one-billion-dollar question is how could it impact. Actually cause them to reopen their cancer review and do their own in-depth epidemiology evaluation? This is getting huge after we heard on our call this morning.

And Dr. Koch said: Yep, I had several of the same thoughts.

It's a big deal. IARC was going to look at it. It was scary.

In fact, so scary that Monsanto put together a plan. Before the IARC panel even met, they put together a plan. This is one of those plans. You're going to see a couple of them throughout this trial. This is from -- this is sent to Dr. Farmer and William Heydens. It's the revised IARC reactive messaging.

Attached please find revised messaging for IARC.

And this is what they're doing. This is February 12th, 2015. IARC isn't even going to meet for another three weeks. This is before they meet.

This component represents the orchestrated outcry that would occur following the March 3rd tenth IARC monograph expert meeting. The following reactive communication efforts would be deployed if glyphosate receives an unfavorable 2B classification. A series of positive communication efforts already will have

occurred leading up to the meeting. The proposed approach suggests industry associations and credible third parties lead and Monsanto plays a secondary role to defend its Roundup brand.

And the first point, we disagree with the decision made by IARC.

This is before they've even made a decision and they've already decided they disagree.

They have another plan. A little more closer to the IARC meeting, still predates it, so this is February 24th, 2015. It's IARC outreach. You see right here, dated February 23rd, 2015.

Number one. Protect the reputation and freedom to operate of Roundup by communicating the safety of glyphosate. Provide cover for regulatory agencies to continue making reregistration decisions based on science.

So they were planning to deal with IARC in step number one after the IARC decision, orchestrate outcry.

You're going to hear from some of the scientists who participated in IARC. And here's some of the people you might hear from.

Dr. Aaron Blair, he was the actual guy who oversaw the entire monograph, he was the former director

of the National Cancer Institute.

Dr. Jameson, he worked at one of the most important government agencies that look at cancer risks, he was there. He's actually going to testify on Thursday next week.

Matthew Martin from the EPA.

Lauren Zeise, from the California EPA, a scientist there who was participating in IARC.

Christopher Portier, our expert, the guy we're talking about, they actually invited him to come participate as a specialist. He wasn't allowed to vote because he had a potential conflict of interest because he had worked with the Environmental Defense Fund. That created a conflict -- oh, that's the thing, you can't participate in IARC or vote unless you have no conflicts of interest. They screen you heavily for it.

So Christopher Portier, because he had worked for the Environmental Defense Fund for a little bit, he didn't qualify as a voting member. But he just knew so much, they brought him in anyway. He was an invited specialist.

There was representatives from various international agencies.

EPA sent their rep, Jesudoss Rowland, even though there was already a scientist from the EPA

participating in the working group.

And Monsanto sends people. Right? They send observers. And they're allowed to participate in the process. This is all public. Right? This is a truly transparent scientific debate.

After they voted, you're going to learn that Monsanto orchestrated an outcry. They attacked these people. They attacked Dr. Blair. They attacked Dr. Portier. They attacked Dr. Jameson. They came after them individually.

Here they are. This is the group that voted.

And they did exactly what we're going to do here. They went through the three pillars of science. They looked at the animal studies. And they gave it a sufficient categorization, which is the highest one they can give. They looked at the cell studies. They gave it a strong classification, which is the highest one you can give. And for epidemiology, they gave it a limited category, which is the second highest category.

And limited can be misleading because it sounds like it's not very much, but if you actually look at the definition, a positive association has been observed between exposure to the agent and cancer for which a causal interpretation is considered by the working group to be credible, but chance, bias, or

confounding could not be ruled out with reasonable confidence.

So highest, highest, second highest. They conclude unanimously, every single person agreed, that it was a class 2 carcinogen, the second highest category you can give one by IARC. This is before a lot of the evidence that's come out recently.

After that orchestrated outcry, Monsanto -- you're going to see all the evidence about this -- they attack IARC. They say it's uncredible. They -- IARC had never seen this before, nor had the scientists that participated.

Over 100 scientists -- about 100 scientists from around the world got together and they wrote a letter saying the most appropriate and scientifically based evaluation of the cancers reported in humans and laboratory animals as well as supported mechanistic data is that glyphosate is a probable human carcinogen. The basis of this conclusion and the absence of the evidence to the contrary, it is reasonable to conclude that glyphosate formulation should also be considered likely human carcinogens.

You're going to hear experts from their side experts, you going to hear experts from our side, that 100 different scientists would all agree on one thing is

pretty remarkable.

But it doesn't stop there. Because the influence and prestige of IARC extends well beyond just those 100 scientists that signed that letter. And I'll explain actually in a second how we get there.

Before that, I want to talk about the EPA because I'm fairly confident in a minute defense counsel is going to come up here and they're going to talk about it.

Because the EPA hasn't issued its final ruling yet. They're still considering it. It's been pending for a couple years. But the most recent iteration of their opinion is that it doesn't cause cancer. That's where the EPA, we think, stands right now. Although they could change after -- well, after this trial. Who knows?

But a couple things to know about the EPA. First, they don't do any testing. They're not out there in the field measuring, studying blood, and that stuff. They rely on the data given to them by -- well, by Monsanto.

They do not evaluate Roundup. They just look at glyphosate. So they don't require any tests on stuff that we actually use. They just look at the chemical in isolation.

And they do these computer modeling studies on the surfactants. You'll hear about that. But whenever -- by the way, the evidence will show that there are not 800 studies on Roundup. If anyone -- if that comes out of anyone's mouth, that's very misleading. There are 800 studies looking at eye irritation and skin irritation. There's about 25 studies on cancer, and I've actually shown them all. So if anyone shows that.

All right. Well, let me just -- they don't look at Roundup, they look at glyphosate. You're going to learn about deep connections between Monsanto employees and the very people within the EPA making these decisions. You're going to see text messages. You're going to see conversations that -- well, I won't argue it. You're going to see it.

They convened a Scientific Advisory Panel to assess the EPA's conclusions. And the Scientific Advisory Panel was all over the board about what they thought of whether or not it caused cancer or not. But you know what they all unanimously agreed, and the evidence will show this, is that the EPA wasn't following its own guidelines, that based on its own guidelines they weren't doing their job.

Remember I said I'd come back to Zhang, the

Berkeley toxicologist. Well, she was on the advisory panel with two other scientists, and they were so outraged by what the EPA was doing, they went and did their own study and published it last month.

And their conclusion, and you'll see this, is that there's compelling evidence that Roundup causes non-Hodgkin's lymphoma. That's the genesis of that study, the Zhang meta-analysis.

And frankly, ladies and gentlemen, the EPA doesn't have the best track record. How some substances have been deemed safe that we find out cause cancer, that the EPA was wrong.

That said, the EPA isn't the only regulator in the United States. We have a panoply of different organizations that assess risk.

First, OSHA, that's the Occupational Safety Health Administration. They're the people who measure what we do in our workplace. They follow IARC. In fact, if you use Roundup in an occupational setting, they have to warn you that IARC has determined it's a probable carcinogen. Because OSHA requires it. But if you're a consumer buying it in Home Depot, no warning whatsoever. So OSHA follows IARC.

The California EPA follows IARC. In fact, the California EPA -- you're going to hear testimony about

this -- sat down and said: What institution do we want to rely on to determine what we believe causes cancer? It's IARC. You know who it's not? The U.S. EPA. They didn't pick them.

ATSDR. This is a group within the CDC, the Center for Disease Control. And they do a lot of cleanup of like toxic waste dumps. But they have to access chemicals and exposures to see which one they're going to clean up.

They've been actively working on a glyphosate review for like three years, and you're going to hear evidence that actually they were about to release it back in 2015 and Monsanto used its connections within the EPA to get the ATSDR to stop it. And that was three and a half years ago.

I believe the quote -- and you'll see this e-mail -- the EPA official says, quote, if I can kill this, I should get a medal. Yeah. So, anyway, that's ATSDR. And you'll hear testimony and evidence that Monsanto and people have considered it IARC-like. By the way, you know who used to run it? Dr. Portier.

That gets us to the EPA. Now the EPA itself is a bit all over the place. Right? They have this office of research and development which looks at things. They also have the office of pesticide program.

And they're the division that has responsibility over glyphosate, Roundup. Over glyphosate.

Now the office of research and development saw the EPA's report and said, no, no, no, no, no, no, we agree with IARC. And then the office of environmental -- the office of pesticide program convened a scientific advisory panel. They agreed EPA wasn't following its guidelines.

This is sort of where we stand in the regulators within the United States. Most of them follow IARC because it's so prestigious.

The Office of Pesticide Programs, they're an outlier. And even, you know, they haven't issued their final report. They've been submitting comments and hearing discussions for over a year now. So who knows? We'll see how that comes out.

The question that we started off with this road stop was: Does Roundup cause NHL? And we believe the evidence shows --

Oh, there's the California EPA, sorry. Yes.

All right. Now we get to: Did it cause Mr. and Mrs. Pilliod's NHL? And we talked about cause. We talked about was it a substantial factor.

These are the Pilliods. I've got a wedding photo of them from 1970. They've been married for

almost 50 years. And here's another photo of them more recently. They've lived in the Livermore area for this whole time. I actually went to their house just two nights ago, and I saw the house that they've owned for 40 years.

Mr. Pilliod took me out back, and we saw all the areas around that house where he would spray. And, you know, Mr. Pilliod and Mrs. Pilliod actually took a lot of pride in their property, a lot of pride in keeping a good property.

Anyway, they've been married. They have two kids who then have had kids who then have had kids. In fact, we're excepting any day now their sixth great-grandchild. It's pretty cool.

Here's a bit of fun for a New Year's party. Halloween.

Anyway, this is their family, not all of them but some family pictures of them.

This is Mrs. Pilliod when she was young. And, you know, you can see as she has gotten older.

And here's Mr. Pilliod. I found a picture of his shirt off so he looked nice and buff.

And you're going to learn that Mr. and Mrs. Pilliod really lived a really active lifestyle. I mean, as you can see, Mr. Pilliod loves to sail, one of

his favorite things to do. He owned a boat. He's the only person I know who owns a boat who's happy about it. Okay.

(Laughter.)

MR. WISNER: You're going to hear how they owned a couple of properties, specifically properties in Spring Valley -- Valley Springs. Valley Springs. They had three different properties. I'm going to go through a little bit of what their actual exposures were. And you're going to see that they took care of those properties, that they sprayed a lot of Roundup.

Okay. And here's actually the product -- one of the products that they used. They used the concentrate and they used the ready-to-use one. The concentrate you just have to mix before you use it.

And here's the label. This is the actual label for Roundup. And it's hard for everyone to see, but I'll just read you the precautionary statement.

Caution. Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling. People and pets may enter treated areas after spraying has dried.

That's it. There was no statement about wearing a mask. And that was a question that came up during jury selection. And you're going to see this

from our experts. There's nothing about wearing protective gear. And in fact, they'll tell you that they relied on this label, that they read it, that they believed you didn't have to wear protective gear and if they'd known that, they would have worn it.

They're going to say that they saw commercials where people were wearing T-shirts and shorts, and they believed that it was fine.

But most importantly, there's no warning about cancer here. You know, when you buy a product that we know causes cancer, big warning right on the front.

Anyone who smokes, we know smoking causes cancer. There's a warning right there on the label. If you decide to smoke, that's fine, that's your choice that you make. But it's your choice, right? You get to decide for yourself.

And they never got a chance to make a choice. And they'll tell you if they had known about any of these things, IBT, if they'd known that it could cause cancer, they just wouldn't have used it. It wasn't that important to them. It's a weed killer for crying out loud.

Importantly, Monsanto has admitted admission number 32, that it has never warned any consumers that glyphosate-containing products can cause non-Hodgkin's

lymphoma and they admit they have never warned Mr. and Mrs. Pilliod.

So let's talk about their exposure. This is an important part of understanding risk. Right? Dose makes the poison. That's the axiom of toxicology, that anything in excess will kill you. Right? If I have too much water, I could die. Right? If I eat too much salt, I could die. But salt and water don't cause cancer.

So the question is: What were their exposures? You're going to learn that they started spraying in 1982 at their Livermore home. That went on for quite a period of time, about 20 years.

And then they started spraying at another house, a property they bought in Spring Valley, California. And they sprayed there for about two years. They sold the place, bought a new place, and they began spraying there.

And just to give you some context, one of these properties -- I forget which one -- was it this one? Don't tell me. I forget which one. And you'll learn from them. I forgot which one. But one of them were supposed to be their dream property, a three-acre property.

So it was a three-acre property. And the

first acre was where they wanted to build a house. And so they sprayed a lot to clear out the brush and make sure it was good to build on. And then they found out there was a lot of noisy dogs nearby, and they decided maybe we don't want to build our dream house there. But anyway they sprayed a lot.

So for this next property they sprayed for about four years.

And then they actually bought a third property. I believe this is the one their daughter moved into. And they were spraying all three properties from 2008 to 2009. So this is a lot of exposure. This is like, you know, every weekend they're out spraying to keep their properties in order. Because they took a lot of pride in their properties, making sure that they were well-maintained.

And then they finally sold off that property. And they sprayed for another year at these two properties.

2011, after 28 years of spraying, in June Mr. Pilliod was diagnosed with non-Hodgkin's lymphoma. He had no idea Roundup had anything to do with it. And so he actually kept spraying. He didn't think it had anything to do with his cancer.

Then in April of 2015, after 32 years of

spraying Roundup -- by the way, they're going to testify that they would spray together. You know, they'd be outside, one person would be spraying it, wind would come and get misted on. They didn't care. They thought it was safe.

After 32 years of spraying Roundup, Alberta Pilliod was diagnosed with NHL. This one was a diffuse large B-cell lymphoma that actually happened in her brain. You might have seen her having a difficult time standing up. She can't -- her balance is all messed up and it will be for the rest of her life because of brain damage. I'll talk a little bit more about that in a second. But because of her sickness and because of her balance issues, she actually has not been spraying since April of 2015.

But Mr. Pilliod continued to spray. And he actually kept spraying until February or January, I think this date is a bit fuzzy, we don't know the exact date, but January or February of 2017. And that's because he finally learned from a commercial from lawyers that it could cause cancer. Not from Monsanto. From us. And so he stopped spraying.

He put all his Roundup into a big bin and took it down to a toxic waste disposal to get rid of it, get it off his property.

The evidence will show that during the entire period of 35 years that they were spraying, they sprayed over 1,500 gallons. Mr. Pilliod sprayed most of it. But Mrs. Pilliod did spray her share, even a 25 percent share of 1,500 gallons is a lot of Roundup.

Let's talk about Mr. Pilliod's cancer first. He was diagnosed with a form of DLBCL. And his type of cancer was systemic so it wasn't located in a specific organ like Mrs. Pilliod. It was throughout his whole body.

And actually this is a PET scan of his body. And as you can see here, all these black spots, one or two of them is, I think, his bladder. Because what they do is they give you a special dye that comes out through your bladder. And it goes through your lymphatic system and lights up all the places where there's tumors. And you can see it was through his entire body. And this is an incredibly aggressive form of non-Hodgkin's lymphoma, stage 4, taken into chemo today if possible.

And the PET scan's helpful. I actually put this together yesterday. This is a sort of visual representation of the tumors throughout his body. The red Play Dough illustrates where all those tumors are.

You're going to learn that Mr. Pilliod's tumor in his hip was so painful, that's actually why they

found it. He was in excruciating pain. He went to the emergency room. They gave him narcotic drug medication, and it didn't fix anything. You're going to hear the pain caused by cancer can't be sometimes fixed with drugs.

And he went and saw his doctor, and they gave him chemo. And after an aggressive regimen of chemo, they got it. He's alive.

But with all things, there's a tradeoff. You're going to learn that Mr. Pilliod, before he ever got cancer, he had been suffering from a series of seizures, issues that plagued him his whole life since his teens. But after he exposed his body to that extreme amount of chemotherapy, it's just been downhill since.

He has good days, he has bad days. And I pray when he gets to testify on the day we have scheduled for him, it's a good day because you can hear from him. But if it's a bad day, you won't be able to hear much from him because he loses words. He can't finish sentences.

And the hardest part, and you'll see this for yourself, the hardest part is watching him know that he can't finish his sentences. He can't remember dates. He can't remember facts as well as he thought he could.

And, you know, the one thing you're going to

hear from him is that he can't sail anymore. He's physically able. I mean, he's in his 70s, and this guy is pretty spry. But he can't go on the water because he's afraid he'll never find his way back.

This is a guy, you'll learn, sailed by himself to Maui and back. I mean, that's an unbelievable achievement. And now he can't even touch his boat.

So that's Mr. Pilliod's cancer.

And one of the things you're going to have to decide is how do we determine that Roundup caused it. And that's a process called a differential diagnosis or differential etiology. It's something that most doctors don't have the luxury of doing with their patients. They don't have time to sit down and think of all the possible risk factors that could have caused it.

But we have two doctors, Dr. Nabhan and Dr. Weisenburger, who have done a deferential. I don't know if they're both going to testify about this. We don't want to waste your time. But one of them is going to talk about Mr. Pilliod's cancer.

And they both conducted the same differential, and they looked at all the potential things that we know are associated or potential things that cause lymphoma. We know that older people do get lymphoma. So do males, so do white people, and so do fat or obese people.

Okay. We know that those things are related to lymphoma.

Anyway, we know that they're related to lymphoma, but they don't actually cause it. Our experts will explain to you that they're just proxies to other stuff. Right? So as you get older, you accumulate more environmental exposures. It's not that you're aging itself that causes lymphoma. It's the exposures that you have.

Family history is highly associated with lymphoma. If your father or mother did have lymphoma, that's a risk factor that you'll get lymphoma. It's kind of like breast cancer. You'll hear that none of them in their family history have any lymphoma. So it's not an issue there.

If you're taking immunosuppressant drugs, if you're getting chemotherapy. Right? That suppress your immune system. That can actually lead to lymphoma. If you have an autoimmune disease like lupus or rheumatoid arthritis. Pesticide use is a well-known cause of lymphoma.

Other chemical exposures, certain types of bacterial infections, and very specific viruses are also associated with specific types of lymphoma, like, for example, HIV, it's an immune disease so it messes your

immune system up, and it can lead to different types of lymphoma. But it's only specific viruses, it's not all viruses. It's ones that attack a specific aspect of the immune system.

