SENATE COMMITTEE on FOOD and AGRICULTURE
Senator Dean Florez, Chair

Evaluating the Health and Environmental Impacts of Methyl Iodide: What are the Alternatives?

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SENATOR DEAN FLOREZ: Okay. Let's go ahead and convene the Senate Committee on Food and Agriculture. I'd like to begin by thanking everyone for being here today and welcome you to our informational hearing titled, "Evaluating the health and environmental impacts of methyl iodide: What are the alternatives?" Obviously, there are no questions to the importance of the agricultural industry and to the economy of California that the food we grow in our state is the backbone of the agriculture economy. We're the world's fifth largest supplier of food and agricultural commodities and so we understand the importance of the work done here, at least in Sacramento, when it comes to understanding the environmental and health impacts of the agricultural industries and the chemicals that they use.

Today we are going to be discussing the impacts of methyl iodide, given the proposed use of this fumigant to replace methyl bromide. The hearing will begin with some scientists and university professors that have studied and researched the fumigants and their impact on the environment. From them we would like to get a better understanding of the potential environmental health hazards posed by methyl iodide.

Second, the committee will hear from researchers, farm owners, and industry representatives to examine alternatives to the application of methyl iodide. From them we would like to understand, if you will, what specifically is

available in terms of the replacements for methyl bromide; where they see the industry moving forward as we begin to look at these types of fumigants.

The third panel; we will hear from federal regulating agencies responsible for the registration of this particular fumigant—methyl iodide—as a pesticide for use in California. Then, we would like to understand the registration process; the analysis used to register such pesticides; and particularly, we'd like to understand DPR's external review and its reevaluation of this as a fumigant. I'm more interested in understanding the steps, as we move forward, in terms of how we're going to move through this process. And, of course, we're going to hear from DPR, the Department of Pesticide Regulation, and here, again, we'd like to go over the entire issue, if you will, from 2006, 2007, and up to this point. We'd like to learn of the steps taken so far. More importantly, we'd like to talk about the additional steps and the plans DPR plans to move forward on, in terms of these long and short term goals in terms of reducing potential hazards of this fumigant.

As most know, this committee is very interested in protecting the health of those who work in our farms and those that live in the community surrounding agricultural lands.

I'd like to thank Senator Wolk, our newest member to the Senate Ag Committee. We share lots of agricultural area and there are lots of areas that border agricultural land. And we're very interested in trying to understand how our agricultural industry can operate and profit, but at the same time, not profit, if you will, on the health of those who work hard or live near agricultural lands. Today it's trying to find, if you will, the appropriate balance in this particular issue. And I'd like to get started. And, Senator Wolk, would you like to say anything at all?

SENATOR LOIS WOLK: No thank you.

SENATOR FLOREZ: Okay. Let's go ahead and have the first panel, if we could, the scientists and researchers. We have Susan Kegley, Ph.D., Amber Wise, Ph.D., and Neil Schore, Ph.D. And, please, when you introduce yourself for the record, give us some of your background and we'll go from there.

Good morning.

SUSAN KEGLEY: Good morning. Thank you so much for having us. There's handouts coming around that you will need.

My name is Susan Kegley. I'm an organic chemist—Ph.D. organic chemist and consulting scientist with Pesticide Action Network. I've been working in the area of pesticide science and policy and air quality for the last 10 years in California.

I want to provide an overview of how this chemical would be used if it were registered, and some of the potential hazards. Others will take up more of the details.

On the first page there, with the picture of the strawberries and the tomatoes, methyl iodide is proposed as a new fumigant. EPA registered it in October of 2007 but California has had a more thorough review process. It's to be marketed as a drop-in replacement for methyl bromide because of methyl bromide's global phase-out. And the crops for which it will be used will be strawberries, tomatoes, turf, grapes, nurseries, and cut flowers.

The problem with all of the fumigants is that they are applied at very high application rates on the order of 50 to several hundred pounds per acre, and, usually, lately anyway, as mixtures. Mixtures of fumigants are not tested in the toxicology, so we have ideas about the toxicity of one fumigant by itself but not many mixed together.

Some pictures below of the tractors. It's used prior to planting. So these will not be residues on a crop afterwards, but it's applied to bare soil.

And on the next page you can see an application—two different kinds of applications. A broadcast tarped application, where the tractor is applying the fumigant, dragging the shanks through the soil that release the gas, and the workers are shoveling soil over the edges of the tarps. So the tarp may slow the release of the methyl iodide from the soil but it doesn't stop it completely, and certainly, the edges where the soils are very permeable. And the second picture on the bottom is a bedded tarped application. You can see there's many more edges there, so those tend to leak more fumigant into the air.

On the next page I have highlighted some of the incidents, poisoning incidents that have happened, Senator Florez, in your district even. Exposure is inevitable with these chemicals not matter how careful the training is of the applicators. People make mistakes, for one thing. And even if people don't make mistakes, if you apply during certain weather conditions, such as temperature inversions, you will have off-site drift at levels that can be particularly toxic to people. Many people have been evacuated from their homes in the early evening/late evening when the inversion layers settle in. This is not cheap for the state of California. It's incredibly disruptive for the people who live close to these areas. And then, you don't even have to be that close; many of these poisoning incidents were for people living up to a mile away.

So methyl iodide has many hazards. It's got everything you want if you want to be poisoned. It's a Prop. 65 carcinogen. It causes developmental toxicity and fetal loss late in pregnancy, so miscarriages. It's a hazardous air pollutant according to EPA. It's neurotoxic, which is going to be mostly problematic for the workers. It's toxic to the thyroid. And as I've mentioned, it has a lot of potential for moving offsite. It also has potential to get into groundwater.

And then on page-4, I've put several other chemicals for comparison of the carcinogenicity of methyl iodide. And the (Q_1*) that is highlighted there, basically the larger that number is, the more potent the carcinogen—the chemical is. And so, methyl iodide is on the same level of potency as far as causing cancer as formaldehyde, which we've been working very hard to get out of building materials; pentachlorophenol used in wood treatments and no longer allowed to be used anymore; perchloroethylene used in the dry cleaning industry, and they're working really hard to get rid of that; and chloropicrin, on the bottom of the chart there, is one of the fumigants that will be co-used—methyl iodide and chloropicrin will be used together, so it will be the double whammy.

The exposures that DPR estimates indicate that you would be exposed to a level of methyl iodide if you live near the field that's 9 to 90 times higher—that would give you a 9 to 90 times higher risk of cancer over your lifetime. A risk of 9 times higher is about like smoking one pack of cigarettes a day, so 90 times higher is unacceptable.

As far as how much you might envision ever being used in California if methyl iodide were to come in and replace methyl bromide entirely, we can envision up to 6 to 10 million pounds a year of methyl iodide used in California.

And then finally, if California wants to prevent adverse effects that methyl iodide might cause, the best solution is to not register it at all. We can't afford more contaminated groundwater; it's very expensive to—you cannot cleanup wells often. You have to find other water sources. We really can't afford the health effects of more miscarriages, more cancers, more thyroid disease, and more neighborhood evacuations that are so disruptive and devastating to people.

Thank you.

SENATOR FLOREZ: Thank you. I do have some questions for you and for the panel, but why don't we go ahead and have the panel present and then we'll take them as a panel if that will be okay.

AMBER WISE: Good morning. And I'd like to thank you, Senator Florez and the committee, for allowing me to come and speak here today.

My name is Amber Wise. I'm a postdoctoral fellow at the Program for Reproductive Health and the Environment at the University of California, San Francisco. I have a Ph.D. in Chemistry from UC Berkeley. And my recent work at USCF focuses on environmental exposures and factors that may affect human health and development.

I'm here today to highlight not only the reproductive development and neurotoxicity concerns of methyl iodide, but also to speak to you as a chemist. I believe someone will be speaking possibly later about the caution and safety considerations that chemists employ when handling even very small amounts

of this substance in the laboratory, so I won't belabor this point. But I want you to keep in mind the hundreds of pounds of this pesticide that could be sprayed on a plot of land in a single application.