Well, we went through it and we looked at each one of those things and they just don't apply to Mr. Pilliod. Our experts will explain that the most likely cause of his cancer is Roundup. Because that's what he had significant exposure to. The rest of the explanations, they don't make sense for him.

Now, Monsanto is going to bring in their experts and they're going to come up with some more ideas of things that could have caused it. That's their job. Right? They have to find other explanations as to why this happened. It can't be their product; right?

And they're going to talk about that he had cancer before. And he did. He's had a lot of skin cancer. He spent a lot of time out in the sun, and incidentally spraying Roundup and sailing. But you're going to learn that skin cancer has nothing to do with lymphoma. It's a completely different type of cancer.

Skin cancer is cancer caused by irritation to the skin. Chemical-induced cancer like lymphoma in the blood system are totally different, they're not related. And our experts will explain that his prior melanomas

that were all surgically removed have nothing to do with his lymphoma.

He has herpes. There's no relationship between that virus infection -- there's no real evidence that it's a serious infection anyway, but, you know, we all have herpes in the mouth and stuff. There's no evidence that that's related to non-Hodgkin's lymphoma. He did smoke for a few years. Smoking is not related to non-Hodgkin's lymphoma, has nothing to do with it. They've studied and never seen it.

The last one is a sort of insidious one. They're going to talk about how Mr. Pilliod had this viral meningitis infection when he was a teenager that led to his seizure disorder. And they're going to say, well, that plus all his skin cancer, that suggests he has a compromised immune system. Ladies and gentlemen, our experts will explain there's absolutely no evidence of that. It's really just a pie-in-the-sky theory.

But even more important, I think the evidence will make this clear that if in fact he did have a compromised immune system, that he of all people deserved to know that the stuff that he was using could cause cancer.

These aren't going to be possible risk factors. The evidence will show that Roundup was a

substantial factor contributing to his cancer.

Now let's talk about Mrs. Pilliod.

Mrs. Pilliod did not have systemic lymphoma. Her lymphoma appeared in a single organ, specifically her brain. And it was a type of a DLBCL, the same type Mr. Pilliod had, but it occurred in the brain. And because it occurs in the brain, they give it another group of letters. They call it PCNSL, which is primary central nervous system lymphoma, but it's the same cancer subtype, it's just in the brain.

And it was very aggressive. And the thing that's interesting about treating lymphoma in the brain is there is a special protection to the brain. Okay? It's called the blood-brain barrier. Many drugs do not penetrate it. And so treating a disease in the brain is very difficult. I mean, getting a biopsy of the tumor is difficult. How do you get there? You have to literally drill into the skull and get it. And they had to do that for Mrs. Pilliod.

The other problem with the brain is that there's not a lot of space in here. Okay. It's confined area where the brain is pushed up against the skull. Now, the skull is a very strong bone. It doesn't have a lot of room. This is why concussions cause problems, cause swelling. And when it swells up,

it creates pressure against the surface of the skull and that can create brain damage. That's what happens to football players. And it happens to people who get tumors in their brain.

You're going to learn that Mrs. Pilliod had a tumor in her brain. It was a fairly substantial tumor. And as you can see right here in this image, this white spot right here is the tumor.

What you're going to learn is that it caused significant brain damage in the internal part of her brain that affects her motor skills, affects her ability to balance and walk, that she's essentially had to walk with a cane. I mean, she refuses to let it stop her. She falls over like every week. She doesn't care. She keeps going because she wants to live her life. It's kind of amazing.

But this tumor is in her brain and it's tricky to treat and so because the chemotherapy drugs that they give don't normally pass the blood-brain barrier. So what they had to do is they took her to a specialist at the University of California San Francisco, UCSF, and they experimented essentially with treatments at very high doses of chemo. Because when you pump it up high enough, it does get through the blood-brain barrier.

And believe it or not, the first time worked.

They got the tumor. It was unbelievable. You're going to hear testimony from her own doctor, actually hear testimony from a doctor that treated both of the Pilliods, who said when she met Mrs. Pilliod, she was convinced she would not live. It worked.

A year later it came back with a vengeance. That's the problem with lymphoma, or all cancers. It's hard to get away from it. Mutations are there.

They treated her again. High doses of chemotherapy. And it reduced the tumor, and we think right now she's in remission. It's been a couple years. We don't think it's back. But, I mean, her next scan is probably in a month or two. So we'll find out.

But the point is she's doing better, but because of this process she's sustained significant brain damage.

Again, we had a differential diagnosis done on her to see if in fact Roundup was a substantial factor in causing her lymphoma. And, again, none of them made sense. The only thing that made sense was Roundup.

Now, Monsanto has identified some more risk factors that they think are relevant, and I don't know if they're actually going to raise any of these at trial. So maybe they've withdrawn them, I don't know. But it came out in discovery so I'm going to bring them

up now.

You might hear evidence about her having a prior history of cancer. She had a bladder cancer. But, again, that bladder cancer was an irritation, it was removed with surgery, and it's been gone and she's been fine. So it has nothing whatsoever to do with lymphoma.

And to be clear, there is no scientific link between other cancers and lymphoma. The only scientific link is lymphoma and lymphoma.

She has reference in her medical records in two little spots, something called Hashimoto's disease, which is a disease that affects the thyroid. The evidence is really unclear if she even has this disease or not. So I don't know if there's going to be a clear-cut answer to this.

More importantly, Hashimoto's disease is associated with thyroid lymphoma but not anything else. She didn't get thyroid lymphoma. So it's really a red herring. We don't even know if she had it, and we also don't know if it actually had anything to do with the lymphoma in her brain.

She smoked for a bit. But, again, smoking has nothing to do with lymphoma.

And apparently -- I don't know if they're

going to do this, but they might challenge the fact that she was a school teacher for 40 years. She taught at an alternative high school outside of Livermore where high school students who didn't finish in the regular curriculum come back as adults. She's actually the principal there. It's pretty cool. A pretty cool job.

Anyway none of those are associated with lymphoma. It's preposterous.

The evidence will show that the most likely substantial contributing factor was Roundup.

And you'll learn from the Judge and she'll explain to you even if something else was related to lymphoma, so long as Roundup was a contributing factor, that's all we have to prove here. We don't have to prove it's the only cause. We just have to prove that it is a cause.

You're going to hear testimony from Dr. Raj. She is a physician, oncologist, that treated both the Pilliods. I took her deposition. She's a lovely physician. And she's going to testify about the treatment. And she's going to talk to you about how she doesn't see husband and wives. Husbands and wives are not genetically related. Right? They don't have the same genetic potential risk factors. They're independent people.

What is common to them? The Roundup. Dr. Raj will say: Listen, they asked me about it, and I said it probably was environmental exposures common to both of you.

You'll also hear from Dr. Rubenstein from UCSF, who was Mrs. Pilliod's physician who saved her life, to be honest. And he'll tell you that, to stay away from pesticides immediately, that they're dangerous and they cause lymphoma. And it's one of the first thing he talks about in his deposition. So you'll hear about it from him as well.

So the question is: Was it a substantial factor in causing their NHL? And I think the evidence will show, yes, it was.

The last two stops on our roadmap here will be relatively quick. We're almost done. I'm going to cover them together.

One stop is: What are the Pilliods damages? And the next one is: Should Monsanto be punished?

This is stuff that you're going to see in evidence. So I'm not going to really go over it. Because I think it's best seen for yourself.

But as you start thinking about what, if anything, you want to award the Pilliods for their cancers, you're going to have to consider economic

damages. That's how much money they lost out of pocket. Those are usually pretty easy. We might even agree to it at the end of the day, what that number is.

But then there's the noneconomic damages, the stuff that's more complicated: Physical pain, mental suffering, loss of enjoyment of life, disfigurement, physical impairment, grief, anxiety, humiliation, emotional distress. These things are difficult to quantify. How do you quantify never being able to do the things that you used to. Never being able to sail because you're afraid you'll be lost? How do you quantify not being able to stand up without help from somebody for the rest of your life?

How do you quantify these two amazing individuals, the twilight years of their life, living with the fallout of cancer and knowing any day it could come back? How do you quantify? I don't know.

At the end of this trial, I will give you a number. I'm not going to give it to you today, but I will come back to you and tell you what I think the evidence supports.

Then there's the question of punitive damages. Punitive damages are not as much about Mr. and Mrs. Pilliod, although they are related. It's about Monsanto. How do you punish a massive corporation with

that kind of money? How do you deter future wrongful conduct? What do you have to do to make them change their mind? And that -- the Judge will explain to you we have to prove punitive damages at a higher level of proof, proof at more than 51 percent. It's clear and convincing evidence.

But as you see, the evidence will come in. You have the Monsanto choices that they've made for the last 40 years. This is the tip of a very large iceberg of evidence that you're going to see in this trial. You're going to see document after document, hear testimony from different witnesses, and when you look at it all, you're going to have to make a decision of should we punish Monsanto, and if -- what does that number look like.

I'm not going to tell you a number now. I will tell you a number at the end of this trial. But it's something that you should have in the back of your mind as you listen to the evidence when it comes in.

So we're at the end of the road here. Two nights ago I had dinner with the Pilliods out in Livermore, and I asked them: I'm going to be speaking to the jury. This is the last chance I have to speak to you until closing arguments. After this it's going to be the witnesses and the Judge. And I asked them: What

should I say to them? This is my moment. What should I say to them?

And they just asked me to thank you. You guys have taken a large amount of your time away from your lives to listen to their story, to sit in judgment on both them and Monsanto.

You're going to hear a lot of evidence, hear from a lot of experts. You're going to have to deal with some complicated and different issues.

I know some of you are happier to be here, some of you have weddings, some of you have issues in lives, I understand. The fact that you're here today, part of this historic case, means everything to them. So thank you for your time.

At the end of this case, we'll be coming back to you with the evidence that come into this trial and asking for a substantial judgment against this company.

Thank you.

THE COURT: Thank you, Mr. Wisner.

We're going to take a break for lunch. We'll come back in an hour and 15 minutes. So 20 of 2:00, we'll be ready to start with closing argument on behalf of Monsanto -- opening. I'm sorry. I said closing argument. I meant opening statement. I apologize.

(Recess taken at 12:24 p.m.)

(Proceedings heard in chambers outside the presence of the jury at 1:54 p.m.:)

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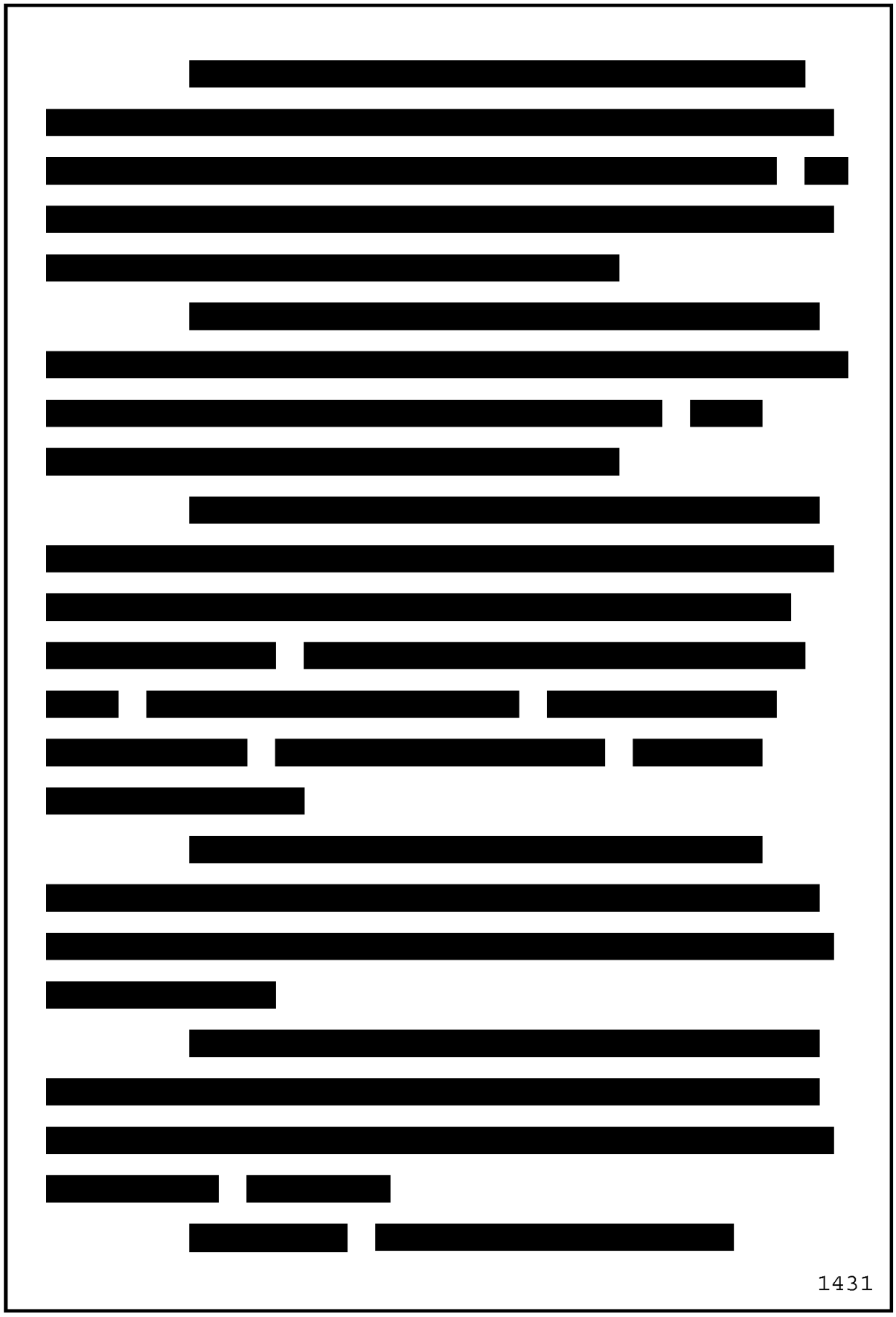
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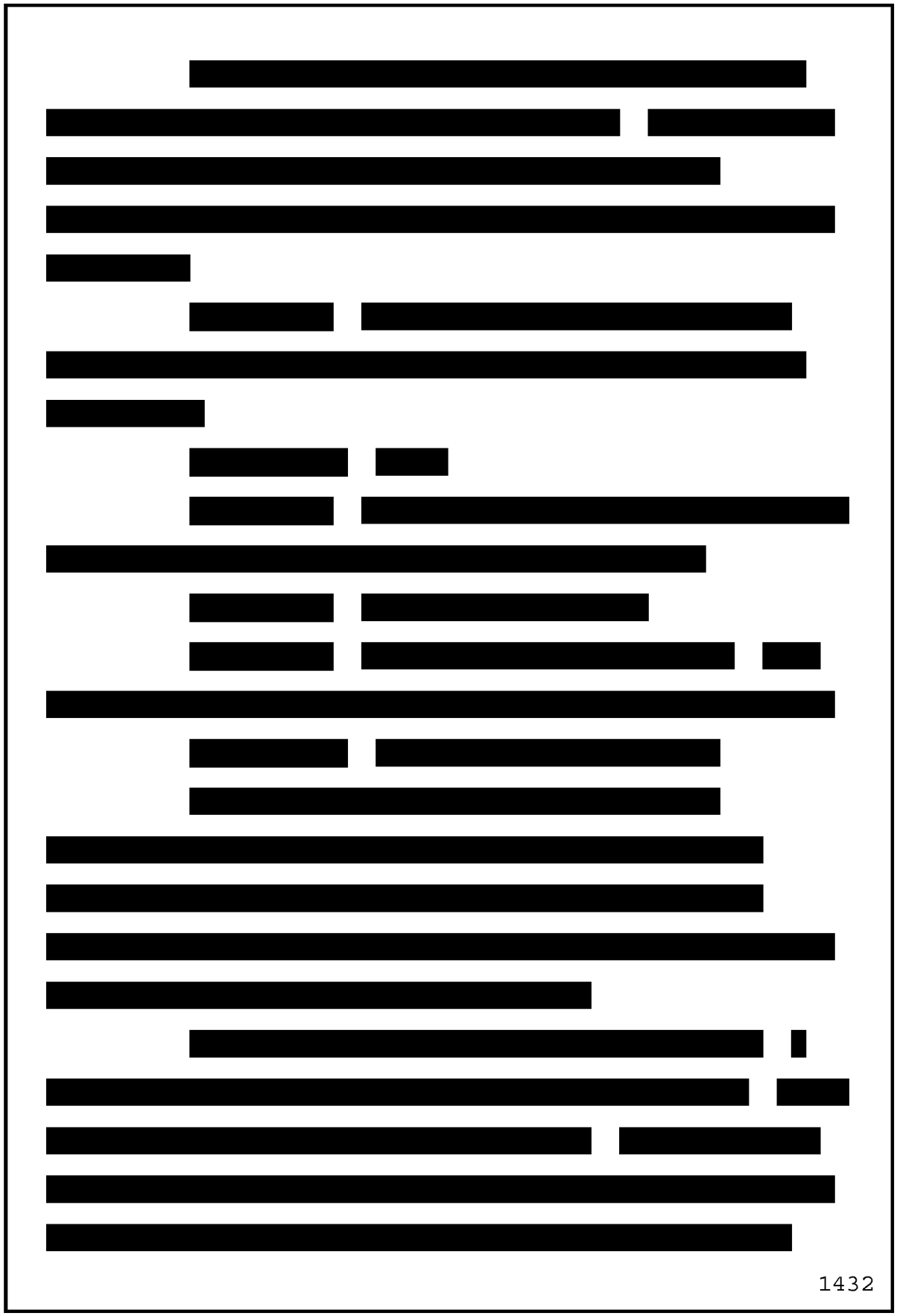
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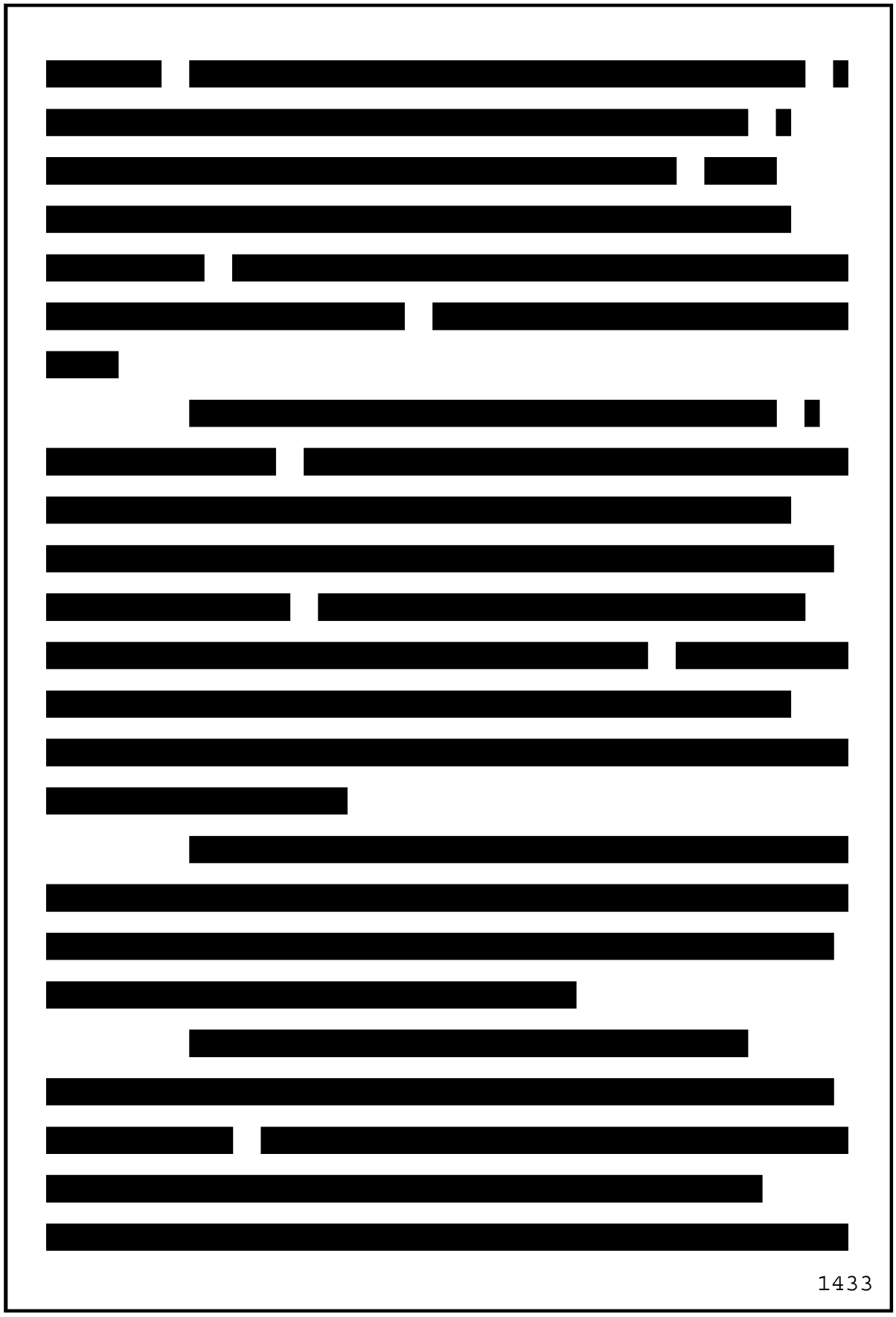
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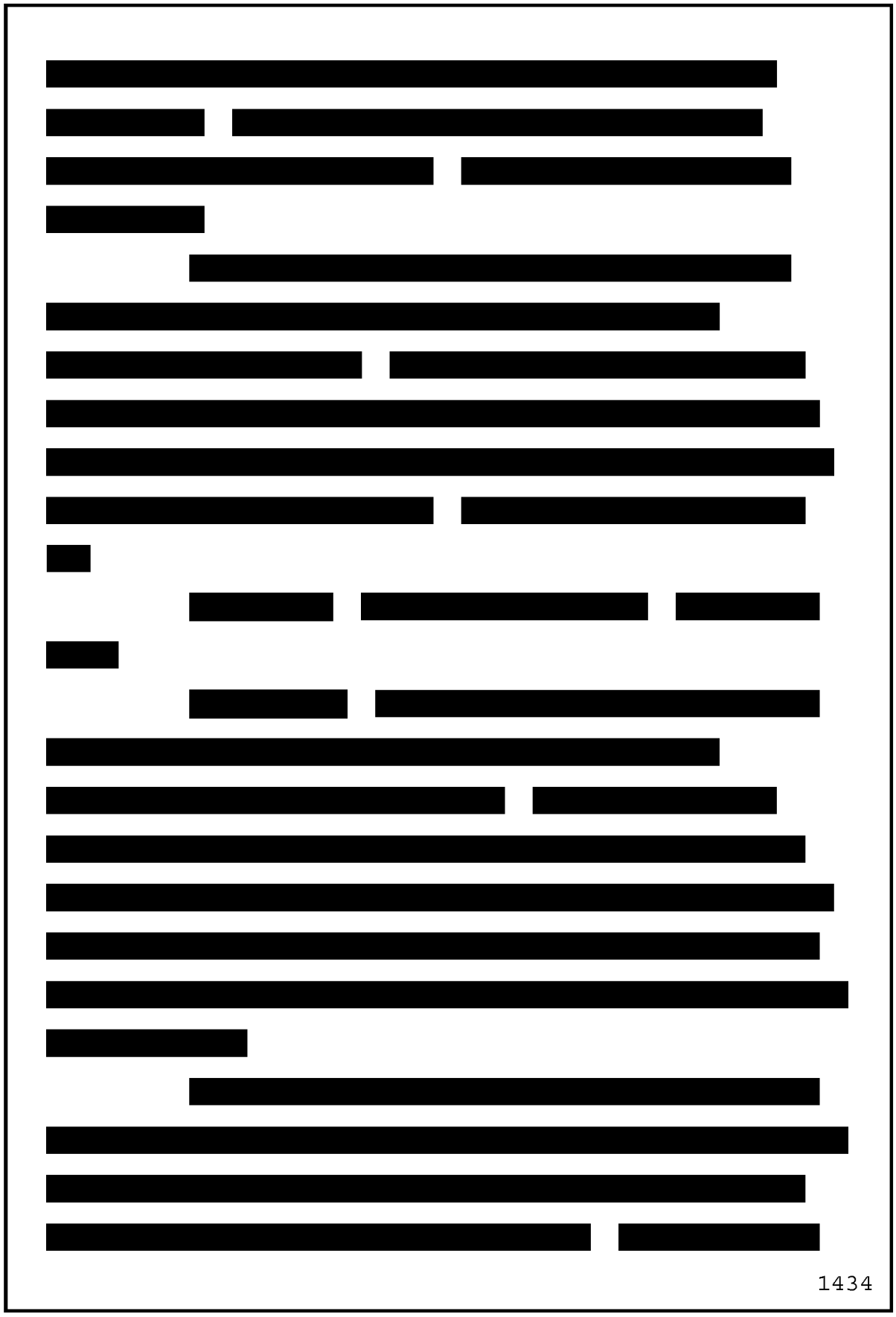
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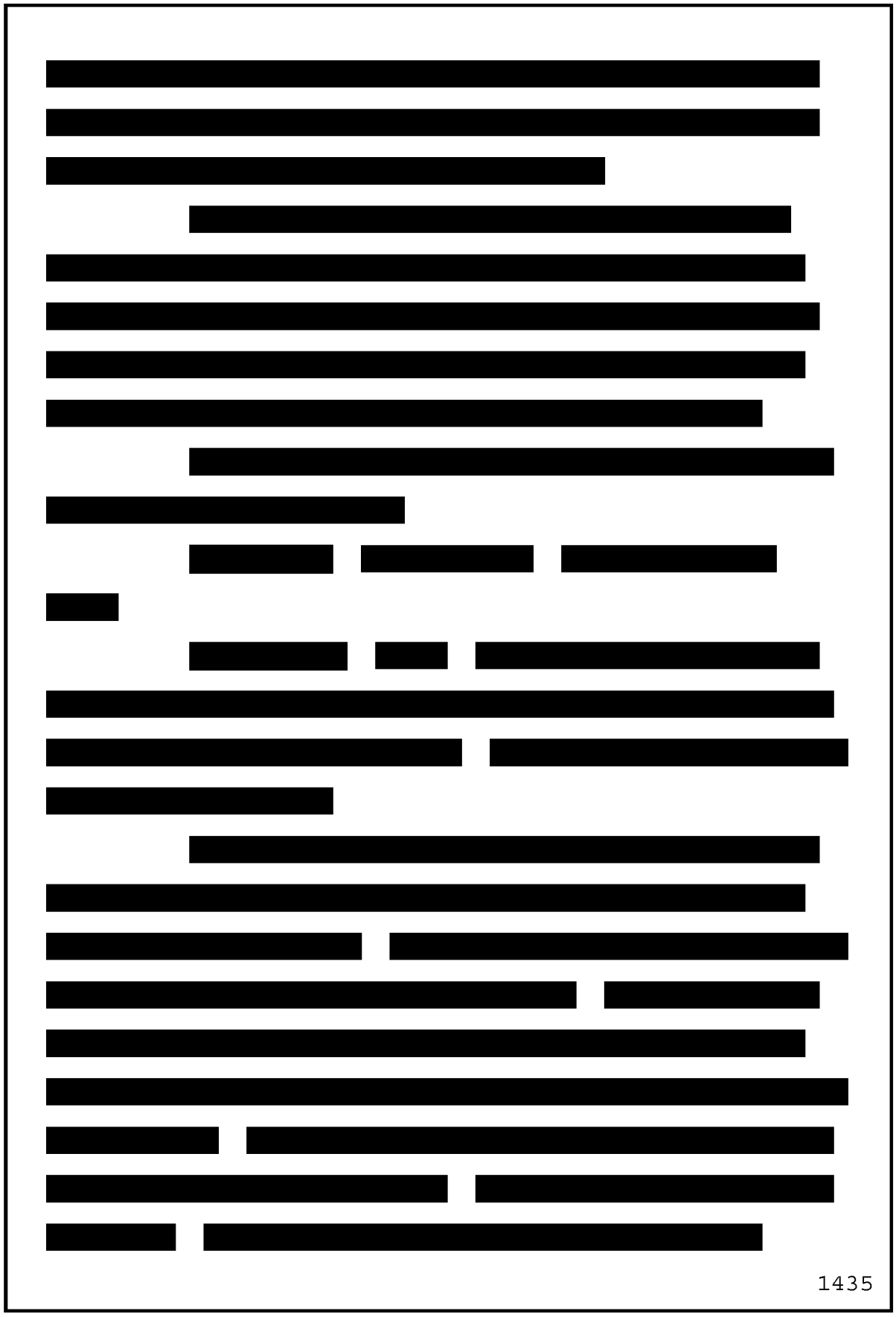
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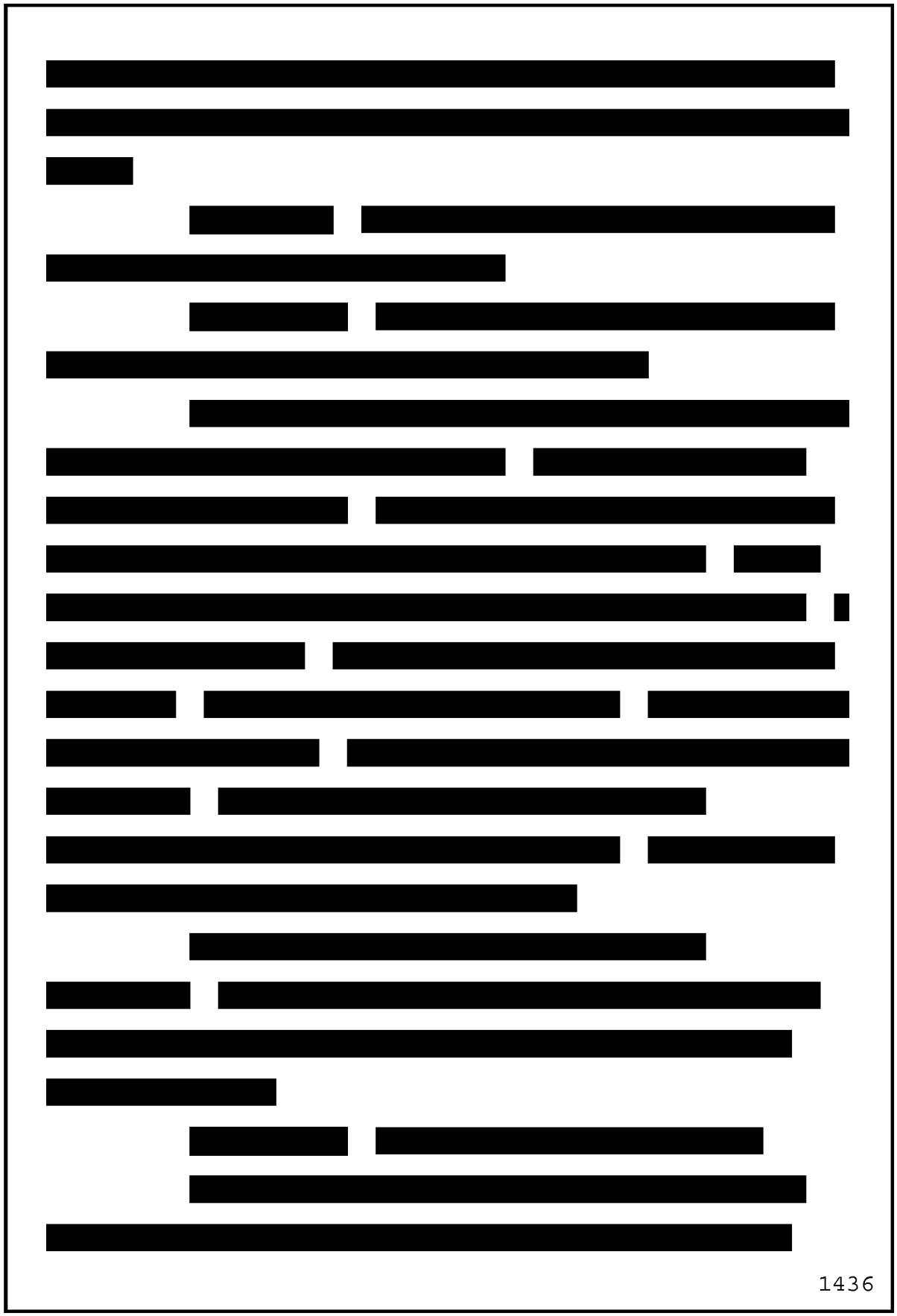
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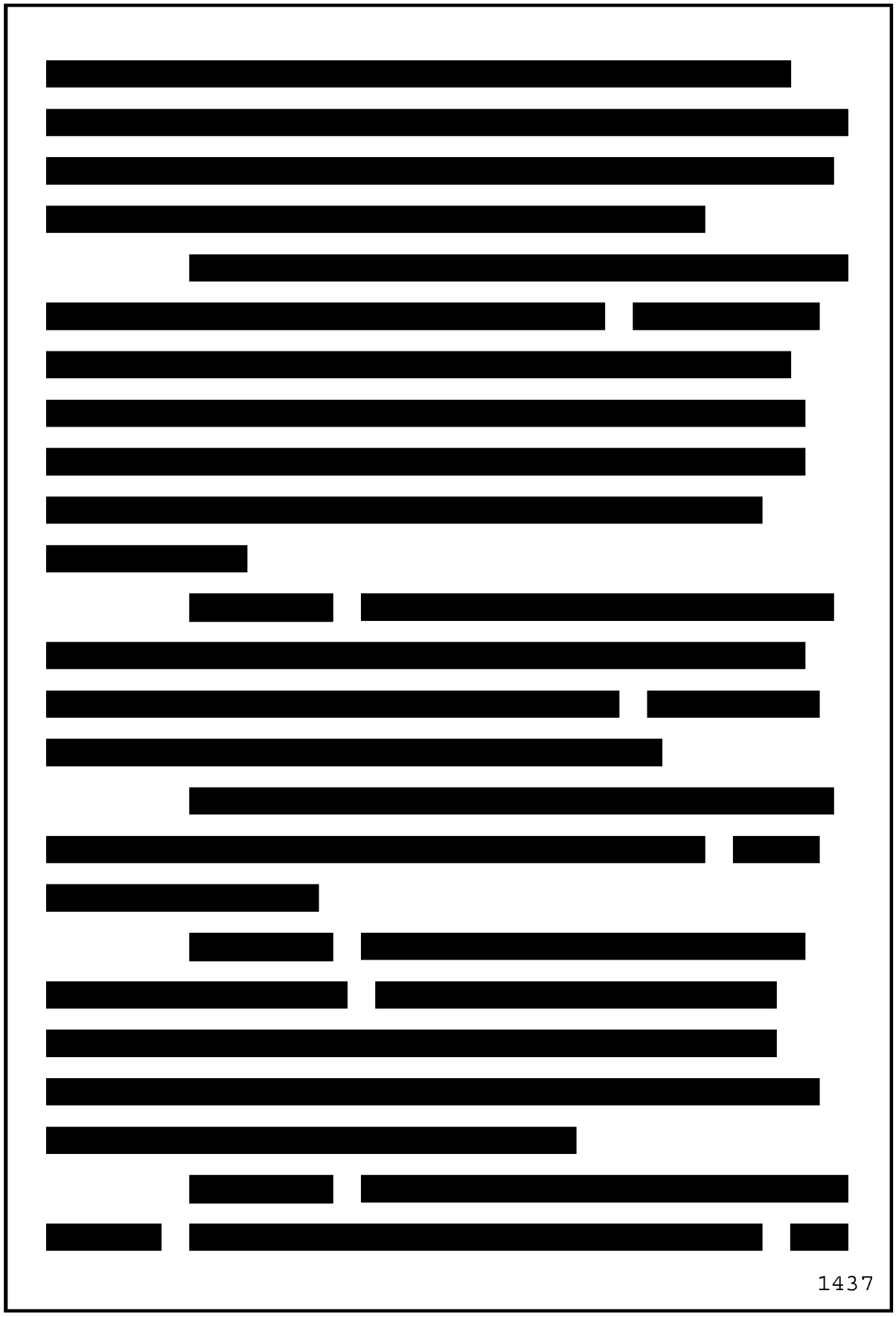
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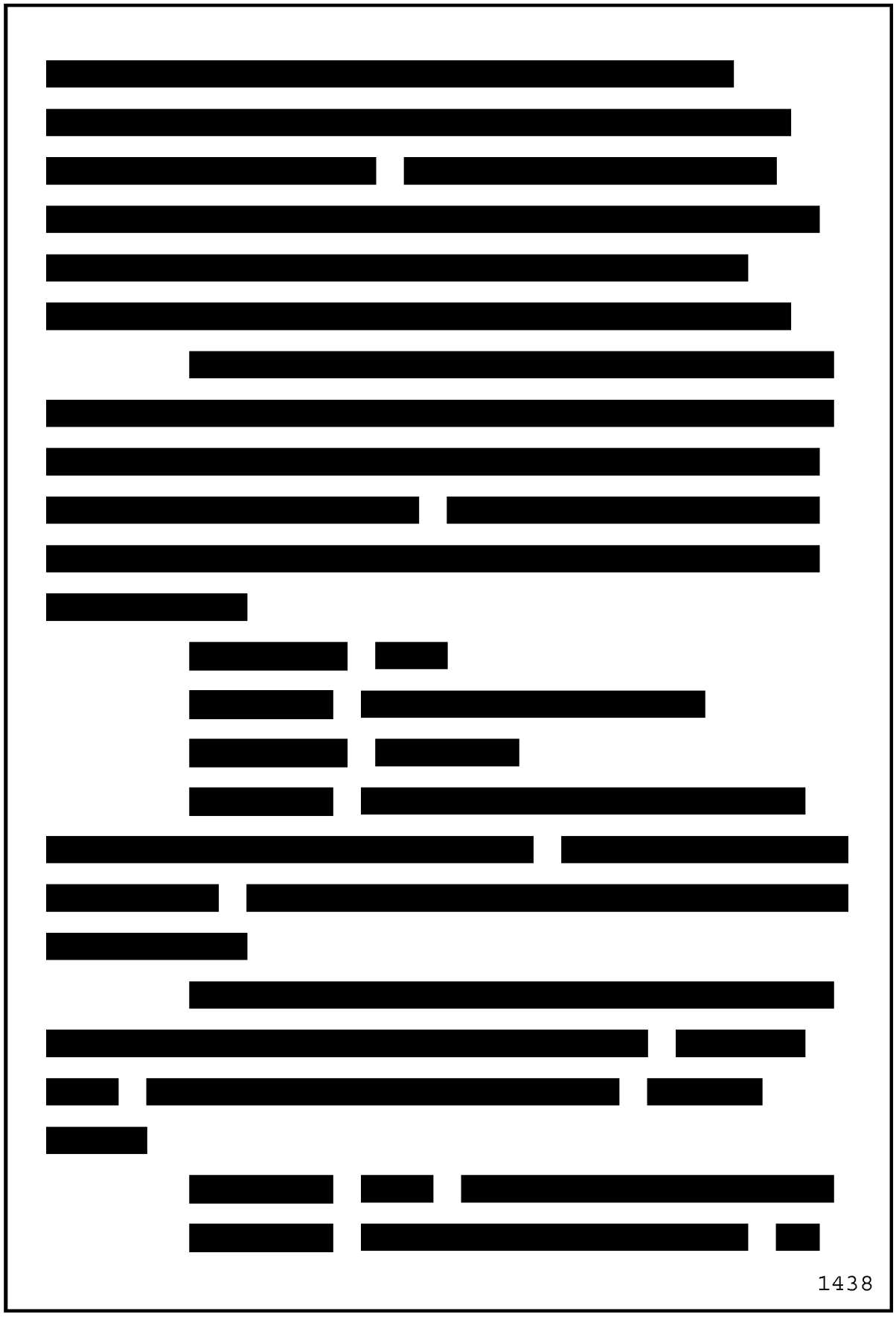
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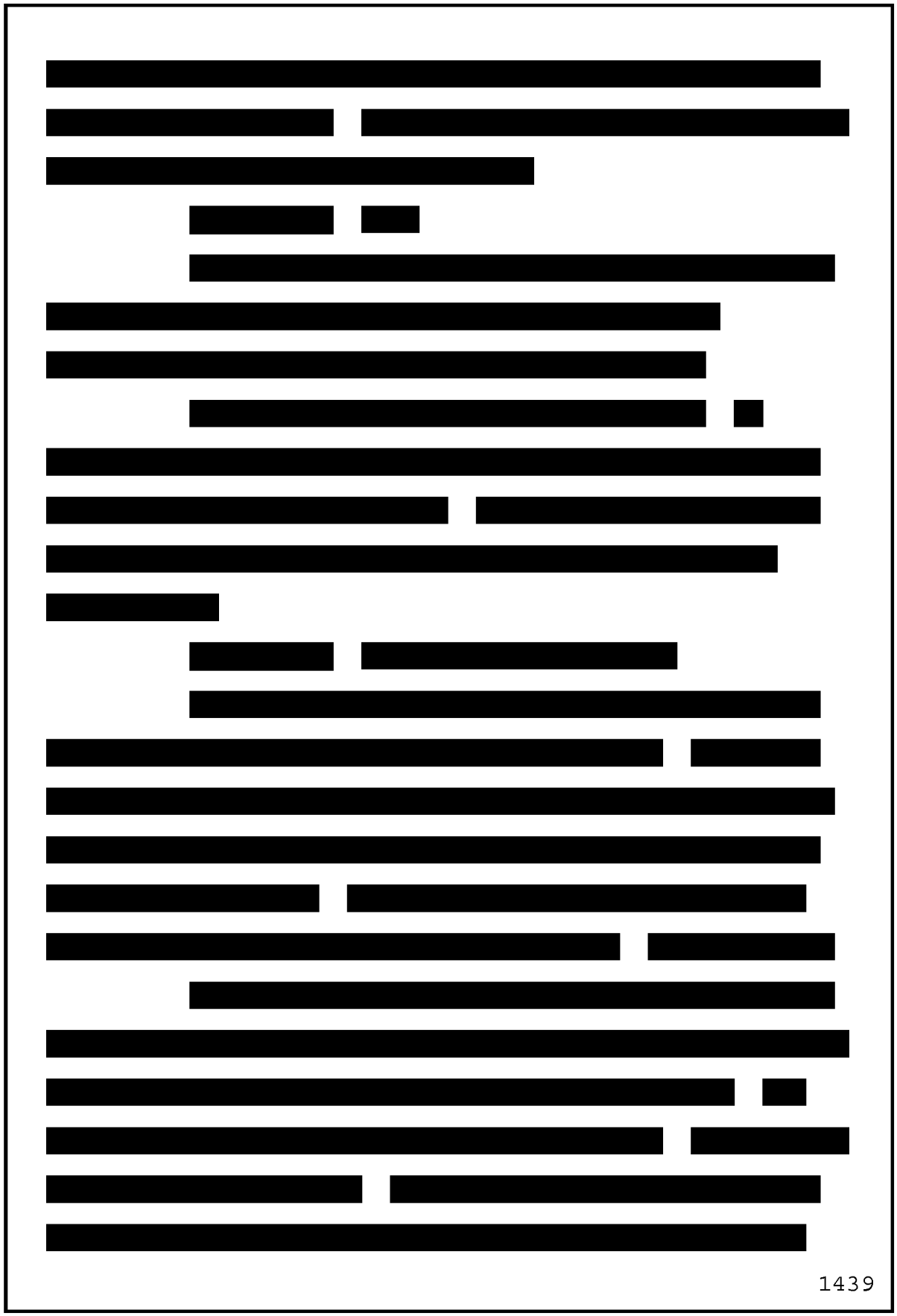
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(The following proceedings were heard in open court in the presence of the jury:)