The structure of the main thyroid hormone contains iodine and this is the reason that iodine is an essential micronutrient. However, too much iodide exposure leads to suppression of the thyroid hormone synthesis and severe perturbations in the endocrine system. These can cause serious consequences on neurological development and have long-term adverse reproductive health outcomes. Methyl iodide is also a registered carcinogen in California under Prop. 65 and is known to cause serious health effects such as thyroid hormone and central nervous system disruption, neurotoxicity, thyroid tumors in addition to other cancers.

In pregnant rats and rabbits, methyl iodide causes severe thyroid hormone disruptions, fewer viable fetuses, lower birth weight, and increased fetal death, especially during late pregnancy. This was one of the toxicity endpoints of greatest concern to the California Department of Pesticide Regulation during the risk assessment of methyl iodide.

During fetal development, the mother is the only source of thyroid hormones for the fetus, and, therefore, even very small perturbations can lead to severe adverse health effects months and even many years down the road. In humans, this could translate to higher rates of miscarriage and lower birth weights, which lead to a host of problems later in life, including lower IQ and reproductive and serious developmental problems.

In addition to the risk from inhalation of methyl iodide, there are other degradation routes that are known to occur in the soil and water environment and they all yield an iodide ion. Methyl iodide is more likely than methyl bromide to cause iodide ion contamination of groundwater due its lower volatilization rates.

The California Department of Pesticide Registration estimates that the inhalation exposure for bystanders and groundwater exposures together would

surely exceed safety limits for iodide set by the National Academy of Sciences and the Agency for Toxic Substances and Disease Registry.

Another important point that Dr. Kegley mentioned earlier but I don't think is discussed quite enough is the formulation of this pesticide is such that it's mixed with another highly toxic fumigant called chloropicrin. It's my understanding this is because chloropicrin is a strong lachrymator, meaning it will cause your eyes to tear up significantly and cause a lot of pain, and this will help workers in determining if they've acutely exposed because methyl iodide doesn't have much of a smell itself. There is nothing in the risk assessment that addresses these facts that there will be simultaneous exposures to these chemicals. Additionally, this toxic chemical will already be sprayed in areas where the populations are exposed to other pesticides year-round and these contribute to higher body burdens and increased overt health outcomes in these groups.

Since the title of this hearing specifically asked for alternatives, I want to briefly mention a couple of things we can do to ensure the health and safety of our state while maintaining economic progress. There are researchers at UC Davis that have shown solarization, or the process of using the sun's heat to kill weed seeds and pathogens in the soil, have worked just as well to increase strawberry yields as traditional soil fumigants. There are also promising results using mustard seed meal and mustard plants as natural methods of pest control. And I think there will be some more people touching on that today.

We cannot continue to poison our environment and bodies with petroleum based and toxic chemicals. I agree with the 1986 decision to phase out methyl bromide because of its reactivity with the ozone layer in addition to the health concerns from exposures to these types of fumigants but I do not think that more data or toxicity tests will somehow find this chemical safe for use.

When I speak to fellow colleagues from graduate school about the possibility of replacing something as toxic as methyl bromide with an even

more reactive compound, they often laugh at me and think I'm not being serious. I hope you seriously consider the public's health and safety when making your policy decisions.

Thank you. And I'm willing to take any questions you have.

SENATOR FLOREZ: Thank you. Okay.

NEIL SCHORE: Good morning. And thank you, Senator Florez, for the opportunity to speak to you. I'm Neil Schore. I'm a professor of chemistry, also vice-chair of the Chemistry Department at UC Davis. I'm also director of the UC System wide Cancer Research Coordinating Committee which makes grants to start cancer research programs throughout the system.

The story about methyl iodide is actually something that, again, when I bring it up—as Dr. Wise has mentioned, when I bring it up among other faculty and mention that this is something that I've gotten involved in to testify with regard to, the main comment when I say that California is thinking of permitting this to be used agriculturally is, "Are they—fill in the blank—insane; crazy; out of their minds?"

And I think that there are aspects of the properties of methyl iodide that perhaps haven't been taken into account when one considers that it's now being used in the majority of states in the nation. And these include the basic chemical and physical properties of the substance—I've got a little handout that I've passed out to everybody—and also aspects of its environmental persistence that go beyond what the normal expertise of a normally trained organic chemist like myself might know about. And so, I have consulted with a colleague, Professor William Casey, who is a distinguished professor of geochemistry, environmental chemistry, land/air/and water resources, and water chemistry. In fact, this is a book that he lent to me so that I could have some documentation of some of the things I'm going to talk about.

Unlike methyl bromide and unlike a lot of fumigants, methyl iodide is not a gas; it is a liquid. It's a heavy, oily liquid with a boiling point well over 100 degrees Fahrenheit. It has a vapor density five times greater than that of air, and that's part of the reason why it's been suggested for use. It does not rise in

the ozone layer. It does not rise at all. If it's released at ground level, it stays at ground level. It disperses horizontally and downwards. When it disperses downwards and gets into the soil, there are a number of possible fates associated with it, one of which is that it can simply mix with groundwater. It mixes better with groundwater. In other words, its mix ability with groundwater is higher than that of methyl bromide or methyl chloride, so it can go directly into groundwater. And in groundwater itself, in water in general, it would last maybe for a time on the order of weeks. But that's not the whole story. The fact is that there is organic material in the soil—humus, other materials that derive from plant degradation just naturally and these are oil like. And since like dissolves likes—something we teach to our freshman chemistry students—the methyl iodide will be largely entrained into these oily, greasy, plant debris, humus like aspects of the soil. And when I asked Bill how long would it last; how long would it leach out from this organic matter in the soil, he said, "Oh, decades," literally, "decades."

Methyl iodide application will have long-term release effects throughout the groundwater. So we would be thinking in terms of something along the lines of MTBE except for the fact that methyl iodide is vastly more hazardous, vastly more dangerous in terms of cancer causing potential, in terms of acute toxicity than MTBE is. So we're dealing with a situation that I think perhaps hasn't been examined in terms of long-term consequences very widely, and that is persistence in the soil and slow leaching into groundwater on an ongoing basis.

Another aspect of this substance is that it's very difficult to remove from water. If you simply do what happens in a typical bottled water store, in other words, distill water that you got out of the tap, methyl iodide will simply distill right along with it. It's not going to go out. It's not going to be separated. It's impossible to separate it by simple distillation. So this will be a persistent contaminant to groundwater through the lifetimes of generations if it's used in large quantities. And the fact of the matter is, that it hasn't been used long enough in this country, anywhere else, for these aspects to be accurately

measured or taken into account. So that is a major concern on my part and I think of just about all of the chemists that I've spoken with.

One more little point I'd like to make with regard to the company that is distributing this—this Arysta organization. I don't really know very much about them. I've looked at their website. I have somewhat of a sense of what they do. But one aspect of the company that alarms me is that they do not belong to what is called the Responsible Care Initiative. And Responsible Care is an organization that developed when a group called the American Chemistry Council responded to the Bhopal incident, which some of you may be aware of. Almost exactly twenty-five years ago, a release of a toxic substance from a plant in Bhopal, India (methyl isocyanite) killed 3 to 4,000 people within hours. Several tens of thousands of people died within months. And the long-term health effects are still being felt among hundreds of thousands of people.

The American Chemical Council, a similar organization in Canada, gave rise to the Responsible Care Initiative whereby companies sign-on; and we're talking about chemical companies, biotech industries, pharmaceutical, oil companies. Just about any organization that has any commercial interest in chemistry offers up itself to independent inspection and audit by knowledgeable individuals. So this is not by government, this is by people who are trained in the business who understand the issues; who know what to look for.

Responsible Care is now distributed across the globe—53 countries, including Japan. Over 200 American companies signed on to Responsible Care. Over 100 Japanese companies have signed on to Responsible Care. It's entirely voluntary. But the whole point is, that these organizations want the public to have some confidence that they are following prudent, safe, environmentally sensible practices when they do their business. And the consequences are documented: Fewer workplace incidents; the workers in these organizations are healthier; they take fewer sick leaves; releases of toxic substances are reduced. All these for the price of joining this organization have

in fact been a major economic plus to the industry. And Arysta does not belong and that really bothers me.