THE COURT: Good afternoon, ladies and gentlemen.

We're going to start with opening statement on behalf of Monsanto. And Mr. Ismail will proceed.

MR. ISMAIL: Thank you, Your Honor.

DEFENDANT'S OPENING STATEMENT

MR. ISMAIL: Good afternoon, everyone.

This morning Mr. Wisner shared with you the unfortunate reality that non-Hodgkin's lymphoma is a

common form of cancer. Just this year alone, 75,000 people across the United States will be newly diagnosed with NHL. And millions will live with the disease.

It will be undisputed in this trial that the vast, vast majority of people who have developed NHL will have never been exposed to Roundup.

What doctors outside this courtroom and across the country know and tell their patients is that the overwhelming majority of the time a cause for why an individual person develops NHL is not known.

You heard Mr. Wisner reference that in fact all the physician witnesses you'll hear from in this case will agree 70, 80, 90 percent of the time doctors cannot determine why a person developed that cancer at that time.

Now, the plaintiffs' explanation for that is that, you heard this morning, is that doctors are just too busy to find out the cause. That explanation told by counsel and through their witnesses will not be credible in light of the evidence you're going to see.

To be sure, over the last several decades researchers have identified several factors that put a person at an increased risk for developing NHL. You will see during this trial that Mr. Pilliod and Mrs. Pilliod each have several of those established risk

factors for developing non-Hodgkin's lymphoma. And I will share that evidence with you this afternoon.

What you'll also learn during this trial is that Roundup is not a cause of non-Hodgkin's lymphoma. You will not need to take my word for it. You will not need to take the word of Monsanto scientists. What you'll learn during the trial is that a great majority of scientific and regulatory bodies around the world that have examined this precise question have determined that Roundup does not cause NHL.

What you will hear is that doctors, when they're treating patients, do not tell their patients that Roundup is a cause of NHL. And to illustrate this point, I'm showing you here eight physicians who are going to be testifying in this case either live or by videotaped testimony.

The two on the left Mr. Wisner previewed for you, those are two witnesses the plaintiffs have retained to testify in this case. The four in the middle are the treating physicians of both Mr. Pilliod and Mrs. Pilliod. Those are the cancer doctors that took care of them for their NHL.

The two on the right are cancer specialists we have retained to look at this case and share opinions with you.

I'd have more to say about each of these witnesses this afternoon, but right now I want to impress upon you that these eight witnesses, when you hear them testify, none of them will tell you that in their own practice they have ever diagnosed a patient's NHL as being caused by Roundup. And I'm specifically including in that the two witnesses that the plaintiffs are paying to testify in this case. In their own practice, they have never determined that NHL, in one of their own patients, has been caused by Roundup.

That fundamental point, that Roundup is not generally recognized as a cause of non-Hodgkin's lymphoma, will be echoed time and time again through the evidence you will see during this trial.

Just to preview some of that evidence that you're going to see, you heard this morning that the EPA has approved Roundup for 40 years, and you might have gotten the impression that that is the only regulatory body that has looked at this issue. And it is not. You're doing to see to the contrary several regulatory bodies around the world have looked at this precise question, one of which is the European Chemical Agency which is one of the regulators in Europe that has looked at this issue. Based on the epidemiological data as well as the data on long-term studies in rats and mice,

taking a weight of evidence approach, no hazard classification for carcinogenicity is warranted.

European Food Safety Authority, another regulatory body in Europe, looking at the exact same evidence that the plaintiff previewed for you this morning and that their experts will rely upon, glyphosate is unlikely to pose a carcinogenic hazard to humans.

The U.S. EPA, the scientists who looked at this data in the EPA, I know counsel had a lot of disparaging things to say about that organization and I will address that later this afternoon.

Based on all the available data, the weight of the evidence clearly do not support the descriptors "carcinogenic to humans" and "likely to be carcinogenic to humans at this time." The strongest support is for "not likely to be carcinogenic to humans." You will see how they reached that conclusion and the data that they relied upon to do so.

Canada has a regulatory body. Scientists who look at these precise issues, the same data that plaintiffs have shared with you. No pesticide regulatory authority including Health Canada considers glyphosate to be carcinogenetic risk of concerns to humans. That's just a preview of what you're going to

see during this trial as to the issues you're going to be asked to decide.

Now before we go further talking about the evidence that you're going to see, I want to circle back to a discussion you had with the lawyers earlier this week. And that is this. You have here at this trial two individuals, Mr. Pilliod and Mrs. Pilliod. And I told you last week and I will tell you again when you come to meet them, you're going to know that they're very nice people, and you know they have experienced some serious health issues.

And as Mr. Miller and Mr. Evans talked with you about this week, it's only natural human emotion that we all share to have compassion for individuals who have gone through some serious health issues.

And candidly I also heard from several of you during this week that some of you have a negative impression of agricultural technology companies like Monsanto. I've heard you and I understand your viewpoint.

But I know you all know by now the importance of setting all that aside. And indeed this case is not a referendum on Monsanto or the agricultural industry in general. It is a specific case and a claim that Roundup played a role in the development of two individuals'

non-Hodgkin's lymphoma.

Now you all know the importance and you have confirmed that you're going to be able, throughout this trial, to put aside the natural compassionate feelings you have for the plaintiffs and any less compassionate feelings you might have for Monsanto and decide this case solely on the evidence and the questions that the Court will pose to you at the end of the trial.

And one of the central issues that you're going to hear and be asked at the end of the trial are these: Did the plaintiffs prove that Roundup was a cause of Mr. Pilliod's diffuse large B-cell lymphoma? Did the plaintiffs prove that Roundup was a cause of Mrs. Pilliod's primary central nervous system lymphoma?

These questions, of course, are phrased that way because it is the plaintiffs who have the burden of proof on causation as they do each and every element of their claim.

Now, Mr. Brown, Mr. Evans, and I are going to share with you the evidence that you're going to need to answer this question. And we understand that you value your time and we understand the sacrifice you all have made to serve as jurors in this case. So we're going to do our best not to waste your time talking about things that do not go to the central issues that you're going

to be asked to decide at the end of this trial.

So let's get started looking at the evidence. Let's begin with Mr. Pilliod.

Now let me pause here to reflect that Mr. Wisner spoke for about two and a half hours this morning, and it wasn't until after more than two hours that he got to talking about the medical history and the diagnosis and the risk factors of the actual plaintiffs in this case.

And since it's their case making the claim about Roundup causing non-Hodgkin's lymphoma, I'm going to begin there. Because no matter what else, the threshold issues that the plaintiffs have to prove is that Roundup was the cause of both of their cancers.

So this is a snapshot of Mr. Pilliod's current medical condition and his relevant medical history. He's 76 years old today. He has many of the conditions that you might associate with aging such as high blood pressure, high cholesterol. He is, as you heard, a former smoker. He as a 20-year pack-a-day history of smoking. He gave up smoking years ago. But we will talk with witnesses about the significance of that fact during this trial.

Mr. Pilliod has a diagnosis of chronic complex epilepsy. That will be significant when we talk about

some of the symptoms that he has reported over the years.

He has a history of cancer in his family. He has a personal history of cancer separate and apart from non-Hodgkin's lymphoma. He has multiple skin cancers. And I will show you how significant that issue is to his development of NHL.

He has the HPV virus. He also has a condition called ulcerative colitis. Some of you may have heard of this. It's a condition. It's not irritable bowel or reflux. It's actually an autoimmune disease whereby Mr. Pilliod's body doesn't always recognize healthy tissue from diseased tissue and can actually attack healthy tissue in his gastrointestinal tract, causing inflammation.

Now as you heard, in 2011 when Mr. Pilliod was 69 years old, he was diagnosed with NHL. And as Mr. Wisner acknowledged, NHL is highly correlated with aging. Doctors consider this a disease of aging. And the risk of a 69-year-old man developing NHL is significantly higher than a man 20 years younger.

Mr. Pilliod received prompt treatment. And by October of 2011, his cancer was in remission. And over the last seven and a half years, up to and including today, he has remained in remission without NHL.

Now, Mr. Pilliod's medical history here reveals several risk factors relevant to the development of non-Hodgkin's lymphoma.

First, I told you he has a personal history of cancer. Now, Mr. Wisner told you there is no evidence, scientific evidence, that links a personal history of cancer with the development of non-Hodgkin's lymphoma. That's just not true.

I'm showing you here a study that shows that patients who have a previous cancer, even if it's not a previous lymphoma, have more than a twofold increased risk of developing NHL.

Now I know you got a tutorial this morning about how to read these numbers. So that 2.43 that's reflected here which is statistically significant is a 243 percent increased risk of developing NHL if you have a previous cancer.

And importantly, this paper that I'm showing you here is one of the papers that counsel showed you this morning because what these researchers did was they looked at a number of different risk factors including pesticide use. So he showed you one part of that paper that talked about pesticide use, at the same time telling you there's no evidence that a history of cancer increases your risk of NHL. And it's in the same study

that I'm showing you right here.

Mr. Pilliod has a history of cancer in his family. Not a history of lymphoma but other forms of cancer. The same study shows that that is a risk factor for developing NHL.

Now you've heard autoimmune diseases are a risk factor. And I think even their experts are going to agree. Mr. Pilliod's history of ulcerative colitis increased his risk of developing NHL.

And it was on Mr. Wisner's chart earlier -- that you saw earlier today, on many health conditions you won't be surprised to learn that NHL is highly correlated with body weight. They agree that that's a risk factor for developing the disease.

The HPV virus. It was told to you today that a history of having a virus, viral infection can increase your risk of developing NHL. The suggestion was that's only things like HIV or other sorts of viruses. That's not true.

And there was, I think, a comment that we all agree with on our side that it's important to look at all the evidence and not just cherrypick one study to make a claim.

If you look at all the evidence, Mr. Pilliod's personal history of HPV put him at a threefold increased

risk of developing NHL.

Now we can go further in our discussion of Mr. Pilliod's medical history. And what you'll see is as his personal history of cancer are recurrent and repeated skin cancers, and that's going to be highly significant to his development of NHL for the following reasons.

Just as the title of this study shows, frequent basal cell, that's a type of skin cancer, is a clinical marker for inherited cancer susceptibility.

So when you were told this morning there is no -- I think I wrote it down. The claim this morning was there is no scientific link between skin cancer and NHL. That is completely contrary to the studies and the testimony you're going to see during this trial.

Basal cell skin cancer, if you have that frequent history of basal cell skin cancer, you have more than a two-and-a-half times increased risk of developing NHL. Different type of skin cancer, squamous cell, again more than a two-and-a-half times increased risk of developing NHL. Melanoma, more than doubling the risk of developing NHL. There's a well established link between those two times of cancer.

One thing that both parties agree on is that NHL is a disease and cancer of the immune system.

I'm putting up here that -- these are not controversial, everyone agrees -- non-Hodgkin's lymphoma, sometimes called NHL or just lymphoma, is a cancer that starts in cells called lymphocytes, which are part of the body's immune system. You can see the description of that from Stanford Health Care.

And so why is that significant? Because if a patient has a compromised or weakened immune system, they're at a significantly increased risk of developing non-Hodgkin's lymphoma. And I'm going to show you now something pretty remarkable about Mr. Pilliod's medical history.

He was first diagnosed with skin cancer back in the 1970s. He was still in his 20s. It's an uncommonly early age to develop skin cancer.

Now you might think to yourself developing skin cancer once or twice here in California, that doesn't convince me that somebody's at an increased risk of other forms of cancer.

But that's not Mr. Pilliod's medical history. He got skin cancer again and again and again. Basal cell, squamous cell, melanomas, different parts of the body, biopsied, diagnosed, confirmed to be cancer over and over and over again. Over the course of his adult life, he has had skin cancer 22 times.

There's no claim that will be made in this trial that Mr. Pilliod's skin cancer has absolutely anything to do with Roundup. You're not going to hear that from plaintiffs' counsel, nor are you going to hear that from their witnesses. These 22 different cancer diagnoses that Mr. Pilliod has had are completely independent from his Roundup use.

Now we know more as well, and that is that Mr. Pilliod at times has had diagnoses and history of meningitis. Some of you are familiar with this disease. Actually back in the 1970s, you have a confirmed grand mal seizure and he was in a comma for a month as a result of that condition.

Now, meningitis is an infection, inflammation of the lining around the brain. Some of you have heard of encephalitis. That's an infection and inflammation of the brain tissue itself. If you have both, you have meningoencephalitis. It's an extremely rare condition to develop. Some of you are familiar with meningitis and it can be quite serious. Mr. Pilliod developed that in 1978.

But he's also had four other diagnoses and bouts of meningitis. This is an extremely rare condition to develop, and he's gotten it five times because it's a sign of a weakened immune system.

And so now we can add this to what we know about the history of cancer. And the picture starts to become more clear.

Mr. Wisner told you that sometimes a trial is like a puzzle. You can add this history to the puzzle, and you can start to see how the picture develops.

We know as well he as an autoimmune disease, ulcerative colitis. We also know as well that he's had at times poorly controlled outbreak of the HPV virus. And you can add that to what we know about other signs and markers of a weakened immune system.

And when you step back and you look at this history, you're going to hear this through the testimony of witnesses, it is highly probative of having a weakened immune system which put Mr. Pilliod unfortunately at a greatly increased risk of developing non-Hodgkin's lymphoma. That's what the evidence is going to show.

Now, given Mr. Pilliod's history, it is not surprising then that none of his doctors say that Roundup was the cause of his cancer. It's also not surprising that when Mr. -- when plaintiffs' counsel's experts are going to testify, they'll agree that Mr. Pilliod could have gotten the exact same cancer at the exact same time had he never been exposed to

Roundup.

And you're not going to see in this trial a single medical record that even suggests that Roundup played a role in Mr. Pilliod's non-Hodgkin's lymphoma.

Now, one more thing I need to address about Mr. Pilliod's medical history, and that is you heard from Mr. Wisner this morning the suggestion that Mr. Pilliod's chemotherapy in 2011 has caused cognitive issues.

To be perfectly clear, during this trial we are not going to contest what Mr. Pilliod actually has gone through with his diagnosis of NHL. We know that that is a difficult disease and the treatment can be challenging.

But what counsel told you this morning that the chemotherapy is a reason for a cognitive -- Mr. Pilliod's cognitive symptoms, that is simply not going to be supported by the evidence you're going to see. Let me show you why.

Before I get there, let me introduce you to one of the witnesses you're going to see in this case. And that is Dr. Alexandra Levine. She is a professor of medicine and a treating oncologist at USC. She's a board-certified hematologist and oncologist who specializes in lymphomas due to infectious organisms.

We have asked her to look at Mr. Pilliod's medical records, and she's going to come here and she's going to share her findings with you. And what she's going to tell you, first of all, is that Mr. Pilliod's diffuse large B-cell lymphoma is the most common type of NHL.

She's also going to review with you the risk factors that he has for developing NHL. And we'll talk with you about the evidence that shows a weakened immune system which itself put him at an increased risk for this disease.

And Dr. Levine will tell you that based on all the evidence she's seen, Roundup did not cause Mr. Pilliod's non-Hodgkin's lymphoma.

Now, return to the issue of plaintiffs' counsel's claim that they're going to prove that the chemotherapy in 2011 has caused the cognitive issues. I'm showing you here a medical record from just last fall from Stanford Health Care. And I think I told you this afternoon already that Mr. Pilliod has a history of complex epilepsy. And I think even counsel referred to the fact that he has unfortunately experienced seizures most of his adult life.

And what -- sort of just to unpack what we're seeing here on this record, the problem is expressive

and receptive aphasia. That is the difficulty communicating, the word-finding challenges, the forgetfulness that Mr. Wisner talked about.

The assessment of his doctors is that it's most likely due to the deep seizures that you can't really see on the EEG or the prolonged postictal state which means the time after you have a seizure, that that's caused damage to the brain and that is the reason why you have these cognitive issues. Nothing from his doctors or the medical records suggests it's due to chemotherapy.

Another reason why we know is that Mr. Pilliod was experiencing the same clinical symptoms from before his cancer diagnosis and his treatment. This is a record -- records from 2009 and early 2011, both of which have clinical symptoms that Mr. Wisner told you about were occurring five or six years before the development of NHL and treatment.

And I told you that his doctors told you -- documented the reason for these issues is because of the history of seizure.

Mr. Pilliod had his first seizure in the 1970s. He had more in the 1980s, 1990s, 2000s, 2010s. Now to be clear, it's not that he's had five seizures. He's had five decades of seizures, all of which has

caused the damage that has resulted in the worsening cognitive issues.

The final comment I want to make on this issue is to preview for you what the testimony of Mr. Pilliod's own doctors will be.

You're going to hear by videotape testimony from Dr. Lin, one of Mr. Pilliod's neurologists. He treated Mr. Pilliod during the time that he had chemotherapy for those four months in 2011, and he documented he had no seizures during those four months.

But he also told us, when both parties had a chance to ask him questions, that Mr. Pilliod had 35 to 50 seizures as part of his medical history. And at no point did Dr. Lin ever conclude or determine that the chemotherapy had anything to do with those seizures or exacerbated that condition.

Two other neurologists Mr. Pilliod sees, these are world-class specialists in complex epilepsy, the head of the Stanford Complex Epilepsy department, same at UCSF. Both have treated Mr. Pilliod, and they will tell you in their testimony that at no time do they link his chemotherapy in 2011 with either worsening of the seizures or the cognitive complaints that Mr. Wisner said they were going to prove during this trial.

Let's now turn to a discussion of

Mrs. Pilliod. Same general picture. Mrs. Pilliod, 74 years old today. Has a history of type 2 diabetes, high blood pressure. Mrs. Pilliod also is a former smoker with a 20-year pack-a-day history of smoking.

Counsel referenced that her medical records document that she has this condition called Hashimoto's disease. I suspect most of you haven't heard of Hashimoto's disease. It's actually also an autoimmune condition documented in her medical records.

Mrs. Pilliod has a history of cancer in her family and a history of -- personal history of cancer herself. In her case she developed bladder cancer in 2008 and had recurrence of that in 2010.

Again, there's no allegation here from plaintiffs' counsel or their witnesses that Mrs. Pilliod's bladder cancer has anything to do with her use of Roundup. That is a completely independent developed cancer before her NHL.

Mrs. Pilliod was 70 years old at the time that she was diagnosed with NHL in 2015. And as Mr. Wisner referenced, she has been in remission since 2017 and remains so today.

Same as we went through with Mr. Pilliod. There are several different risk factors that can be identified from her medical history.

I've already referenced the first two, her personal history of cancer, in her case bladder cancer, more than doubles her risks of getting NHL. The fact that she has a history of cancer in her family similarly put her at an increased risk for non-Hodgkin's lymphoma.

Plaintiffs' counsel agrees and their witnesses will agree that an autoimmune disease puts you at an increased risk of developing NHL. I think they're going to try to tell you she doesn't have Hashimoto's disease. But it's documented in her medical records, and as you'll see here, it's a tripling of the risk of developing NHL.

We've seen already that body weight is associated with developing non-Hodgkin's lymphoma, as is advancing age. In fact, what we're showing you here is the incidence rate of developing NHL for women, comparing women under the age of 50 to over the age of 50, and it's not going to be controversial. Their witnesses will agree. As people age, their increase of NHL substantially goes up.

Now, what did you see from plaintiffs' counsel today? You saw that both for Mr. Pilliod and Mrs. Pilliod, you saw a slide that went up that had several risk factors on them. And then they just crossed a bunch out and left Roundup and put a circle

around it.

But what they don't explain is on what basis do they just cross out these other known risk factors for developing NHL. It's undisputed that the medical records confirm she has, and for Mr. Pilliod, a personal history of cancer, a family history of cancer, autoimmune disease, they're in the right age group. Mr. Pilliod has additional risk factors relevant to him.

You can't just cross them out and circle Roundup and say that's the cause. And in fact, the overwhelming majority of the time, again 70, 80, 90 percent, doctors cannot determine the cause of an individual person's cancer. Why that person developed primary central nervous system lymphoma at that time is not known.

Yes, we know that she has risk factors for developing NHL. But what doctors will agree is that you can't determine which of those risk factors, what's her cause in any particular case, and that is how the consensus medical opinion and how doctors all across the country treat NHL.

Now you're going to also see testify in this case Dr. Celeste Bello. Dr. Bello is a board-certified cancer specialist. She is a researcher in the very specific type and subtype of NHL that Mrs. Pilliod has

developed, primary central nervous system lymphoma.

Dr. Bello looked at Mrs. Pilliod's medical records, and she's going to share her findings with you as well. What she's going to tell you is that primary central nervous system lymphoma is actually a very rare subtype of NHL, and in the vast majority of cases, the cause is unknown.

She's going to talk to you about Mrs. Pilliod's known risk factors, but then just like the overwhelming majority of people who develop this condition, the cause of Mrs. Pilliod's primary central nervous system lymphoma is not known. But Dr. Bello is also going to review based on the evidence that she has seen and talk with you about how Roundup did not cause Mrs. Pilliod's primary central nervous system lymphoma.

Just like with Mr. Pilliod, you're not going to see any of Mrs. Pilliod's own doctors testify in this case that Roundup had anything to do with her development of cancer. Plaintiffs' counsel's experts are going to agree that Mrs. Pilliod could have developed this exact same cancer at the exact same time having never been exposed to Roundup. And you're not going to see a single medical record in this case that identifies Roundup as a cause of her NHL.

It's even more than that because plaintiffs'

counsel previewed that Dr. Weisenburger is going to testify in this case. You were told he's a pathologist. What do pathologists do? Right. They look at tissue under a microscope.

Both in Mr. Pilliod's case and in Mrs. Pilliod's case, a biopsy was taken of their NHL, in his case 2011, in Mrs. Pilliod's case 2015. That tissue sample is preserved. And Dr. Weisenburger looked at it, plaintiffs' expert. And if he comes to testify from that witness chair, what he'll admit is that when he looked at that slide under the microscope, there is nothing there that identifies Roundup as playing any role whatsoever in either plaintiff developing NHL.

They're going to call Dr. Nabhan who is an oncologist who previously treated patients. He looked at all the medical records for both Mr. and Mrs. Pilliod. And if he comes to testify, he's going to admit from that chair that there's nothing in the medical records that specifically rules in, that specifically identifies Roundup as having anything to do with their cancer. There's not a test, imaging study, a laboratory value, nothing whatsoever in any of her medical records or Mr. Pilliod's medical records that will identify Roundup.

I told you I was going to come back to these

four physicians. I think you know by now that Dr. Raj was -- is an oncologist who treated both Mr. and Mrs. Pilliod. The other three treated Mr. -- sorry, Mrs. Pilliod alone.

All four witnesses were deposed in this case, meaning both sides had a chance to ask them questions under oath. All four were asked and all four agree that at no time did they ever determine that Roundup had anything to do with either Mr. Pilliod or Mrs. Pilliod developing non-Hodgkin's lymphoma.

I want to make one more point about Drs. Nabhan and Weisenburger.

Now, sometimes it's useful for juries when they're evaluating testimony of expert witnesses to contrast what those witnesses tell you in court when they've been retained by one side and what they do when they're not in court.

And this is what you're going to hear from Drs. Nabhan and Weisenburger if they testify: That when they're not working on a case, when they're not testifying in court, when they're actually back treating their own patients, they do not tell patients that Roundup causes non-Hodgkin's lymphoma. They're going to tell you here that they believe Roundup causes that cancer and did so in these two cases. But when they're

back at their own institutions, that's not what they tell patients. And they've never diagnosed one of their own patients with NHL as being due to Roundup.

They're going to tell you they interact with other doctors at their hospitals, but when they're talking to the other doctors at their hospital, they've never told one of their colleagues that Roundup causes non-Hodgkin's lymphoma. But that's what they're going to tell you inside this courtroom.

They're going to tell you that they've both been involved with teaching medical students. They're going to admit that they've never taught medical students that Roundup has anything to do with NHL.

They're going to tell you that they've spoken at scientific conferences over the years. But they'll also admit that they've never presented at a scientific conference the same things that they're going to tell you here in court.

And so as you listen to their testimony, you can consider those facts when weighing how much to put on their opinions that they're offering you in this case.

Now I'm going to switch gears now and move away from talking about the Pilliods to talking about some of the other things we've heard this morning. And

I think one thing that has become very clear after listening to plaintiffs' presentation, there's going to be a lot of discussion about e-mails during the course of this trial.

Now, I suspect everyone here has some experience with e-mail, either personally or at work or both. And you know that it is a convenient, quick, easy, but very imperfect form of communication.

If you just take one e-mail here or there, you often miss the context of what happened before or after that one snapshot in time, and that that one e-mail does not actually often represent what happened in the end at all.

I'm going to give you a couple of examples of that.

You heard presented today, you heard this term ghostwriter, right? You guys remember that term from Mr. Wisner this morning. He showed you some e-mails, and he actually defined it for you. It's when you're involved in scientific research but you don't acknowledge you were involved in it. That was their definition.

The paper that he specifically identified was this Williams paper. But on the very paper that he's talking about, it acknowledges the contributions of the

Monsanto scientists who participated in that scientific research. It wasn't even their own definition he provided you this morning.

That's one example of how you can just pluck one e-mail out of a long sequence of documents on a topic and it doesn't give you the whole picture of what's going on.

Let me give you another example. Do you remember the discussion of Dr. Parry? That was the researcher over in Wales who Monsanto looked to in the 1990s to look at some of the data on glyphosate, and Dr. Parry, as you saw in some of the documents, had some concerns and suggested additional testing be done.

What you didn't hear was that every -- nearly everyone if not every single one of the categories of those tests has been done, and that Dr. Parry, at the end of the day, at the end of his analysis, as documented here, confirmed and agreed with the assessment of the scientists from Monsanto.

Now those are just two examples of what I've been talking about of how just taking one e-mail out of a discussion doesn't always give the full picture.

Now, during the course of this trial, there's going to be other e-mails shown, I'm certain of that based on what we heard today. And there's, of course, a

natural temptation for us, and it's difficult sitting over there and hearing the characterization of the documents and there's a natural temptation to want to jump up and start disagreeing and bringing in different evidence to provide the full picture.

But I want to preview for now that we're not going to do that on every single e-mail that is flashed across the screen. We're going to rely and trust on your good judgment and common sense to recognize those issues that get raised that have nothing to do with the questions you're going to be asked to decide at the end of the day.

But I recognize that that may be difficult at times. Because I'm sure you saw some e-mails this morning that bothered you. And you're going to see during the course of this trial through some of these e-mails and even the testimony of the Monsanto scientists that our people believe strongly in the safety of this product, the appropriateness of our actions and the correctness of our scientific determinations.

And I suppose it can be a fair criticism to say that our people may have been too defensive at times or that their e-mails should have been more measured. I understand that. And you may have that impression. But

if that's your impression on the various e-mails that get shown or the testimony that gets shown, the question is: Does that have anything to do with the central issues in this case involving these two plaintiffs? And the central issue that cuts across all the claims being made here is: Does Roundup have anything to do with these two individuals developing non-Hodgkin's lymphoma?

As I told you earlier this afternoon, this case is not a referendum on Monsanto. It is very specific claims brought by two individuals. So we're not going to jump up every time an e-mail gets flashed across the screen and talk to you about all the other evidence that goes to that specific issue.

And instead we're going to trust and rely upon you recognizing, as the case goes through, as you watch the plaintiffs present their evidence, you're going to see the snippets of e-mails or videotape deposition coming by, you can think to yourself: Does this actually have anything to do with the central issue in this case, or is there something else going on? And if you don't see us respond and jump up every time that gets shown, now you know why.

So let's continue with some of the other issues you've heard. You folks have been here about a week already, and you've heard the name Roundup a couple

hundred times and there has been a lot of discussion about what Roundup actually does.

So glyphosate, the active ingredient in Roundup, targets a specific enzyme essential for plants to grow. So plants need to produce amino acids, proteins to help the plant grow. Glyphosate targets those and blocks them, depriving the plant of food and ultimately the weed to die.

Two things that Roundup does not do. It does not enter the groundwater and does not stay in the soil.

Now, these are not controversial points, and I don't think any of this is disputed and you're probably not going to hear much about this during the trial, but I did want to give you that baseline overview of what Roundup is.

Now, there are many uses for Roundup, both agricultural and nonagricultural. As you've heard, the Pilliods were not using Roundup on a farm or part of their job as groundkeepers or anything of the sort. They had a residence and several investment properties and used Roundup on occasion at those locations.

Mr. Pilliod may tell you about a time that the fire department came out to inspect one of his properties and instructed him to reduce the weed overgrowth for fire protection, which is a common use of

Roundup.

So let's talk about the testing. There's a lot of talk this morning about what testing has or has not been done with Roundup.

Now, glyphosate, the active ingredient, and the final product Roundup itself has been subjected to 40 years of testing. And in fact, Roundup itself has been on the market since the mid 1970s.

And I want to show you the different categories of testing that has been done both on Roundup and the active ingredient, glyphosate.

I think Mr. Wisner used pillars. Mine looks more like a wheel, I guess. And the point here is that the various categories of testing that plaintiffs' counsel talked about have been done on either Roundup, glyphosate, and in some cases both.