Thank you very much.

SENATOR FLOREZ: Great. Thank you. You all are going to have to look at each other as I ask these questions because I'd like you to interact a little bit on some of these. Let's start with the very threshold question. Is there any safe way to use this fumigant? That's the hardest question last, and we'll work backwards from there.

DR. KEGLEY: The nature of the chemical is such that it will escape from where you use it. And the question is, is in what concentrations? If you used really, really tiny amounts maybe you could use it in a way that doesn't expose too many people at too high a level. But keep in mind that chemists, when they use a milliliter of this chemical, are wearing double gloves, handling it with syringes in a fume hood.

SENATOR FLOREZ: And yet the picture you showed, no one even had a respirator on. So farm workers.

DR. KEGLEY: Right. And those rules are changing a little bit. Most of the farm workers involved in an application will have to have respiratory protection, or, they're supposed to be provided with it anyway.

SENATOR FLOREZ: And how would they know if they're even exposed at certain levels given this has no particular scent? And you mentioned chloropicrin as an additive in order to allow the worker to, I assume, get stinging eyes and folks—you know, we had a whole…

DR. KEGLEY: Lung cancer.

SENATOR FLOREZ: Well, we had a whole—as you may have mentioned, we had the whole bill signed by this Governor. It was so bad when chloropicrin was applied to farm workers and we actually had pesticide drift, as we called legislation to the Governor and this Governor signed that despite protests from the industry yet now we're talking about combining this particular product with a Prop. 65 listed substance. So again, is there a safe application for this in the way that it is currently being envisioned to be used? Not in the

chemistry department at UC San Francisco. I mean, you tell me, is there a safe, practical way, from your experiences, to use this in the fields?

DR. KEGLEY: No.

DR. SCHORE: I can't imagine.

DR. WISE: I would agree.

DR. SCHORE: It just moves too fast.

SENATOR FLOREZ: And was this particular substance originally to be used as a fumigant? When we start to think about methyl iodide, I mean, was this particularly thought of as a fumigant?

DR. SCHORE: No. It's a research chemical. It is used in small amounts in synthesis of more complex molecules from less complex molecules which is for example, the cornerstone of the pharmaceutical and medicinal chemistry industries. And these are under tightly controlled conditions. In fume hoods certainly at minimum, and sometimes in what we call "inner atmosphere enclosures."

SENATOR FLOREZ: And you mentioned the—at least you referred to the fact that the move to this particular fumigant, pesticide, is that it doesn't allow for the ozone layer to be affected.

DR. SCHORE: It's too heavy. And I think it's just come from the expedience of, "Okay, methyl bromide does what we want but it goes up in the atmosphere. What's the closest thing to it that doesn't?" Well, methyl iodide. Well, that's true. That's absolutely true.

SENATOR FLOREZ: Right. Because it's an oily substance and actually stays to the ground.

DR. SCHORE: Right.

SENATOR FLOREZ: And this was because of the Montreal protocol and us moving in that direction?

DR. SCHORE: Yeah. Basically.

DR. WISE: Correct.

DR. SCHORE: It's not entirely benign to the atmosphere, because one way that it does decompose—a minor pathway—but in the amounts that's

going to be applied it may still be significant. When exposed to light, it will decompose to methane and iodine. Methane, of course, is greenhouse gas.

SENATOR FLOREZ: But there's two ways for this to travel I think you mentioned earlier. One is up to the level of the ozone; the other is into the 3,000 foot away household or farm worker housing complex, or myself (I live across the street from fields). I mean, this could easily, then, travel horizontally, I think as you have mentioned?

DR. SCHORE: Yeah. That's going to be…

SENATOR FLOREZ: Not at the height, but actually horizontally.

DR. SCHORE: Pretty much at your ground level.

SENATOR FLOREZ: At ground level.

DR. SCHORE: I mean, it's certainly volatile, so the vapors will travel. It does evaporate. But the vapors are so heavy that it would take significant atmospheric agitation to make them rise more than maybe, I don't know, a few tens of feet or something off the ground. But they would certainly be there at ground level just spreading horizontally.

SENATOR FLOREZ: And in terms of the actual component of methyl iodide, if without chloropicrin we wouldn't even know it, correct?

DR. KEGLEY: It has kind of a perfumy, sweetish smell. If you smelled it in the organic chemistry stockroom you will recognize it again when you smell it again. But it's not very noticeable to the average person.

DR. SCHORE: I've used it in research for a very long time but, in fact, I've never put myself in a position of smelling it. Really. If I were to take a thimble full of it and drop it down the drain in my lab (I can go back there that this afternoon and do that) I would be violating so many regulations that they would be too many to count. And if I were caught, then the fine would be some number followed by many zeroes.

SENATOR FLOREZ: Right. Okay. Let's go through a few more. I'd like to get this on the record. And the goal is to produce a transcript that we could forward to the various agencies and, of course, to our very own DPR folks so

they can get a better understanding from yourselves and so we can get a better understanding—the Legislature.

Can you go into some more detail in terms of the actual application of this? From your vantage point, how often is this going to be applied to a field? Let's use strawberries as an example. You used grapes earlier, but let's just use strawberries.

DR. KEGLEY: Strawberries; typically they'll fumigate once a year and in some places only every other year; and vineyards when they do a replant of the vineyard, so it's not as frequent, obviously.

SENATOR FLOREZ: And this is—again, the application is injected into the ground much like methyl bromide is?

DR. KEGLEY: And then tarped afterwards.

SENATOR FLOREZ: And tarped.

DR. WISE: This is long before there's any plants in the ground.

SENATOR FLOREZ: Right. And there's no residue on the actual food, correct?

DR. KEGLEY: Although there's a potential—after you fumigate a field for several years, there's a potential for iodine ion to accumulate in the soil, and whether or not that will be taken up by the strawberries is still an open question because we haven't had fields that have been fumigated year after year. After one year, they certainly tested—EPA required a test after one year and it didn't seem to be an issue. But after many years, it's hard to know.

SENATOR FLOREZ: Okay. And so, do you have an opinion on aerial spraying versus ground injection in terms of these…

DR. KEGLEY: This would not be aerially sprayed ever.

SENATOR FLOREZ: Right.

DR. KEGLEY: But the exposure compared to a chemical that you would aerially spray is actually higher just because you use more pounds per acre.

DR. SCHORE: Because on a per molecule basis it's heavier to get the same number of molecules in the ground you need more weight.

SENATOR FLOREZ: Gotcha. And this is the reason for the oily substance of it.

DR. SCHORE: Yeah. And since it's less volatile being a liquid rather than a gas. And, in fact, the pesticide function comes from the vapors of the material. In interstitial soil spaces, methyl iodide actually would provide less vapor than methyl bromide would so it might have to be used in larger quantities on for that reason as well.

SENATOR FLOREZ: Okay. And let's be clear for the record; what is it that we're trying to kill with this particular fumigant.

DR. KEGLEY: Soil pathogens, fungi, verticillium wilt, nematodes. Some fumigants are also effective on weed seeds, as well, and I think methyl bromide is and it's similar.

SENATOR FLOREZ: Okay. And that's the primary use of this?

DR. KEGLEY: It's basically sterilizing the soil before you plant.

SENATOR FLOREZ: Okay. And is it any better or worse from that perspective, only, in terms of what you're trying to kill versus methyl bromide?

DR. KEGLEY: I think the reason some people are enthusiastic about methyl iodide is that it's so similar to methyl bromide, that you can use it as kind of a drop-in replacement. Other fumigants are—Telone is better for nematodes, metam is better for weed seeds, but there's nothing like the methyl bromide's silver bullet.

SENATOR FLOREZ: This kills it all, basically?

DR. KEGLEY: Yeah.