Remember those genotoxicity, those laboratory studies that plaintiffs' counsel talked about. Those have been done on the surfactants. That's that soapy material that helps the product spread across the leaf of the plant.

There have been those types of tests done on glyphosate, the active ingredient, and on Roundup, the formulated product. These have been done by both Monsanto scientists and others.

So you know right now the suggestion that there have been no cancer tests done on the formulated product is not true. There are dozens of genotoxicity tests done on the formulated product Roundup.

There was a lot of talk today about those long-term rodent carcinogenicity studies. Those were done on glyphosate. Typically you would see about two for a chemical. There are at least 12 high-quality rat and mouse studies done on glyphosate.

Human epidemiology, this is going to prove to be the most important set of data for you to look at because here we are 40 years after Roundup has been on the market, and, yes, there's -- there are laboratory test tube studies done, and, yes, there are animal studies done. And we'll talk about those. But at this point we have tens of thousands of individuals who have been exposed to Roundup who have been assessed for whether or not there's any increased risk of NHL, and I'm going to show you the results of those studies this afternoon.

The point of it being there is ample testing done both by Monsanto scientists and others. And it's perfectly normal for testing to be done by individuals and organizations outside Monsanto to examine this question.

For example, the epidemiology studies, you're going to see that one of the largest studies done is actually sponsored by the National Cancer Institute. So you don't just look to what studies Monsanto has done. You look to what studies have been done on glyphosate and Roundup.

And so when plaintiffs' counsel tells you that it hasn't been studied, the very narrow and specific allegation they're making is that there's not a long-term rat or mouse study done on Roundup, the formulated product.

But the point of the matter is at this point, Roundup has been approved by over 100 countries around the world. Those regulators have not asked or required the specific test that plaintiffs are complaining about here.

Just to give you an overview, to look at one set of those regulatory approvals, as you've heard, Roundup was first approved in the mid 1970s by the career scientists at EPA. And over and over and over again, those scientists have reexamined the data and have confirmed the absence of a cancer risk with Roundup.

And it's not, as Mr. Wisner told you, that even back in the mid 1980s their first classification

was as a possible carcinogen. So it's not like they just weren't looking at the data and just saying you're good to go, there's no cancer risk here.

They looked at the data carefully. And as more data came in, they have confirmed and reaffirmed their assessment that there is not an increased risk of cancer with Roundup.

Now, I know it is easy and convenient to just say, oh, the EPA, that's a political organization, they don't know what they're doing. And you've heard references to that this morning.

But we're not talking about the political appointees or bureaucratic staff at the EPA. We're talking about the career scientists there, the toxicologists, the chemists, the pathologists, the epidemiologists. All of them have been involved in looking at this precise question.

And so when you see the EPA's determination, it is backed by solid science and people who are looking carefully at this issue.

Now, there was some discussion this morning about this organization called IARC. I know you've heard that reference by Mr. Wisner. What I want you to know about IARC is the following.

This is an organization that has very specific

rules about what they can look at when asked to answer and looking at a scientific issue. As you heard, there was a working group of IARC in March of 2015 that looked at pesticides and herbicides including glyphosate.

Now, when I say that they have very specific rules, that's not a criticism of IARC. I'm not saying it's a bad organization because they have those rules, but it's a reality.

And what that reality is when you look to what -- when you examine what they looked at to answer this question, it's not going to be disputed, I don't think plaintiffs' counsel or their witnesses are going to claim otherwise, that in 2015 this working group that met in France did not look at the most updated human epidemiological data available.

It's not going to be disputed that when they made their determination, they didn't consider half of the long-term mouse and rat studies and only 20 to 25 percent of those genotoxicity studies.

So when you compare the volume of scientific evidence that the scientists at EPA considered versus the more limited set of scientific evidence that IARC looked at, it's not even close.

And, again, that's not offered as a -- to say that IARC did anything wrong and they weren't following

their own rules. That's the rules of that organization. And we will explain to you what those rules are during the trial and why they had a more limited review.

Well, what I'm previewing for you here is that that's not even a close comparison as to looking at all the evidence versus a slice of it.

Now, there was some discussion how the California EPA has agreed with IARC's conclusion. And I'm not sure how much of this is going to be part of this trial, but just to be clear, there is no step between IARC and what California EPA does in terms of a review of the data. It's an automatic process. An organization like IARC makes a classification. California EPA has no discretion, it adopts it as such. They don't independently look at the evidence.

And so that's not at all suggesting that they're on the same level or par with all these other scientific organizations that I'm going to be talking about -- that we're going to be talking about in this trial.

But it is the case that IARC, in March of 2015, made its classification. And what happened after that is exactly what you would hope and expect to happen, and that is that scientists at regulatory bodies around the world said, hey, IARC has come to this

conclusion, let's take another look at the data. Let's see if there's anything that should be of concern when it comes to products like Roundup and cancer risk.

And that's what happened. You had several different organizations from around the world consider the evidence again in light of IARC's conclusions. Because IARC was the first time in 40 years that any scientific organization has flagged products like Roundup as being a possible carcinogen.

And so you had independent looks at the data, all the data, which we agree should be done. They looked at all the data including the same arguments and same evidence that Mr. Wisner previewed for you this morning, and it was among these organizations a unanimous conclusion that products like Roundup do not cause NHL.

This is -- again these are a couple of organizations I previewed for you earlier this afternoon. This is the European Food Safety Authority: Glyphosate is unlikely to pose a carcinogenetic hazard to humans. This conclusion was reached after IARC reached its conclusion.

The European Chemicals Agency: Based on the epidemiological data as well as the data from long-term studies in rats and mice, taking a weight of the

evidence approach, no classification for carcinogenicity is warranted.

Canada, Health Canada, which in the document that assesses the cancer risk, if any, from glyphosate describes their mission: Health Canada's primary objective in regulating pesticides is to protect Canadians' health and their environment. And their conclusion: Glyphosate is not genotoxic and is unlikely to pose a cancer risk.

Australia: The scientific weight of the evidence that exposure -- indicates that exposure to glyphosate does not pose a carcinogenetic or genotoxic risk to humans.

All of these assessments. So say if you will if you want, like Mr. Wisner did, criticizes the EPA and the scientists there, but that doesn't explain all these other scientific organizations and regulatory bodies who looked at the same evidence the plaintiffs' exerts have looked at and reached conclusions fundamentally different from what counsel told you this morning.

Now let's look at some of the various pillars, if I can borrow a phrase, of evidence that these other regulators considered when assessing whether or not there's a cancer risk with products like Roundup.

And I'm going to start with the

epidemiological evidence because as I indicated earlier, the human data, the human studies at this point after 40 years is the most compelling set of data to look at as to this question.

And I'm going to begin with a study that Mr. Wisner talked about and it's called the Agricultural Health Study. This is a study that is sponsored and funded by the National Cancer Institute which is a division of the National Institutes of Health. It is one of the premier cancer organizations in the country.

It was further funded and supported by the National Institutes of -- Institute of Environmental Health Science and by university of researchers at the University of Iowa.

Now, importantly, there's no funding whatsoever from Monsanto or any other industry participant. So when counsel says that Monsanto scientists have been involved in the publication or the development of science, even by their own terms, that does not apply to the Agricultural Health Study.

So what is that study? Well, you heard preview by Mr. Wisner today that plaintiffs are going to attack this study during the course of this trial, and I'm going to show you why in a minute. But first to explain how the study was done.

It began in the mid 1990s and it enrolled about 55,000 people who used pesticides and herbicides, 45,000 of whom used products like Roundup.

And when the participants were enrolled in the study, they were given a detailed questionnaire. What pesticides do you use? How often do you use it? What kind of protective equipment, if any, do you use? And all that is recorded.

The -- at the time of their enrollment, the average exposure to pesticides, about 15 years. The reason why I mention that is when you look at the results, you're looking at the participants who had several decades of exposure to pesticides and herbicides.

And we're talking about the folks who worked with herbicides and pesticides on farms or at work or even around the house. So that's sort of the overview of the study.

To give you a sense of how important the Agricultural Health Study is, it has served as the data and the source for more than 250 separate papers looking at different health outcomes, including one of its main research objectives, whether there's any cancer risk following pesticide or herbicide exposure.

The researchers from the National Cancer

Institute were part of this study, published their first look at the data in 2005. And their conclusion was as follows: There was no association between glyphosate exposure and all cancer incidents or most of the specific cancer subtypes we evaluated including non-Hodgkin's lymphoma.

Now the study continued. Actually still continues to this day nearly 25 years later. And just last year there was another update of this study, and the conclusions from the researchers at the National Cancer Institute and others was as follows: No association was apparent between glyphosate and any solid tumors or lymphoid malignancies overall, including non-Hodgkin's lymphoma and its subtypes.

Now this is one of the important epidemiological studies that will be evidence in this trial, and you'll hear the witnesses talk about it. And it's important in answering questions that you're going to be posed at the end of the case.

There's other epidemiological evidence as well, and Mr. Wisner talked about those.

Now these are four of the studies he referenced. And one thing that becomes readily apparent is that they're much smaller than the Agricultural Health Study, which I'll show you how much smaller.

But importantly there's other parts of these studies that are important and the witnesses will talk about as to how to properly interpret the results. And in fact, if you look at these studies, they support the conclusion that Roundup does not cause non-Hodgkin's lymphoma.

Let me tell you why. These studies, some of these are older studies, and when they looked back at their participants, some of the participants were exposed to pesticides and other chemicals back beginning in the 1960s or 1970s. Roundup was introduced in mid 1970s, but even then it wasn't as frequently used. The point being that many of these participants had exposure to other pesticides and herbicides.

And that presented a problem for the researchers because now they had to determine whether, when they're looking at cancer risk, is it due to Roundup exposure or is it due to other types of exposure the participants had?

And you might have missed it on counsel's chart this morning, but when he reported the results here, sometimes he would report the results and he used the word "adjusted." You saw a lot of slides this morning. You probably don't remember seeing that on the slides. But they were in that plot that I think he

talked about the whiskers and whatnot.

With respect to some of these studies, he would report one number, and then underneath it he would report a different risk number and put in parentheses "adjusted." And the witnesses are going to talk about this.

And what "adjusted" means is you're adjusting the risk analysis for other pesticide use. And what you want to do is you want to isolate and measure the effect of glyphosate not seeing whether there's an effect of other pesticides. All the witnesses who testify are going to agree that the reliable number to look at is to look at the adjusted number when you're talking about whether or not there's a cancer risk with Roundup.

And so when you do the adjustment, the first study talked about -- maybe it wasn't the first study talked about, but one of the studies on the chart was McDuffie. They didn't do this adjustment. The other three that I had on the prior example, Hardell, De Roos, Eriksson, when you do the rigorous adjustment, you find that there's no statistically significant increased risk of non-Hodgkin's lymphoma with products like Roundup, consistent with the findings of the Agricultural Health Study.

So you want to look at all the epidemiological

evidence and you look at the reliable risk estimates, what you'll see is it agrees there's not an increased risk of NHL.

Now, I told you that the studies were a lot smaller. Just to give you that comparison, the Agricultural Health Study in terms of the number of Roundup users exposed in the study, there's nearly 55,000 in the Agricultural Health Study. Eriksson, for example, had 47. So if you're looking at the reliable data to answer this question, Agricultural Health Study is a much larger analysis.

Now the Agricultural Health Study provides other forms of data as well. I think both counsel started today by talking about how common non-Hodgkin's lymphoma is.

And so just unfortunately there's a background in the general population. And so what the researchers at AHS wanted to do was to say how does the general population development of NHL, the incidence of NHL, compare to the participants inside the study.

So what they did was they found or identified about 45,000 people who had similar characteristics to those in the study, similar age, similar genders, similar race, and they said, okay, what is the risk of developing NHL over a 20-year period? And it was about

1 percent.

Then they said, okay, let's compare that to the incidence of Roundup inside the study. And what they found was about 1 percent. When you're talking about epidemiological analysis like this, those numbers are essentially the same. And what they concluded was there was no increased risk of the Roundup users in the Agricultural Health Study than you would expect to see in the general population.

Another thing that became readily apparent is 99 percent of the folks who had on average several decades of exposure to Roundup, products like Roundup did not develop non-Hodgkin's lymphoma.

These are some of the data that allowed the researchers, including those at the National Cancer Institute and others who published those papers about AHS, to conclude there was no increased risk in glyphosate exposure.

I want to show you one other piece of human data, and that is this. I think Mr. Wisner talked about this, and I want to give you what we believe the evidence will show a more complete picture.

Just to orient everyone again on this graph, the blue line here is the yearly usage of glyphosate in the United States. And as you can see, it was first

introduced in the mid 1970s, but as the years have gone by, its usage has gone up.

Now, the -- what you would expect to see, the claim made here is that glyphosate exposure causes NHL and what you would expect to see if that were true, you'd expect to see some impact on the incidence rate of NHL in this country at the same time that the glyphosate use is going up.

I think Mr. Wisner told you that if you wanted to, you could chop off this data and give a different picture. But we think the proper approach is to not chop off this data and actually look at the full picture, and what you'll see on this orange line is that there's some variances here and there, but it's essentially flat.

And your common sense can look at this type of data, along with what we've already seen from the Agricultural Health Study, from the other epidemiological studies, from the conclusions of regulators around the world, all of whom agree that products like Roundup do not increase your risk of NHL.

Now, what you're going to hear from plaintiffs' counsel and their witnesses is going to be a lot of discussion of those mice and rat studies. It was previewed this morning. Next week you're going to hear

a lot of it through their first witnesses.

And to be sure and to be clear, we agree that these types of animal studies are an important part of the scientific evidence that you would look to to assess the safety of a product like Roundup. And there are many of those studies and there's going to be discussion of them in this trial.

But as I've said before, at this point we have reliable, large human epidemiological evidence that has much more direct relevance to the issues you're going to have to decide specific to Mr. and Mrs. Pilliod.

Now, the animal data themselves has been looked at by independent scientists and the conclusions are just different than what you were told today.

This is a statement from scientists at EPA. A total of 14 animal carcinogenicity studies with glyphosate, glyphosate acid, or glyphosate salts were analyzed for the current evaluation. None of the tumors evaluated were considered to be treatment-related based on weight of evidence evaluations.

So you have the exact same mice and rat studies that counsel previewed for you this morning have been analyzed and determined to be different than what you were told today.

And if you don't want to look at EPA, you can

look at other independent scientists. This is one of the scientific groups in Europe responsible for regulating the use of pesticides. Glyphosate did not present genotoxic potential, and no evidence of carcinogenicity was observed in rats or mice. That's what the independent scientists who looked at the exact same data and concluded.

I want to make one other point here about the animal studies, and that is this. How do they relate to, coming back to where I started, the issues in this case that are specific to Mr. and Mrs. Pilliod?

Well, what I'm showing you here is the estimate of the exposure that Mrs. Pilliod and Mr. Pilliod had to Roundup.

Now, I think Mr. Wisner told you that they're going to have a witness testify, Dr. Sawyer, who is going to purport to do a calculation through which he's going to tell you how much Roundup the Pilliods have been exposed to spraying it at their various properties.

To be clear, we do not agree their witness is doing this calculation correctly, and we think he's going to give you a number that is very out of step with what accepted scientific methodology has shown. But for now, let's just accept that at face value, that this is the number that they're going to tell is the exposure

for Mr. and Mrs. Pilliod.

The difference here is because Mr. Pilliod did spray the product much more than Mrs. Pilliod, but he frequently was wearing long pants, long shirts while he was outside, and Dr. Sawyer will tell you how he came up with this calculation.

Now let's compare that to the high doses in mice and rat studies. So this is one of the studies that was up on the screen this morning, and I'm sure it's going to be talked about next week. And the way these studies are done is that the mice and rats are actually fed the glyphosate every day as part of their diet, in massive quantities, nearly 5,000 milligrams per kilogram per day.

And how does that relate? If you use their expert's estimate for exposure, for Mr. Pilliod the mice and rat studies show 35 -- nearly 35,000 times more glyphosate given to the rodents than even they say Mr. Pilliod was exposed to.

And if you look at Mrs. Pilliod's exposure, it's nearly 70,000 times more glyphosate given to the rodents in these tests that they're going to talk to you about next week than even they say Mrs. Pilliod was exposed to.

So the question is going to be as to what

relevance these types of studies have for the issues you're going to be asked to decide in this case.

When I ask you to consider the evidence, you're going to see just how the big difference between the exposure levels that a human would be expected to be exposed to versus these high-dose rodent studies.

Now I'm almost finished. I'm not going to speak for two and a half hours this afternoon. And what I want to finish with is what we talked about at the very beginning. And that is this case is specifically about a central issue that you'll be asked to decide, that they have to prove as a threshold issue, no matter whatever else you think about the evidence you're going to see, that Roundup was a substantial cause of both Mr. Pilliod and Mrs. Pilliod's non-Hodgkin's lymphoma.

And what -- Mr. Wisner I think asked you to consider what do they have in common, and what he suggested to you was the answer is the only thing they have in common is Roundup.

Well, you've now seen some of the evidence that are going to come into this trial, and you know that's not the case.

What they have in common is they both have a personal history of cancer. What they have in common is they both have cancer in their families. What they have

in common is they've both been diagnosed with an autoimmune disease which even their witnesses agree autoimmune diseases are a risk factor for non-Hodgkin's lymphoma.

They both fall into various other categories including age that puts people at an increased risk of NHL.

And we know as well that Mr. Pilliod has other risk factors specific to him that you'll see and consider as you weigh the evidence in this case, including 22 different skin cancers, five separate bouts of meningitis, viral infections, and others sort of evidence that you're going to see come into this case that are going to go to this issue of causation.

Now to preview what's going to happen next, I believe next week the first witness plaintiffs are going to call is Dr. Portier. You heard him referenced a couple times today. Dr. Portier has some opinions he's going to share with you. I know you'll respectfully listen and consider his evidence, hopefully the cross-examination as well.

But one thing I want you to know right now is that Dr. Portier has nothing to say about Mr. Pilliod or Mrs. Pilliod. He has no opinions whatsoever about their specific development of NHL.

The second witness that they told you they're going to call is Dr. Jameson. Same thing. He's not going to tell you anything about Mr. Pilliod or Mrs. Pilliod.

I think you were told next was going to be Dr. Ritz. Same thing. She's not going to tell you anything about Mr. Pilliod or Mrs. Pilliod.