SENATOR FLOREZ: So you don't have to do various types of applications of different types of products?

DR. KEGLEY: Well, the mix with chloropicrin certainly is helping. You know, chloropicrin is not just the warning agent anymore. When they're using it at levels of 30 percent or 50 percent, which several mixes of the methyl iodide products are like that, then it's actually being used as a fumigant to kill soil pests.

SENATOR FLOREZ: Okay. Let's go through the health side of this now for a moment. You mentioned that it's listed as a Prop. 65 substance, and what does that mean to be listed as a Prop. 65 cancer causing chemical?

DR. WISE: The state of California Office of Environmental Health Hazard Assessment maintains this list and they do risk assessments of various compounds they think are of concern. And so, to be listed it has to have reproductive cancer indications and I believe developmental.

DR. KEGLEY: And developmental. They list things as either a carcinogen, or a developmental toxin, or a reproductive toxin, or all three or two.

SENATOR FLOREZ: Where does this fall?

DR. KEGLEY: It's a carcinogen. They haven't reviewed it for it's developmental toxicity yet but it would certainly, once reviewed, end up on the developmental toxicant list because it causes—basically it causes miscarriages and interferes with pregnancy. But it's as much a political process as a scientific process to get these chemicals listed, and so, it hasn't been evaluated for that yet.

SENATOR FLOREZ: And you mentioned thyroid tumors in your presentation. What chemicals, particularly, in this methyl iodide causes that?

DR. WISE: It's the iodine ion itself. So your thyroid hormone structure, the chemical structure of your hormone itself, contains iodine, which is pretty rare in biological molecules. And so, this is a reason why we want to eat iodized salt, because we need some of this in our diet. But of course, too much of it is also a bad thing, and too much of this will suppress the synthesis of this hormone in your body along with many other problems. And your thyroid hormone regulates metabolism, development, neurodevelopment. I mean, this is—almost every system in your body you can trace back to being regulated in some way.

SENATOR FLOREZ: So if we were to compare methyl bromide with methyl iodide what would be, from your vantage point, at least to the workers and the communities in the surrounding fields, the more toxic chemical?

Given the statistics you mentioned earlier, is this a simple replacement or it seems to be a more simple replacement?

DR. SCHORE: Methyl iodide is more reactive both chemically and biochemically. The connection to the iodine atom is weaker than the connection to the bromium atom in methyl bromide and so that means it's more susceptible to breaking apart. And basically doing chemistry, as we say, which means doing chemistry in the body, doing chemistry in the environment, which will have the effect of modifying biology that takes place.

DR. WISE: It's a very efficient DNA methylator. And any time you're changing the sequence of your DNA you're going to have some serious problems.

DR. SCHORE: One of the major and most commonly researched aspects of cancer is the methylation of your DNA. When I see the proposals coming across my desk to the Cancer Research Coordinating Committee, easily each year 10 percent of them relate to methylation effects on DNA and related areas.

SENATOR FLOREZ: Is this substance, then, used to actually induce tumors and research?

DR. KEGLEY: No. There's actually a couple of studies where they're inducing cancer in cell culture lines and they use methyl iodide to do it.

SENATOR FLOREZ: Okay. So this is actually—one of these substances actually produces the tumors themselves in order to study and research, correct?

DR. SCHORE: Yeah. We know exactly how that works. It's been very well studied.

SENATOR FLOREZ: Okay. Let's talk a little bit about the thickness of this. You mentioned the tradeoff between the ozone, if you will, the rapid rise of this and the horizontal or downward nature of this particular substance. So that, obviously, has implications for water and water supply and a whole host of other issues. Is this water soluble? Does this actually…

DR. SCHORE: It's not completely miscible with water, but it dissolves to a significant extend. It's not as soluble as, for instance, alcohol or—it's about as soluble as ether, for instance; in fact, more soluble than ether.

SENATOR FLOREZ: So one more big question for the panelists, can this contaminate our water?

DR. SCHORE: Yes.

DR. WISE: Yes. And it's been estimated…

SENATOR FLOREZ: And can someone go further and explain that to us?

DR. WISE: It's been estimated that it would contaminate water more than methyl bromide. It is more miscible than methyl bromide is in water.

And there was a study. I have it in one of the references—the Gan and Yates reference. They did some early fade and transport studies of these two as fumigants. And they predicted that methyl iodide would definitely contaminate groundwater more significantly than methyl bromide.

SENATOR FLOREZ: And how long does this stay in the soil after applied? You mentioned the strawberry example as once a year, but I mean, how often—do you have any thought in terms of the lifespan of this particular…

DR. KEGLEY: This came up at the Scientific Review Panel meeting, and Randy Sagawa from DPR was there, and there was a pretty good discussion between the scientists and nobody really knew the answer to that question. Because methyl iodide does react with things and then it is transformed into something else. But in groundwater, you don't have much for it to react with so it could last a very long time just being in groundwater. So I think we don't know completely the answer to that question, but it could be easily as long as a month and possibly as long as a year.

DR. SCHORE: We know methyl bromide in pure neutral water lasts at least for weeks. We _____ in the order of weeks for methyl bromide. Methyl iodide should be in the same order of magnitude.

SENATOR FLOREZ: But is methyl iodide found in the natural environment anyway?

DR. KEGLEY: In the ocean.

SENATOR FLOREZ: In the ocean. But not in the applications that we see or are thinking about today? So in other words, there's natural applications of this but not necessarily here on the field, is that correct?

DR. SCHORE: Right.

SENATOR FLOREZ: Somebody give me a "yes," because a transcript won't get your nodding head in.

DR. KEGLEY: Yes.

SENATOR FLOREZ: Yes. Okay. Great. A couple more questions if I could. I think in terms of body able to detoxify this, does our bodies have the ability to do that in terms of exposure to methyl iodide?

DR. SCHORE: It would hit a number of systems in the body. It would hit any of the sulfur metabolism systems; glutathione, which is a major coenzyme in the body that protects the body from oxidative burdens and so forth and is critical in metabolism. And of course, it would hit a lot of proteins and most critically, downstream it would hit the nucleic acids.

DR. KEGLEY: But it will not persist in the body because it's so reactive. It's so reactive that it basically reacts with many bio-molecules and is excreted. Or, when they do a test with radioactive methyl iodide, the radioactivity actually stays in the body in certain tissues and it concentrates in the brain, the kidneys, the liver, and the lungs.

SENATOR FLOREZ: I guess I've read some studies that say it can last up to seven days in the body, and in many cases the way it's distributed through the body varies, is that basically it?

DR. KEGLEY: Yes. Could I stop one second?

SENATOR FLOREZ: Yes.

DR. KEGLEY: I want to go back to the comparison between methyl iodide and methyl bromide. And I'm concerned that we're comparing them. They're both very bad for people to be breathing and be exposed to. And I

think a different question would be what can we do instead? And I think the people who are coming behind us with the alternatives panel are going to have some interesting ideas. I don't think it's a choice between methyl bromide or methyl iodide; it should be a choice between fumigants or not fumigants and that's an important change in perspective in the way we look at the issue.

SENATOR FLOREZ: Okay. Let's go over just a few more. In terms of tests on animal exposures, can you tell me about the latency effect, the period of time where cancer shows up in terms of the way we use this particular substance in research?

DR. KEGLEY: It does appear to have a fairly long latency period in the animal studies that were done. In the studies that were approved or used by USEPA and DPR in looking at the toxicology, there were some real questions about the studies. Many of the animals died before the end of the study, even in the control group, which suggests that they might not have been put in the right place. The cage placement made a difference in how affected the animals were. And so, the density, the heaviness of the gas may have made a difference in exposure for the rats on the bottom cages compared to the top cages. So I'm not sure we can even trust that study.

SENATOR FLOREZ: And tell me the match between those studies on animals and human exposure. How do we make…

DR. SCHORE: These are difficult extrapolations and everybody acknowledges that.

When it comes to the ability of a substance to cause cancer you have a whole gamut—you have the AIMS(?) test, which basically tests for toxicity in microorganisms and so many things test positive for that, that, of course, the FDA has a laundry list of things that are banned in terms of food additives and so forth. But when you get to multi-celled organisms, even ones that are reasonably close anatomically to humans, there are still so many unknowns, so many differences; differences in cell lifetime in different organ systems and so forth. How fast cells mutate? What the consequences are? When you're dealing with a mutagen like methyl iodide, basically you're looking at some

degree of effect on an organ, or cells, or so forth. It may be so severe that the cells simply die, and in many respects, that's what you want to have happen. It's the intermediate range of having no effect and killing the cells that can lead to cells all of a sudden become essentially immortalized and start mutating and lead to tumors. And so, it's a difficult window to hit and that's part of the reason for the latency. Sometimes it just takes a physiological—some other physiological insult to lower the body's ability to either get rid of damaged cells or to repair ones that are damaged and all of a sudden the cancer takes hold.

SENATOR FLOREZ: I just have one final question for you and that is, you're the science panel. We've asked DPR to utilize third party review. Explain what credible third party review is to you folks. What does that mean for this one lay person here in the Legislature that will look and ask the question, third party review occurred and so therefore, it's done? What should we be looking for when we hear the words "third party review" from this perspective of policymakers—elected officials?

DR. KEGLEY: The most important thing from a policymaker perspective is that the panel consists of scientists who have no conflict of interest with—they're not associated with the industry, or they're not associated with some group that would bias their opinion. Their opinions need to be based completely on science. And I would say that's the most important component of a peer review panel.

DR. SCHORE: When we send a grant proposal out we expect it be reviewed by peers. We expect that while these peers may in fact know us in some way or other, and maybe have read our publications, or have met us at a meeting, that in fact they're going to sit back and put that out of their mind and they're just going to take a look at the product and they're going to look at it entirely on its own merits. They'll use their own expertise from the knowledge they have in the field. They'll go to other resources. They'll go the literature to try and confirm that their impressions, if they have criticisms, are in fact accurate and up to date. That's what we expect from peer review, and that's what we mean by independent third part review.

SENATOR FLOREZ: And so, this panel, what's the process thus far in this debate, if you will, on whether we should implement this this year? Has that occurred, the third party internal review?

DR. KEGLEY: Yes. Professor John Froines at the Toxicology Department at UCLA is the chair of the panel and he pulled together a group of experts that had expertise related to carcinogenicity, developmental toxicity, all of those things that are kind of essential for understanding methyl iodide. Also, exposure assessment, people who do modeling of how chemicals move through the environment and that panel met in September of last year. And I think they're about to release their findings sometime in the next week or so.

SENATOR FLOREZ: Well, let's focus on that for a moment. So they met in September. There were some issues on whether or not we had the funding in order to allow that to occur. I guess DPR put out a press release out saying that it was going to occur, and this is, then, the outcome of this particular external review—this particular report.

DR. KEGLEY: Coming report, yes.

SENATOR FLOREZ: And what was your input in that process, the three of you?

DR. KEGLEY: I gave a presentation at the SRP meeting.

DR. WISE: I gave a public comment at the hearing meeting.

DR. SCHORE: I was not able to participate. I just finished teaching a 500 student class in organic chemistry.

SENATOR FLOREZ: But these were a day or day-and-a-half of testimony. And so this group, by the chair at UCLA—who picked the chair at UCLA?

DR. KEGLEY: DPR. Well, actually, I'm not sure because John Froines has been chair of the Scientific Review Panel for the Toxic Air Contaminant program for the state of California and they review both Air Resources Board air toxics, as well as the pesticide air toxics. And they've been doing this—Professor Froines has been in charge of this for at least 10 years if not longer.

So it's an established panel that the State uses regularly to do these kinds of reviews.

SENATOR FLOREZ: It's a panel the State uses regularly as picked by?

DR. KEGLEY: You know, I don't know the process. It's in the legislation.

SENATOR FLOREZ: There's a difference, in my view only—my opinion. I mean, there's a Bush Administration EPA and there's an Obama Administration EPA, and they all can be great scientists but there's sometimes just a bit of difference in perspective. So I'm kind of wondering who the actual appointments—where did they come from and who ultimately made those choices?

DR. KEGLEY: They've been in place for so long that I've—you'd have to go look in the statutes. I can get that information to you.

SENATOR FLOREZ: Okay. We'll look. And in terms of the process, then, this report is going to be the final word in terms of external review or, now is this kicked over to DPR to make a final decision? What's your view of the process?

DR. KEGLEY: The panel does not make a decision about the regulatory status of the chemical. The panel reviews the science that DPR used to come up with their risk assessment. And DPR did a very nice job on this risk assessment. The panel had several comments on how they could make it better. But basically, the Department of Pesticide Regulation did a pretty nice job on it.

SENATOR FLOREZ: And could one say—I'm not on the panel, but if I were to listen to the three of you I would say don't use it. I mean, are there other folks on the other side of this science that would give us a different perspective than what you may have given us today?

DR. KEGLEY: I don't want to speak for Arysta, but what they said at a previous hearing was that…

SENATOR FLOREZ: Arysta is the one that make the chemical, right, so they're a little biased in this. I'm talking about outside folks who…

DR. KEGLEY: No. But what they're saying is that it's certainly a hazardous chemical but it can be handled safely if you have the proper training for the applicators. We just don't believe that's true. You can't have people who don't make mistakes. It's just not possible. And the weather doesn't cooperate either.

SENATOR FLOREZ: Right. How do you handle it in the laboratory, again, just so I can understand?

DR. KEGLEY: With syringes.

SENATOR FLOREZ: Syringes.

DR. SCHORE: Gloves.

SENATOR FLOREZ: Gloves.

DR. SCHORE: Goggles.

DR. WISE: Closed containers away with hoods sucking the fumes…

SENATOR FLOREZ: Respirators, these types…

DR. KEGLEY: You don't need a respirator if you're working in a hood. But you're handling it in an essentially closed system with a syringe.

SENATOR FLOREZ: Oh, okay. I gotcha. And that's the way it's handled in the laboratory?

DR. WISE: Yeah. It also can go through your skin, so double gloves. It's not just an inhalation risk.

SENATOR FLOREZ: Okay. And the panel is going to likely tell us if indeed they move in a direction that—well, they're not going to move in a direction. They're just going to present the risk?

DR. KEGLEY: Their findings. They present their findings on the quality of DPR's risk assessment.

SENATOR FLOREZ: And DPR, then, makes a final decision?

DR. KEGLEY: Final decision. You should be talking to DPR.

SENATOR FLOREZ: Oh, we are. They're coming up. I just want to get your perspective as folks who have followed the process, participated, particularly, in the process, and might have a perspective on what a report looks like. Because sometimes when a report comes out we look at it and go,

"Well, the report was done," and that was all that was asked to do and DPR makes a decision.

Is there any, from your vantage point, any—you mentioned solarization as an alternative. I think one of you did. I'm not sure who. Tell me what that—how it works.

DR. WISE: It's my understanding that it's the process of also using plastic to trap the sun's heat onto the soil and then basically leaving it there for some period of time for the sun to do its job of essentially baking the soil in order to sterilize it.

SENATOR FLOREZ: And does the period of time allow for a growing season or is it like…

DR. KEGLEY: It's usually four or five weeks, I think.

SENATOR FLOREZ: Okay.

DR. WISE: Yeah. It's longer than if you were to fumigate, but it's definitely not an entire year or anything like that.

SENATOR FLOREZ: Gotcha. And are there any folks that are using that particular process in California?

DR. WISE: I believe there are, yeah. One of the references that I mentioned had a—it was a press release I believe. They highlighted an organic farmer who was using this method.

SENATOR FLOREZ: Okay.

DR. KEGLEY: And it works pretty well in the valley, and not as well in the coast because it's cooler on the coast than the valley. But your alternatives people will be able to address that better.

SENATOR FLOREZ: Okay. Senator Wolk, do you have any questions? Okay. Thank you for putting that on the record. We appreciate that.