I think it was previewed for you you're going to see some videotaped depositions taken of Monsanto scientists which, by their own terms, is going to have nothing to do specifically with the plaintiffs in this case.

The point being that you folks might be here two weeks before Mr. Miller and Mr. Wisner start to present evidence about the actual plaintiffs here.

Now maybe they'll reshuffle things after hearing this, but point being whenever it is, when plaintiffs' counsel gets around to talking about the risk factors and the medical history of the two plaintiffs who are at issue in this case, you folks have a right to demand from them actual medical evidence that will establish that Roundup had anything to do with their specific non-Hodgkin's lymphoma.

And if you make that demand and ask for the actual medical evidence, not studies in rodents, not

epidemiological studies that don't adjust for risk factors, and certainly not in humans, and if you make the actual demand of them that they present medical evidence that specifically links their cancer to non-Hodgkin's lymphoma, at the end of this trial you're going to find the plaintiffs cannot meet their burden of proof on that central issue in this case.

On behalf of my colleagues, I want to thank you all. I know it's been a long day and you've heard a lot. I want to thank you all for careful attention and your time this afternoon. And we do look forward to presenting you this trial. Thank you.

THE COURT: Thank you, Mr. Ismail.

All right. So, ladies and gentlemen, we have now heard both opening statements from both the plaintiffs and the defendants.

And because it's 3:15, we're going to break for the day. So I will see you again next on Tuesday morning. Remember Monday is a holiday for the Court so we will not be in session.

I just want to remind you now that the case has started it's more important than ever that you adhere to all of the admonitions I gave you the other day. Please, no research. Please do not talk about the case. Don't talk about anything you have heard with

anyone.

It's important that all of you see and hear all of the evidence that you will consider in this case at the same time. And then you will also deliberate about that evidence together at the end.

Please do not seek out or even read -- even if you see headlines, do not read anything about this case or any subject matter of this case.

So I'm going to trust that you're going to have a good weekend. I thank you for your time and your patience and your attention today. And we will continue Tuesday at 9:00 a.m. in this department with further evidence in the case.

So thank you for your time today.

We are going to take a break for 20 minutes.

(Jury excused for the weekend recess.)

(Recess taken at 3:16 p.m.)

(Proceedings resumed at 3:39 p.m. out of the presence of the jury:)

(Discussion held off the record.)

THE COURT: You guys wanted to talk about the deposition designation of Dr. Heydens? Yes?

MR. ESFANDIARY: Sure.

Yeah, Your Honor, I think both sides have some things they want to bring up.

For the most part, we stand on your rulings. We just want to get clarification on a couple of points if you don't mind.

THE COURT: Sure. Go ahead.

MR. ESFANDIARY: Now, there's a couple of e-mails that Dr. Heydens, in his deposition, received from other Monsanto employees, and he responds to them. And Your Honor overruled the objections on Dr. Heydens' response to those e-mails.

THE COURT: Right.

MR. ESFANDIARY: But you upheld the objection to the e-mails being sent to Dr. Heydens by his colleagues.

It makes it very difficult for those circumstances to really understand what Dr. Heydens is talking about without seeing the e-mail from his Monsanto colleague. It makes his response kind of just hanging in midair.

THE COURT: Give me the page.

MR. ESFANDIARY: Sure. If you take a look at, for example, page --

THE COURT: Because I thought what I did was to overrule the objections to the ones that he authored, and that was fine.

MR. ESFANDIARY: Right.

THE COURT: And then some of them were from other people he was cc'd or he didn't respond necessarily but he just -- I don't know. And there's no -- I didn't see any acknowledgment that he's actually received. I know the ones that he sent he was asked about.

So that was my thinking around the rulings on somewhere he was cc'd, but there's no particular acknowledgment in the deposition that he received it. But he does acknowledge that he sent another e-mail. So you can show me specifically the designations.

MR. ESFANDIARY: Sure. I don't know if you have the deposition in front of you.

THE COURT: I have the deposition in front of me.

MR. ESFANDIARY: 147, look at line 13.

THE COURT: Okay.

MR. ESFANDIARY: And this is discussing Exhibit 318 --

MR. WISNER: It's 18.

MR. ESFANDIARY: It's 18, yeah. From his deposition. The initial e-mail to Dr. Heydens --

THE COURT: 147.

MR. ESFANDIARY: It starts on line 13 and there's a question there.

THE COURT: Okay. 147, line 13 to 148, 1 there's no objection.

What page are you on? I'm on page 7.

MR. ESFANDIARY: Sorry, Your Honor. I'm looking at 145, 60.

THE COURT: That's what I thought.

MR. WISNER: That's the setup.

MR. ESFANDIARY: Yeah. And there's a series of e-mails between Dr. Heydens, Donna Farmer, and Dr. Ashley Roberts about the Intertek report. And the initial e-mail from Dr. Roberts to Dr. Heydens, you excluded any reference of testimony about that e-mail. It's the e-mail where Dr. Roberts says -- and he's writing about Keith Sullivan, one of the experts --

THE COURT: Hold on. So 18. Wait a minute. Part of the e-mail is Donna Farmer, subject Keith.

MR. WISNER: And it starts on page 3 of the exhibit, Your Honor. That's the e-mail.

THE COURT: Okay. Donna Farmer to --

MR. WISNER: So the first one is Ashley Roberts.

THE COURT: Then Heydens to Ashley.

MR. ESFANDIARY: Exactly. So you sustained the objection with respect to e-mail from Dr. Roberts, from Ashley Roberts to Dr. Heydens, but overruled the

objection with respect to Dr. Heydens' response. And the clarification we're seeking, Your Honor, is that Dr. --

THE COURT: That was as to Farmer to him?

MR. ESFANDIARY: No. No. Ashley Robert's e-mail to Dr. Heydens which asks the question: I was under the impression these were inert, but reading the response this morning in *the Ecologist* makes it sound like the combination is toxic. And what do you think? he says.

THE COURT: Oh, I see. Hi, Donna, Bill. That?

MR. ESFANDIARY: Yes, correct. And Dr. Heydens' response to this and he says: Ashley, I think the short answer is no.

THE COURT: You know what? I think I read it in reverse. I was reading this one instead of this one.

MR. ESFANDIARY: Right. Yeah, that makes sense.

THE COURT: I did read it -- I think I read it... I think you're right. Do you want to respond, Mr. Ismail?

MR. GRIFFIS: Mr. Griffis. I do not, Your Honor.

THE COURT: I will overrule that objection.

MR. ESFANDIARY: Thank you, Your Honor.

THE COURT: Hold on one second.

So it's those two e-mails you're talking about specifically?

MR. ESFANDIARY: Yes. We're not concerned about Dr. Farmer's e-mail.

THE COURT: 145 to 153. Hold on. Let me just look at the e-mail.

145 is, yeah, 16 to 153, 4. That's overruled. That should be overruled because you're talking about those two e-mails.

MR. ESFANDIARY: Just as a matter of practice going forward, Your Honor, I assume that any objections to e-mails where, for example, Dr. Heydens is responding to it, I assume those kinds of objections will be overruled if they're otherwise admissible because otherwise a written response from Dr. Heydens doesn't make sense on its own.

THE COURT: I do. And I just think I read it the wrong order. Let's keep going.

MR. ESFANDIARY: The second one, Your Honor, is on page 264 beginning on line 16. And it's exhibit -- I'll get you the exhibit in just a second.

THE COURT: So there's two -- you're on page 15?

MR. ESFANDIARY: And it's Exhibit 36 that's being discussed.

MR. WISNER: It's the same thing, Your Honor.

THE COURT: All right. That may very well -- let me take a look at it. I may have read it in the reverse. I was trying to get it read through pretty quickly before the close of business yesterday. So let me just take a look.

So the e-mail that's from Garnet, Richard Garnet to Bill Heydens should be included. That's a setup e-mail for his response.

MR. ESFANDIARY: That's right. And I assume Mr. Miller took his deposition. Mr. Miller asks Dr. Heydens about Dr. Garnet's e-mail in terms of what the formulated product means.

THE COURT: Hold on. Okay.

So on 263, you're talking about page 263 to 264?

MR. ESFANDIARY: Yes.

THE COURT: And where specifically, which line are you?

MR. ESFANDIARY: So it's the same -- yeah, it's the same issue because it was overruled as part of that chain of question and answers. Sorry, it was sustained as part of the same question and answer.

And -- oh, you know what, Your Honor, I'm sorry, I confused myself. There's a nonissue there. It's fine. I just wanted to make sure that that e-mail from Dr. Garnet was admitted.

THE COURT: Okay. So the setup e-mail?

MR. ESFANDIARY: Yes.

And lastly there's a set of questions and answers towards the end of the deposition where Mr. Miller comes back after Monsanto's counsel has had a chance to question Dr. Heydens.

THE COURT: Right.

MR. ESFANDIARY: And Mr. Miller shows Dr. Heydens the IARC monograph. And Your Honor excluded any testimony from Dr. Heydens based on the IARC monograph being shown to him as hearsay. And I just want to clarify that, you know, we're not trying to get the IARC monograph admitted through Dr. Heydens. It was solely for the purposes of his examination that he was being asked about the IARC monograph because throughout his testimony he consistently relied upon the EPA's evaluation and he's also criticizing IARC.

THE COURT: First of all, let's go to the page.

MR. ESFANDIARY: Yes. It will be page 443 --

THE COURT: What page on the objections?

MR. ESFANDIARY: The IARC stuff starts on page 34 of the objections and rulings.

THE COURT: So the hearsay objection is to the IARC monograph. So you're not offering that -- I mean, you don't intend to offer that into evidence, do you?

MR. ESFANDIARY: Right. It's just for the state of mind because he was testifying about IARC earlier in his deposition and also about his reliance on the EPA. So Mr. Miller obviously wanted to examine him about, well, what do you know about the IARC monograph? He's seen it, he's read it, he's analyzed it as part of his work as the product defense team at Monsanto.

THE COURT: Some portion of it is coming in at some point. That has not yet been discussed or resolved. I know that the IARC monograph itself is not coming in, but I think some part of the summary maybe -- well, we haven't had a conversation about that.

So I'm not entirely sure when you're saying it's not coming in. What, was it handed to him to look at --

MR. ESFANDIARY: Right.

THE COURT: -- in the course of his deposition? And he's talking, it's in his hand, it's not admitted. Because there is an objection. Maybe I should understand better the objection.

MR. GRIFFIS: If counsel does not intend to display the IARC monograph or offer it into evidence during this question, we don't have any objection to him being asked questions about it.

THE COURT: That's the question I'm asking. It sounds like in the course of the deposition he's handed the monograph, he's looking at it as he's speaking. And if the clarification is -- is there an objection to playing the portion where he actually has it in his hand, he's speaking, and you don't object, then we're fine and we move on.

MR. GRIFFIS: Right.

MR. ESFANDIARY: Right.

THE COURT: If it's not being offered, then I think we just resolved that issue.

MR. ESFANDIARY: And really last thing, Your Honor. At the start of the deposition, Dr. Heydens is shown an article -- if you go to -- I can give you the page and line.

THE COURT: I know, I think it's the thing that talks about ghostwriting or something, it's an article about ghostwriting.

MR. ESFANDIARY: That's right. And the same thing, Your Honor, we wouldn't necessarily --

MR. WISNER: Your Honor, I actually think we

came to a stipulation about this pretrial, all published literature we agreed would not come into evidence but could be shown to the jury.

THE COURT: Okay. So if you did, you needed to tell me or otherwise not object during the course of the deposition.

MR. WISNER: It just occurred to me.

THE COURT: Because I'm just looking at what I'm looking at. So if you have come to an agreement about it, let me know where it is and I'll change it.

MR. GRIFFIS: Actually technically we haven't because that was part of the proposal about foreign regulatory documents and everything else that we never got a response to so -- so it's a stipulation we're prepared to make. But it doesn't apply to anything that gets published in a magazine, which is what this is. We're talking about scientific medical literature, and that is different --

THE COURT: I know what you're talking about. I don't know whether what you're telling me is you're going to do the same thing as in the last where you're just handing him something, he's looking at it, the jury is not looking at it, and you're talking about the contents or whatever he's going -- the questions that are asked and answered. There was an objection to that.

I don't know if it's the same issue that we just had. If it is, fine, because we're not publishing it to the jury.

MR. GRIFFIS: Well, we do have an objection to him being just shown -- this is somebody's definition of ghostwriting. It's not a piece of scientific literature within his purview. It's not a toxicology article. It's not about toxicology or carcinogenicity of Roundup or anything like that.

THE COURT: It's about ghostwriting which I think is part of what they're talking about with this witness.

MR. GRIFFIS: It's part of what they want to talk about with this witness, but it's not his own purview. And, you know, the definition of the World Association of Medical Editors on this ghostwriting --

THE COURT: Take me to the page so I can look at it.

MR. GRIFFIS: Page 26 of the transcript.

THE COURT: Page what of the objections? So I know exactly what ruling I'm looking at.

MR. WISNER: In the first page, Your Honor.

MR. ESFANDIARY: It's the first page, yeah.

THE COURT: Right. Okay. So that's Exhibit 3 and the objection is to the document.

MR. GRIFFIS: To the document and question. But the document --

THE COURT: It doesn't say that in there. That's why I didn't address that. It just says "objection hearsay, Exhibit 3."

So maybe I have to get a little more familiar with the style of the objections. Because if you have hearsay Exhibit 3, I think the objection is a hearsay objection to Exhibit 3.

MR. GRIFFIS: Okay.

THE COURT: And not to the transcript. Because in order for it to be an objection to the transcript, you need to include it in that column. That way what I'm probably going to do, which is quick and dirty, is circle it, draw a line, and say S or O so that you can follow.

MR. GRIFFIS: We'll be more clear.

THE COURT: That's fine. I didn't see that. And that's different than if you're objecting to the question and answer, it would be different.

MR. GRIFFIS: We'd be objecting to both.

THE COURT: I didn't know that until now, but that's fine.

MR. GRIFFIS: We've also asked -- I mean, there's a caveat at the top, but people often don't read

caveats. But it's at the top of all of the designations saying that this doesn't necessarily reflect our objections to particular exhibits in whole or in part. We really focus on the testimony. And what we've done in the past is take up objections to particular exhibits, and there's usually only, you know, a couple at issue in a particular deposition, right before or the evening before or whatever is convenient, and work that out.

Often it's an issue of redaction. For example, Mr. Wisner displayed to the jury and read today a reference to --

MR. WISNER: I said a lot.

MR. GRIFFIS: Yeah, breast milk was one. Endocrine disruption was one.

THE COURT: I saw --

MR. GRIFFIS: We would normally -- had we known that that particular exhibit was going to be displayed and that part of it be displayed, we would ask that that be redacted. That would be the sort of thing that we try to clean up. And we have some objections to some entire exhibits, but it's fairly rare but there will be some of that.

But anyway this particular one.

THE COURT: So this particular one. Let's

focus on this for a minute because I guess if we need to come back, we can. I guess this would be right before you show the -- because I assume this is an editing the video issue, which is that once I rule, you're going to edit the video to reflect my ruling. And what do you guys do, review the videos again?

MR. WISNER: Correct.

MR. GRIFFIS: Yes.

THE COURT: And then decide if there are other issues right before the video is shown?

MR. GRIFFIS: What we've done historically is figure out what our mutual objections are to the transcript because that's important for these guys getting them cut, getting them actually cut and prepared so that they can be displayed in a manner, kind of a first order of priority.

And then we focus on the exhibits. To the extent that we haven't -- I mean, obviously to some extent, that gets done during the first process. But to the extent that redactions need to be done or that we have a remaining objection to some exhibit that hasn't been previously worked out, then we take that up later. Sometimes that involves knocking out a piece of testimony. But that's usually a deletion of segment 15 or something like that. It's fairly simple in a

technical perspective to do.

MR. WISNER: And what we also do is we basically meet beforehand after the deposition has been played. And I tell counsel we're moving the following exhibit numbers into evidence.

And most of the time they say sure. And so I just move it into evidence often outside the presence of the jury, just during these housekeeping matters. And that's how we've done it historically. So I think it's worked pretty well. It also helps the clerk keep track of the evidence because it all comes in in one shot.

THE COURT: Okay. So the objection is to lines 15 to 21. And that's fine. But I don't know how this is going -- I mean, it's not my problem. I don't know then how it's going to make sense because there's a continue referenced to the document.

So I'm fine with the objection, the hearsay objection because it is, and I sustained that.

Looking at the six or seven lines that you're objecting to, I can sustain the objection because I'm not allowing the article in, but I think you need to keep reading to decide and maybe meet and confer. Once I've done that, there may be other parts of it that you need to delete because you're talking about the document, and there are a few phrases and then

ultimately the question is asked, "Do you agree with that?" And then he says, yes, I agree with that.

So anyway, that's not going to make sense so I'll let you guys work it out.

MR. GRIFFIS: We'll work that out and we'll object to the questions.

MR. ESFANDIARY: It's like, Your Honor, Dr. Heydens here has been cross-examined with a ham sandwich essentially; right?

THE COURT: But you don't see the ham sandwich. He just referred to it.

MR. ESFANDIARY: He just referred to a ham sandwich, exactly. And the issue is also that Dr. Heydens agrees with the definition of ghostwriting. And again it's not being proffered, you know, for the truth --

THE COURT: So what you're going to have to do is just say that there is a definition out there, do you agree or don't. Because the documents -- you're right, the document is the ham sandwich, but you don't get to show the ham sandwich or admit the ham sandwich, you just get to talk about the ham sandwich.

MR. ESFANDIARY: That's fine.

THE COURT: So that's the basis of my ruling.

Okay. So that brings me to defendant's

concerns.

Can you give me one quick second. I'll be right back.

(Pause in the proceedings.)

THE COURT: Mr. Griffis.

MR. GRIFFIS: Thank you, Your Honor.

We have submitted a trial brief on this issue, and I believe it's been filed or is going to be filed. I've got my phone off so I don't know the exact --

THE COURT: Oh, you mean a separate briefing from what you've already filed.

MR. GRIFFIS: Oh, yes.

THE COURT: Okay. What is this?

MR. GRIFFIS: I handed it up today. And the issue here is pretty simple. This pertains to the portion of the examination in the 300s. The first one that we wanted to talk about is on page 322. But it's where Dr. Heydens is being asked by defense counsel about various regulatory documents.