Okay. Let's move on to the second panel. We have representatives from the California Association of Nurseries, the co-owner of Swanton Berry Farm, the Acting State Program Manager for Natural Resource Conservation Service, and a professor from the Department of Environmental Studies at the University of California, Santa Cruz. Thank you.

Let's start, if we could, with Mr. Dolezal. Thank you for joining us today. If you could state your name for the record, that would be wonderful.

ROBERT DOLEZAL: I'm Robert Dolezal, speaking on behalf of the more than 10,000 grower nurseries in California and the California Association of Nurseries and Garden Centers. I want to thank Senator Florez and the members of this committee for including me in this panel.

We're California's second largest crop after dairy with a farm gate value of more than $4 billion annually. It's been rightfully said that our nurseries are the foundation of the California crop agricultural system.

And I want to thank you, again, for inviting our industry to speak on this important matter.

Effective soil fumigants are critical to nurseries, as they are to many others beyond our nurseries. Senator Florez, your District 16 (Fresno, Kern and Tulare), produce the greatest fruits and nuts that are an economic engine to employ large numbers of farm laborers. Many others on this committee also hail from major agricultural centers. Now the very livelihoods of your constituents—farmers and their laborers—face a dire threat. They face certain extinction, in fact, unless you act—unless you urge DPR to promptly register methyl iodide without further delay. They are threatened by excessive caution when it comes to this registration of methyl iodide, a proven, safe crop protection product invented right here at the University of California, Riverside. Methyl iodide disinfects soils of diseases and it kills near microscopic parasitic worms called "nematodes."

Now let me spell out the future, a prediction that will almost certainly come true if the registration of methyl iodide in California is blocked.

The state of California mandates that every nursery in our state produce and sell only clean, healthy plants that are free of all diseases and nematodes. In the case of nematodes, many soil borne diseases, there is zero tolerance. If you find a single nematode in a field of nursery trees or vines, the entire crop must be destroyed. The farm soils throughout the state are infested with a variety of these disease causing pathogens and pests. There's only one sure

way to grow our nursery crops free of these disease organisms and nematodes and that's to fumigate the soil in our fields to a depth of five feet prior to planting.

Up until now, we have had a choice of several different plant health fumigants products: metam sodium, methyl bromide, Telone, and chloropicrin, which has been pointed out as a warning odor agent with some fumigation properties. The future of these fumigants is doubtful. While Telone and metam sodium work well in sandy loam to kill nematodes in heavy clay soils to a depth of five feet, only methyl bromide works along with its drop-in substitute product, methyl iodide, which has no volatile organic compounds to release and is ozone beneficial.

Soon, when methyl bromide is de-registered, nurseries in California will no longer be able to meet the State's zero tolerance requirement for nematode free nursery stock. That means vineyards and fruit and nut orchards throughout the state and the country will no longer have replacement trees to grow their new vineyards and orchards. The same is true for the 1.4 billion strawberry starts we produce in California. Our state supplies more than 90 percent of the world's supply of strawberry starts. Imagine your districts in this state without vineyards, citrus groves, fruit and nut orchards, and strawberry fields. Without prompt registration of methyl iodide, that future is most certainly coming to your districts.

Orchard trees and vines grown without soil fumigation are destined to produce 40 – 60 percent less fruit, citrus, nuts, and grapes than those planted in fumigated soils. The same is true for many other major crops. Nematodes encircle their roots, form cyst-like knots, and block those roots from taking in nutrients. There's no known cure; the tree, vine, or row crop must be removed and the soil fumigated.

Shut off the flows of nursery stock to production agriculture by failing to register methyl iodide, and all planting will cease. Not even out of state or foreign sources can provide these plants. For many, like avocado, their climate needs are critical, and these conditions are found in our state. Total economic

activity would decrease by an approximate $1.264 billion and at least 50,000 agricultural jobs will be lost according to the CDFA.

With faltering production, food prices will skyrocket. Expect our nurseries, many of which have been growing plants for generations here in California, to move out of state or out of country, taking their California jobs with them. Farmers and nurseries will have no alternative but to layoff their seasonal and permanent workers. Agricultural unemployment will soar, and the effect will ripple throughout the economy to packers, processors, transportation companies, and the state's own revenue sources.

For over 20 years, finding alternatives to existing soil fumigants has been the holy grail of crop protection companies like Arysta. Hundreds of compounds have been evaluated, tested, and trialed. Only one, methyl iodide, is in the registration process at DPR and has been since 2002. Methyl iodide is a silver bullet that when used in accordance with the safe practices and reasonable mitigations appropriate for all agricultural plant health products, is safe to nurserymen, to farmers, to their employees, and to the public. These mitigations include using special sub-surface application equipment, never above-ground spraying. Only highly trained technicians are in the fields during the applications. They make sure that every application complies with every state and federal regulated label requirement. Other mitigations include safety buffer zones, applications as deep as 20 inches beneath the soil surface, under a flood of capping water (as you've just heard, this chemical doesn't mix readily with water), and beneath virtually impenetrable plastic film that prevents release into the air. We're even considering the protective spray of a fertilizer—thiosulfate—to neutralize any potential methyl iodide that somehow would find a path to the surface.

These mitigations also mean that no agricultural laborers are present in the fields during and after the application, since methyl iodide is applied in the dead of winter long before seasonal employees arrive to plant, cultivate, or harvest. All of this for a product that the USEPA declares has received one of the most thorough analyses ever conducted for a new pesticide.

Methyl iodide is already registered and being used in 47 other U.S. states, in Japan, and soon, environmentally conscious New Zealand (about two weeks away from registration). It has the most rigorous stewardship and training programs for use in the fumigant industry. Not a single worker related incident has been reported.

Finally, you'll hear today from organic growers. They say healthy plants planted in rotation produce nearly as large a crop as those planted and grown in fields treated with fumigants. But recognize that only a few thousand of the more than 1.4 billion strawberry starts—a few hundred thousand, excuse me, of the more than 1.4 billion starts—and virtually zero of the tree and vine crops will exist for them to plant in their organic fields. Virtually every organic grower starts his or her fields and orchards with stock grown in fumigated soil. It is their only economic and effective option.

I thank the committee for hearing the real risk that this is to the state's agriculture and our nursery industry. We strongly urge you to send a message to CalEPA and DPR to register methyl iodide without further delay. I'd be please to answer any questions.

SENATOR FLOREZ: Great. Thank you. Let's go ahead and hear from the rest of the panel and then we'll take some questions.

JIM COCHRAN: Jim Cochran. I farm around 200 acres along the coast of California, about 100 of it in production at any given time; around 20 acres of strawberries, miscellaneous bush berries, and vegetables make up the rest of my operation. I've farmed for around 30 years. The first four or five years that I was in the business, I was farming—working for farms in the Salinas Valley farming conventionally; using fumigants like methyl bromide and all the other pesticides in the arsenal.

Started out on my own. I did a 50/50 thing the first year. I was scared to death. I heard the stories that you're recounting there. And believe me, it is a bit scary when you have a high value crop. A lot of money tied up into it to not use unknown chemicals or poison. So I decided I was going to try 50/50

and sure enough, my crop did okay on the organic side. And not only that, it tasted better. And the difference in yield was not so much.

And so, having had to work around all these chemicals myself, and personally been exposed to half a dozen of them in my short career in the chemical farming business, I decided to go organic. And it was scary at first, you know. But I think it just—I'd like to draw a parallel with Detroit back in the seventies. Detroit was riding a wave of success in the way that they built cars, and, yet, there were some people talking about fuel economy and they were talking about safety, and they were talking about other things, and Detroit said, "No. No. We've been doing this forever. We know how to do it. We can't change. Our industry will crash if we do, and so forth." And you know, 30 years later the Japanese cars ate our lunch. And I think that right now agriculture has the same opportunity that Detroit had back in the seventies, which was to really listen to what the chemists and environmental people, and the customers, particularly the young customers, are saying; that they really want a product that isn't produced using these chemicals—these toxic chemicals. Not to mention, the workers who don't like working around this stuff.

So I think agriculture has the opportunity now to take a progressive—I have to say, I'm a journal junky. I read all about, you know, big industries getting to a point where they're mature and they sort of become complacent and smug and so forth and don't really innovate to the degree that they could and they get beat up. So I think that it's a chance for us to really bring some more innovation to the world of agriculture.

We've been buying organic starts from northern California, grown on unfumigated soil for five years or so. And to be honest, I was worried at first. But actually, they're nice strong plants and they produce just as well if not better than the plants grown on fumigated soil. So, change is a little scary, you know, but it's good for an industry. And I think that this is our opportunity to move in a positive direction.

SENATOR WOLK: So you're at 50/50 or at zero?

MR. COCHRAN: No. No. We're 100 percent organic for the last 25 years. And, you know, I'm a profitable business. I have to say—can I say one little thing that…

SENATOR FLOREZ: Yes.

MR. COCHRAN: I was riveted by chemistry. And I can tell you that in Chem 1A back in college, I definitely was not riveted by chemistry. But you know, really, I'm impressed that anybody got me worked up about chemistry.

SENATOR FLOREZ: Thank you. Appreciate that.

CAROL SHENNAN: Hi. I'm Carol Shennan, Professor of Environmental Studies at the University of California, Santa Cruz. I want to thank you for asking me to be on the panel. My background is for 10 years I was the director the Center for Agroecology and Sustainable Food Systems at UC Santa Cruz. And my degree is in Botany from the University of Cambridge in England.

I started working in alternative to methyl bromide about five or six years ago now. After a casual conversation when we were finding a lot of verticillium problems on the organic farm at the UC campus and there was a Dutch plant pathologist visiting who mentioned a technique that was being developed in—a non-chemical technique—that was being developed in the Netherlands that was showing great promise for controlling not only verticillium, but quite a range of soil borne pathogens and the range of crops, including some nursery crops. So having talked to her, I decided that somebody should look at this for California. And we then got one of the largest grants from the Alternatives to Methyl Bromide program through the USDA to start doing research on this four years ago. And I just want to tell you a little bit.

This is just one alternative that's being looked at through research. I'll mention some of the others a little bit later.

I want to stress that pretty much from the outset we've been working with conventional growers trying to test this and develop this technique in the field. It's not something that is limited to a research station or a laboratory. And the technique is—we're also working in collaboration with researchers in

Florida, who are trying the same technique in vegetable and ornamental crops there.

The technique I'm talking about is called "anaerobic soil disinfestation," which is a bit of a mouthful. But basically, you can think of it almost as a biological way of fumigating the soil, if you like. And it's a very simple technique. It doesn't require any inputs other than sources of organic matter, which can be crop residues; it could be waste products like rice bran or wheat bran. We've been testing a whole host of different potential products that could be used.

And what you do is you put this organic matter into the soil to feed the soil microbes. You then irrigate the soil until it becomes saturated, which removes all the oxygen from the soil. You cover it with a tarp. You can use the same tarp that you would do for your regular strawberry beds. And the microbes start breaking down this organic matter or food we've put into the soil through an anaerobic process. And it's the byproducts of this anaerobic respiration that are toxic to a whole lot of organisms. And particularly, we've been focusing on verticillium wilt because it's the primary disease of strawberries in the region, and it's proving really quite effective. It's a desirable technique in the sense that it doesn't require farmers to really change their system a lot. What it means, is doing your preparation, your bed preparation, about a month before you would normally and go through the process of incorporating this organic matter when you make your beds and then irrigating the soil. The beauty of it is, once holes are punched in the soil, oxygen starts returning into the soil and those toxic byproducts disappear. And we found that there's absolutely no carryover in terms of any negative effect on strawberry yields. So it's very compatible with current methods of production.

We've been testing this in Santa Cruz County, Monterey County, and Ventura County, and the response of our participating growers have been extremely positive. When we've been able to reduce quite high levels of verticillium by 80 to 95 percent with just one treatment of this technique, the farmers were very encouraged. And we have no shortage of farmers wanting to

work with us to try this out. The limitation is how much money we have to be able to do the tests.

I won't say that we've got it down to 100 percent reliability. With anything that's a biological system, you have to test it in different soil types, different climatic conditions, and we're in the process of doing that. But as I say, it's been successful enough that one grower is starting to do it in his own fields.

So that's one technique.

My feeling is that often—it's dangerous to look just for one technique to control any problem and that it's much better to have a suite of approaches you can take. And some of the other approaches that don't involve using either methyl bromide or any other fumigant have been mentioned.

I will say that soil solarization isn't a viable option for a lot of our coastal valleys because the temperatures are not high enough. The combination of this ASD technique with solarization, though, has been incredibly effective in Florida for controlling weeds, as well as nematodes and some other fungal pathogens.

We're looking at—and there's been some work done looking at rotations, including broccoli, before you grow the strawberries, and we consistently saw growing the broccoli knocked down with soil borne pathogen levels of verticillium. We're also looking at rotations that have non-verticillium hosts in them, because that's one way of preventing the problem from building up in the first place. And we're currently applying for money to develop these integrated strategies that would use two or three different approaches to try and control the problem and prevent it from ever becoming a problem.

So I would say that we're a few years away from saying this could be used widely. I think we anticipate in the next few years that an increasing number of growers will be trying it. We'd be interested in trying it with some of the nursery crops to see if it would function well there.

And one thing I want to say is the danger of having things like methyl bromide and methyl iodide around, is that it does create a complacency. And

that there's been very little research money directed towards looking at non-chemical alternatives.

I was recently at the Methyl Bromide Alternative Conference in San Diego in November. And I would say that over 95 percent of the presentations were on chemicals, and that may be being generous. There are a handful of people around the country trying to look at non-chemical alternatives. But the amount of money that's been invested—and it still is very little. And my concern is if we keep registering another chemical, then that situation won't change. In some ways, mother is the source of invention and we've been, maybe, too complacent in terms of not looking for other ways of controlling a lot of our pests and diseases.

SENATOR FLOREZ: Thank you very much.

RONEY GUTIERREZ: Good morning to all the members of the committee. Thank you for this opportunity. My name is Roney Gutierrez. I am the Acting State Program Manager for the Natural Resources Conservation Service. It's a federal agency. And I come in representation of the agency at the last minute invitation this weekend—very last minute. And I must clarify that I am in no way an expert on this subject. And so, why am I here?

I think the reason I was invited is to present something about what was mentioned here recently. We are an agency that works with land owners, producers in agriculture of different sorts, whether they be conventional, commercial pesticide users, and helping them improve the efficiency of their application; whether they be organic growers and finding innovative ways, perhaps, to a biological control; whether they be someone who is looking for a menu of options, as was mentioned, for integrated pest management. We provide technical and financial assistance to California growers. In the suite of practices, we offer over 500 different activities through which we provide technical and financial assistance.

In the past year, we offered over $3 million in financial assistance for organic agriculture and over $18 million, really, in fine technical and financial

assistance for all those producers who are interested in water quality improvements.

So, really, my presentation is very short in that, as I said, I was here last minute just to provide an alternative and supporting whatever is best and whatever the best decision is for California.

SENATOR FLOREZ: Great. Thank you. Thank you for showing up as well. Senator Wolk.

SENATOR WOLK: Thank you, Mr. Chair. I have a couple of questions. A very, very interesting panel. One of the issues that I wonder about was raised by you, Doctor, and that has to do with the sources of funding. I've been concerned about that in the area of water, as well as pesticide research. I think you made a very good point about the amount of funding that goes into research in these areas. I'm curious who funded your research.

DR. SHENNAN: Well, I'm very pleased to say that we've been funded both through USDA, through their Alternative…

SENATOR WOLK: Through the government?

DR. SHENNAN: Through the government. But also, through the California Strawberry Commission, and they're very supportive of our work. They've continued to fund us now for three years. They see a need for non-chemical alternatives and are willing to put some money into trying to encourage the research so that those can be developed.