And what Your Honor appears to have done is look at those -- look at what the actual documents are. And if it's a document that you had just ruled came in under Section 1280 or under 452, you admitted it, and if it wasn't, then you sustained the objection.

THE COURT: Right.

MR. GRIFFIS: And similarly to the issue raised with Mr. Esfandiary with regard to IARC, it's our intention to put these documents into evidence at the time with Dr. Heydens. We may file a motion asking Your Honor to take judicial notice of them.

For example, one of them is the REDs, the 1992 REDs. That stands for Reregistration Eligibility Decision by the EPA. The EPA is going through this every 15 years a mandatory pesticide reregistration process.

The most recent one started, for example, in 2009 and culminated with the 2016 and 2017 LPP reports. The previous one culminated in the 1993 RED.

What we focused on in the request for judicial notice and the trial brief that was similar to that on 1280 which we submitted to you was the most recent decisions of a few regulatory authorities, to keep it as simple as possible.

THE COURT: So let me ask you a quick question. I know that Mr. Wisner yesterday talked a little bit about, well, we've kind of resolved the EPA stuff, we can talk about the EPA.

I don't know if these documents are part of some of the documents are in that conversation or not.

MR. GRIFFIS: Well, they're real similar to --

I mean they're terrifically similar to the 2016 and 2017 OPP reports, the exact correspondence back a little bit in time, back to 1993.

So what we're doing when we're asking Dr. Heydens about it is just showing that Monsanto's reliance and knowledge of that document back then which brings us, you know -- and then bring it up to the present with 2016 and 2017 OPP testimony, which you admitted.

THE COURT: So let me just say if you would identify those, because I think if he's just handed a document to look at and it's not being offered in evidence, it's the same thing we were talking which is I don't think we have -- I thought there was an objection to its admissibility at that time. And if that's not the issue, then I don't think -- I think that we're probably talking about something different with respect to ruling on these objections and this document and maybe it's an argument for another time.

MR. GRIFFIS: Yes, Your Honor.

THE COURT: But then I think we can probably get past that. So I'll have to note where they are so when I file this, it actually accurately reflects what I'm doing.

MR. GRIFFIS: Okay.

THE COURT: But -- and that's the conversation we're having about some of these documents. It would be the same thing.

MR. GRIFFIS: In the trial brief we put in bold the page and line numbers at issue.

THE COURT: Okay.

MR. GRIFFIS: And the documents in question are the 1993 RED which -- and again we're not going to offer any of these in evidence through Dr. Heydens. We may seek judicial notice of them at another time, but we're not doing that today.

Another one is the Cancer Assessment Review Committee, the CARC. You've admitted at plaintiffs' request the SAP which is, as I was saying the other day, not a body of the government, some independent scientists that are brought in to consult, but CARC is the group of government scientists that is assembled in order to make cancer carcinogenicity evaluations on behalf of OPP.

THE COURT: So let me tell you what happens when I'm looking at this. We're sort of talking about something a little different than what I'm looking at. I'm looking at what's really literally in front of me at that moment and I'm ruling on.

MR. GRIFFIS: Yes.

THE COURT: I understand your argument and we can probably have that conversation about whether those are in fact like something else. But I can only rule on what I see and reference the rulings I've already made.

And so when I looked at this, what I saw was I said yes to two documents, EPA documents. I haven't ruled on anything else. These are similar so all I can say is no until I say -- unless and until I say yes.

MR. GRIFFIS: Right.

THE COURT: So I think that that's -- so you have to understand my thinking as I'm going through. That's all I can do. I'm sitting in my chambers by myself looking at this. I can't theorize what you may be asking that's similar to some other argument that you've already made.

MR. GRIFFIS: And what we're saying in our brief that we're not actually asking you to make the decisions about the documents yet, just the testimony. And we won't be offering the documents into evidence with Dr. Heydens.

THE COURT: And I don't have a problem with that unless counsel has an issue, you know, unless they object.

MR. ESFANDIARY: It's not so much the document itself. It's the way in which Dr. Heydens is examined

about the document. And if you look at our objections on the objection chart, it's more than just a hearsay issue. It's more of an underlying 352 issue here. And speculation as well.

THE COURT: What page?

MR. ESFANDIARY: If you look at, for example, page 25 of the objection chart. The specific page -- I can give you an example of a specific page in the deposition at issue. If you'd look at page 323.

THE COURT: Okay.

MR. ESFANDIARY: And if you look at, for example, line -- beginning on line 16 of the transcript, he's asked:

"Q. Can you read what that subheading is for the record, please?

And he says:

"A. B is human health assessment.

"Q. Was it human health risk assessment conducted for glyphosate as part of the RED decision-making process?

"A. Yes, it was."

And that's essentially speculation, Your Honor. He does not have any personal or inside knowledge of what the EPA's process is.

This is pages and pages of Dr. Heydens being

shown -- actually not even shown, he's been asked to read into the record extensive portions of this document and then being asked to speculate on what the intentions, procedures, and motivations of the EPA are behind making this evaluation.

This is not the witness for this kind of examination. So putting aside the 1280 issue and the whole, you know, public records exception, there's an underlying 352 issue with the way this testimony is coming in. So that's our objection.

THE COURT: I did notice that.

So tell me, Mr. Griffis, as I look at this testimony and he seems to be doing just that. And I did go back to see, wait a minute, is this guy an expert? Because he wasn't designated an expert. So this is not expert testimony.

MR. GRIFFIS: It's not expert testimony.

THE COURT: And so he's basically just sort of explaining what other people are doing. So the document is one thing and it may be admissible because I've made similar rulings.

MR. GRIFFIS: Yes.

THE COURT: But his testimony basically talking about what the EPA did or didn't do, I don't think he's competent to do that.

MR. GRIFFIS: Dr. Heydens is a company toxicologist. And he -- you know, what this testimony is intended to demonstrate is what the company knew and was aware of and relied on that EPA was doing before, during, and after the IARC decision, before, during, and after the exposure periods of various plaintiffs including the Pilliods.

And the -- and him discussing this is reflecting his understanding of the process and part of what the company was relying on.

THE COURT: Well, but -- and I know that. Because there are lots of places where he does explain just what he does, I assume this is about what his job is, what he knows about certain kinds of studies. But that's a little different than the testimony basically parsing the document itself and talking about the EPA.

And so I think my rulings reflected that those -- and you could certainly tell me if you think I'm confused about that -- but he picks up the document, the EPA document, and he is asked:

> What sorts of items are evaluated as part of the RED human health assessment that are listed here in this table?
>
> Well, it's a very detailed assessment.

Well, he doesn't do that. He's talking about what the EPA does, and that's hearsay. So the EPA needs to talk about what the EPA does. Dr. Heydens may have some knowledge, but it's kind of hearsay knowledge about what they're doing, not direct knowledge.

And then later on he says: Well, so were the mouse studies submitted by Monsanto? Yes, they were. Those things are all fine because when he starts talking about what he does and what his responsibilities are, I don't think I sustained any objections to any of the testimony where this is in his direct knowledge.

MR. GRIFFIS: I would say to that that Dr. Heydens' understanding and belief about the rigor of the EPA's assessment is directly relevant to Monsanto's state of mind and Monsanto's good faith belief that the EPA's decisions are valid and reflect sound science.

Part of the failure to warn standard is going to be --

THE COURT: But that's different than testifying about what the EPA does based on the document. He's free to testify about what Monsanto thought happened and what their state of mind was relative to what the various requirements and regulations were. He should.

But when he -- that's not this. This is:

This is what this is, this is what they do, this is how they do it. And that's not in his direct knowledge.

MR. GRIFFIS: Well, his belief about this is what they do, this is what they've done --

THE COURT: Not related to this document though. That's why I'm saying -- I don't know how -- I know it's going to come in as a video, but that can't come in. If there's testimony about what Monsanto did, what he thought Monsanto was supposed to do, and all of that, that's still not this. This is still different. This is still his going into basically Monsanto's state of mind and talking about what Monsanto does without any foundation for that.

MR. GRIFFIS: Would the same apply to Mr. Miller's questions reading from the IARC document and similar questions of other witnesses?

THE COURT: I don't know. We'd have to talk about those, and we'll cross that bridge. I'm not sure what you're referring to. But --

MR. GRIFFIS: Then I think -- I believe that what Your Honor did was with regard to these issues where the discussion was about a document that you hadn't ruled on yet, you made a single ruling, you know, see page 20, it's hearsay, because I haven't ruled on it yet. Rather than looking --

THE COURT: There were several pages where the exact same thing, the exact same objections were made. They were different citations but the exact same objections were made. And it covers from, let's say 337 to 341, or maybe even a longer span of pages. But each page has the same objections.

So I'm not reading differently. Even though it may be page 347 or 365, yeah, it's kind of a -- well, I'm trying to get used to your style I guess is what I'm saying.

I think I get it, but if that's how you're going to do it, and that's actually a little bit later on I think in the document too where you shift and then for three pages it's the same exact objections in the same -- in the column, the same column, the same page.

So my rulings aren't going to change. It's just referenced to the entire group of testimony, entire period of that testimony that you're actually objecting to.

So that's all. I mean, I can sort of do -- that's all I can do. I can't really -- I don't think there's anything else I can say.

MR. GRIFFIS: I think I understand it.

THE COURT: Do you understand what I'm saying?

MR. GRIFFIS: It may be the case that I'm not

sure without spending time, but I doubt you want to take time right now to look through this to see if there is some gaps between the rulings that you made with the clarification that you just gave that if the documents aren't coming in, then you don't have a -- that's not a problem that you have with the testimony anymore.

THE COURT: Yeah. You're going to have to go back and look at that. And I don't know whether -- I don't recall whether this particular document was the only one where he had that kind of -- where he was testifying in that way or there were just references and he's sort of giving his thoughts on what -- sort of chronology of what Monsanto knew and when they knew it.

So I would suggest that you just go back and look at it again --

MR. GRIFFIS: And we'll talk about that.

THE COURT: -- and maybe refine the objections or at least refine the number of places where you're concerned.

MR. GRIFFIS: The last issue is on page 3 of the trial brief that's unrelated to the others. There are two rulings that seem to be mistakes. It seems to us, and perhaps we didn't understand correctly, that you sustained objections. This would be -- the first one would be on page 336, lines 13. So that's page --

THE COURT: Objection to 348 through 356; is that what --

MR. GRIFFIS: You excluded all testimony from 322 to 341.

THE COURT: All right. Let me take a look.

MR. GRIFFIS: I see that on page 20. And that appears to be on the basis that it's hearsay because that was the objection you circled there. 322 to 341.

But a portion of that testimony is about -- not about Exhibit 41 which is one of the documents that we discussed earlier, but it's about the 2016 OPP report. That's 326.

MR. WISNER: Your Honor, this is testimony that is literally what we're talking about. He's speculating about what they did, why they did it. He says that the reason they did this is because they looked at -- they wanted to look at more studies. I mean, he's full on talking for the EPA now.

You read the big paragraph and then speculates about what Monsanto does. Maybe there's something in there that we could work out that is a legitimate question and answer, but most of it falls into that category.

MR. ESFANDIARY: And also, Your Honor, in the EPA document, there's references to the JNPR and EFSA

and then Dr. Heydens goes on to testify about what those agencies did. So Monsanto's counsel will say:

Oh, the EPA also agreed with EFSA in this document; right?

Oh, yes, they did.

And you also know about the EFSA opinion?

Yeah, I do.

And what do they do?

So it's just kind of this never-ending spiral of testimony from Dr. Heydens putting himself in the shoes of regulators that he's not competent doing. I mean, he's not being asked whether Monsanto believes about how great the EPA is. He's being asked to read into the record portions of these documents and then telling the jury what they mean and what the EPA did. And that's what we're objecting to.

THE COURT: Right. Let me just stick with Mr. Griffis for a second because I want --

MR. GRIFFIS: That's right.

THE COURT: -- to be clear on exactly --

MR. GRIFFIS: Well, it appeared to me from page 20 of the rulings that the basis of your exclusion of 322:3 to 341:4 was --

THE COURT: On page 20, it's 321:18 to 322

to -- oh, I see. 322:3.

MR. GRIFFIS: Yeah. It looks like the basis for that is hearsay and the statement that it's Exhibit 3-41.

THE COURT: Right. And I think that is his discussion of the document. I think it is a similar discussion. It does go through some detail about what the EPA is doing. So that is -- I think my ruling would be to sustain that conversation.

So if you want to go back and figure out which of the testimony relates to parsing these documents and saying, okay, this is what the EPA did, this is what the EPA did, then I'm going to sustain those objections.

MR. GRIFFIS: Okay.

THE COURT: I will not sustain objections, though, to his personal knowledge of what Monsanto did and what he did on behalf of Monsanto and why he did even relative to the EPA.

So if he's saying: Well, the EPA required that we do X, Y, and Z, or we were told that this was what was required, that's all fine.

MR. GRIFFIS: Certainly a question like: You know about the EFSA decision, right? That would be admissible.

THE COURT: That would be. If you know about

the EFSA decision, what did you think of that? What did you do in response to the EFSA decision?

MR. GRIFFIS: Yes, Your Honor.

THE COURT: Plus the EFSA decision is coming in anyway, right?

MR. WISNER: That's right. Where we take issue is when they go: What did they do? And why did they come to that conclusion? Did EPA agree with EFSA? I don't think --

THE COURT: I think we get --

MR. WISNER: We'll meet and confer on it.

THE COURT: You understand now what my concerns are and what your concerns are. And if I need to go back -- I'm going to file these because they're going to need to be filed so I need to clean these up so that if somebody looks at this, they can see what I did and why I did it.

MR. GRIFFIS: You know, having a set of rulings from Your Honor and hearing your process is very helpful in helping us refine what we provide to you.

So that I can understand, will this apply also if a corporate witness is shown a corporate e-mail and the questioning is:

Do you see this? It says that, right?

Do you see this? It says that, right?

Do you see this? It says that, right?

And they're not being asked to comment on it or react to it, but they're just reading things into the record about the e-mail, would that also be --

THE COURT: Really, when we're having a question about A, let's stay on A. We can't talk about A prime because I don't have A prime in front of me right now.

If you want to give me an example of the deposition, even this one, where that's the case, then I'd be happy to take a look at it if there was an objection. But I can't do the tit-for-tat conversation where if you rule this way, it's favorable to the plaintiffs, when we present something, how are you going to rule? I don't know the answer to that. There's only so much of a leading question I'm going to permit, if that's what you're asking.

MR. GRIFFIS: Yes, Your Honor.

THE COURT: I think that's even reflected later on in this deposition where there was quite a bit of -- I mean, isn't it true you killed the Pope? Or whatever. But it's like -- you understand what I'm saying. It's getting late in the day. But I get it. I understand what you say. But I need specifics because as we're putting things on the record, it's just going

to create a messy record if we're sort of having some generalized conversation about it.

I want to stick with specific things in the documents so that we're all clear on what I'm doing and you have guidance and, you know, I can make sense of what I said and you can make sense of it.

MR. GRIFFIS: Well, I think we can do a better job with our objections and the work product we provide.

May I ask which other depositions you've looked at so far?

THE COURT: I'm almost done with -- I'm in Dr. Reeves for a week. I'm trying to get through this. It's a very long deposition. But I also do everything draft, and then I go back and I finalize it to make sure that I made correct rulings, at least the rulings I want to make. And so I've done Dr. Reeves in draft. I have maybe a couple more pages to go.

I just haven't had a chance to go back and cross-check it because it's a very long deposition. It's going to take a little time. Just between jury selection and opening, I haven't had the opportunity to do that.

However, I think later on this evening, I'm going to try to get that done. I would like to get that to you before the weekend because we're not going to be

back in session until Tuesday.

MR. GRIFFIS: Yes.

THE COURT: And I know that you're putting this on -- is this part of your case, Mr. Wisner?

MR. WISNER: Yes. Dr. Reeves will be in our case in chief.

THE COURT: I know Mr. Wisner is asking me to finish it and I will try.

MR. WISNER: I think it will be helpful.

THE COURT: I'll try to get that done before tomorrow. I have a meeting in San Francisco, but I will try to make it work.

MR. GRIFFIS: Thank you, Your Honor.

MR. WISNER: The next deposition, if you're looking for the next one to look at?

THE COURT: Not really. But you're going to tell me anyway. That's okay.

MR. WISNER: Would be Dr. Blair. We originally had Reeves done and then Heydens done because we thought --

THE COURT: Why don't you give me a list in order of priority? Because I'm going to take some of this stuff with me over the weekend.

MR. WISNER: I can tell you right now you're not going to get through more than two this weekend. I

mean, maybe you plan to. But it would be Blair.

THE COURT: All right.

MR. WISNER: You'll have all these already. So it will be Blair, Koch, K-O-C-H, and Grant, Hugh Grant.

And Blair, just to give you some timing, our plan was to play his testimony. He was the chair of the IARC working group. It was a deposition. We want to play him before Dr. Jameson takes the stand. And it's about an hour and a half. So our plan was to play it first thing Thursday morning at 9:00 a.m., Blair, and then have Jameson testify immediately afterwards and get him off the stand in one day.

THE COURT: Okay. That's fine.

MR. WISNER: So that's just the timing of things.

THE COURT: I'll put them in that order. I just wanted to know.

MR. WISNER: And the Reeves one, the reason why we had you take a look at that first, I think, is because -- well, a couple reasons. Your rulings on that I think will strongly guide us in a lot of the other depositions. I think it will result in less objections by both sides since we think -- we know that's not a winner. You know what I mean?

THE COURT: All right. Well, that sounds fine. Thank you. Thank you for your time.

ALL: Thank you, Your Honor.

THE COURT: Everybody, well done.

I'll see you Tuesday.

(Proceedings adjourned at 4:26 p.m.)

State of California)
)
County of Alameda)

I, Kelly L. Shainline, Court Reporter at the Superior Court of California, County of Alameda, do hereby certify:

That I was present at the time of the above proceedings;

That I took down in machine shorthand notes all proceedings had and testimony given;

That I thereafter transcribed said shorthand notes with the aid of a computer;

That the above and foregoing is a full, true, and correct transcription of said shorthand notes, and a full, true and correct transcript of all proceedings had and testimony taken;

That I am not a party to the action or related to a party or counsel;

That I have no financial or other interest in the outcome of the action.

Dated: March 28, 2019

Kelly L. Shainline, CSR No. 13476