SENATOR WOLK: I wanted to ask you about your—the three counties that you mentioned you're doing your research in are coastal counties?

DR. SHENNAN: Yes. Essentially.

SENATOR WOLK: Are there any anaerobic experiments or trials going on in the Central Valley?

DR. SHENNAN: No. There aren't as yet. When I was at this methyl bromide meeting, I was approached by a number of different groups who were interested in trying it, from Washington and Oregon, not as yet, from anybody from the Central Valley. But if we can raise the funds, I would be really interested. Because I think having the heat of the Central Valley—this whole

process works better the warmer the soils are. And so, we're actually looking at it in probably the worst case scenario in the coastal valley. So the fact that we could get 80/95 percent reduction in verticillium is very promising.

Based on the Florida results, I think the capacity for eliminating nematodes and weeds would be much higher in the Central Valley.

SENATOR WOLK: And my last question is to both Mr. Cochran and Mr. Dolezal. In your letter you said that virtually every organic grower starts his or her fields in orchards with stock grown and fumigated soil; it's their only option. I'd like a little bit more clarity on what you mean and then, your response to that.

MR. DOLEZAL: Well, the Strawberry Commission has surveyed the growers, which are a discreet group of nurseries that belong to the California Strawberry Nurserymen's Association up in the Lassen County area (by Redding and Lassen County) and of the 1.4 billion strawberry starts that they produced, they were unable to account for more than about 250,000 starts, so—I don't know what the percentage is; it's less than a percent—certainly well less than a percent. There maybe a small grower somewhere that does provide stock. He may be in a situation where he doesn't have to face some of the issues of the verticillium wilts and some of the other plant pathogens that are difficult to control in a scaled up environment. But that's the basic answer to your question.

SENATOR WOLK: Did you want to comment on that? Where do you get your stocks?

MR. DOLEZAL: Excuse me. One further thing. With respect to non-strawberry crops, to other row crop vegetables and to trees, again, you have a zero tolerance policy for nematodes. So on nematodes the process she was mentioning, I don't believe she's studying nematode control with it.

DR. SHENNAN: Florida _____

MR. DOLEZAL: The Florida group may be under a much different heat circumstance; different soil conditions. But in California, if you have one

nematode found in an acre of material, you destroy all $40,000 worth of that material.

SENATOR WOLK: And where do you get your stock?

MR. COCHRAN: There is an organic supplier of starts in northern California who we've been buying from the last five years or so. And as I say, they came clean. They were inspected by the county inspector on departure and pest inspection and produced well in our field. There are 1,700 acres of organic strawberries grown in California, so I'm now a small grower instead of the only. That's fine. I don't mind being small.

SENATOR WOLK: Lots in my county.

MR. COCHRAN: Pardon me?

SENATOR WOLK: I've got a lot in my county—Yolo.

MR. COCHRAN: So at any rate, it's certainly, technically possible to do.

SENATOR WOLK: Okay. Thank you. Thanks.

SENATOR FLOREZ: Senator.

SENATOR HANCOCK: Thanks. Thank you, Senator Florez. So, if there's zero tolerance for nematodes and the Santa Cruz research comes up 80 to 95 percent clean, do you have to destroy the crops because of the…

DR. SHENNAN: This was for verticillium, not for nematodes.

SENATOR HANCOCK: So it's not for nematodes.

DR. SHENNAN: No. I would say, I think zero tolerance legislation does make it very difficult to come up with non-chemical alternatives since there—given the variations in the natural world, it's very hard to guarantee 100 percent every time. I will say that the results from Florida with nematodes so far have shown control equivalent to methyl bromide, but that's only from one year of data so I don't want by any means, to suggest that we know the answer to that. So it's not quite the same situation there with the diseases.

SENATOR HANCOCK: So could I ask Swanton, so you never have a nematode? How does it work for you?

MR. COCHRAN: Well, some our soils have endemic nematodes. At least the ground, they came with some infestation of nematodes but they've never

been an economic problem for us. I mean, you lose a little bit and that's not a big issue for us. We use a broccoli rotation and we also incorporate some mustard seed, and we use the dry fallow. Economically it works out just fine for us in the end.

SENATOR HANCOCK: Okay. So you don't have to end up destroying all crops?

MR. COCHRAN: No.

MR. DOLEZAL: Senator Hancock, I just wanted to say that under the California Department of Food and Agriculture code, nurseries are under a different stricture than crop agriculture. And under that, we have general plant cleanliness. That means all the product we have to ship has to be disease and pest free. So there is a zero tolerance for nematodes. But there is a broader standard, which is that if they find pretty much anything, it doesn't ship.

SENATOR HANCOCK: Okay. I understand now. Thank you. We're talking crops in the field versus nursery crops. Okay. Thank you.

And then just briefly; how do the costs compare with the fumigation, you know, using the corn husks and that?

UNIDENTIFIED: Oh, the corn husks.

SENATOR HANCOCK: Or whatever.

DR. SHENNAN: We haven't finished the analysis yet. However, it's really—the economic costs are, in terms of the inputs that we'd use—the carbon sources—all of them we've looked at have been much less than methyl bromide.

SENATOR HANCOCK: Okay. Great. Thank you.

DR. SHENNAN: But the question is having that few weeks—that window—so that you can do the extra three weeks of this treatment.

SENATOR HANCOCK: Okay. Thank you.

SENATOR FLOREZ: Before we go onto the next panel, I have just a couple of questions, particularly for Mr. Dolezal. I very much appreciate your

statement, but did you hear the prior panel before you in terms of the health effects?

MR. DOLEZAL: Yes. Actually I did. And I'd like to clarify some misinformation that was given.

SENATOR FLOREZ: Yes. Let's do that.

MR. DOLEZAL: There was an impression that the amount of methyl iodide applied to the soil would be greater than methyl bromide. The actual number is about 50 percent.

SENATOR FLOREZ: Fifty percent less.

MR. DOLEZAL: Less.

SENATOR FLOREZ: Okay. And let's go through that.

MR. DOLEZAL: The other thing is they're using it in rotation.

SENATOR FLOREZ: Okay. Let's go through that slow. So, 50 percent less than methyl bromide; does that mean that it's 50 percent safer? So I can make sure that I understand your logic.

MR. DOLEZAL: Well, safety is a matter of hazard. Hazard is a matter of poisoning standards and exposure. Exposure is the amount of concentration. And as I've indicated in my testimony, the expectation is this material is going to breakdown in the two to three week cycle (he's discussing) within the soil under a cap of water in permeable plastic and thiosulfate.

SENATOR FLOREZ: How about the application of it? I think that's what we need to focus on. Do you apply methyl iodide in the same manner that you applied methyl bromide?

MR. DOLEZAL: Well, actually, there's new techniques, but, yes, essentially. The major difference is in nursery crops. You apply it substantially deeper than you do for row crops. Where they may use a four inch shank, laying it down just under the soil's surface, we put it down 20 inches. So it has 20 inches of soil and a cap of water over the top it plus the virtually impermeable film. It's very difficult for that material to get out.

The new shanking materials and the new approaches that are being promoted, actually use new cutoff technology so that the shank isn't applying

the liquid (and it's not a fume, it's a liquid) to the soil until the shank is fully inserted. And before the shank is pulled back out, it's shut off, so there's zero release after the shank is full.

SENATOR FLOREZ: And so, is your association advocating that everyone who uses this particular substance will do exactly what you're saying?

MR. DOLEZAL: Both we and the manufacturer and the rest of the industry are advocating that, yes.

SENATOR FLOREZ: Beyond advocating, is this going to be a standard that you put forward in terms of your own regs?

MR. DOLEZAL: Well, at the current time, the process the Department of Pest—DPR, I'm sorry—is that they're evaluating the risk assessment phase. Mitigations…

SENATOR FLOREZ: Would you support DPR requiring that of you then?

MR. DOLEZAL: Mitigations? Yes. We would certainly recommend that they employ safety standards, mitigations that would reduce the exposure to below the toxic levels.

SENATOR FLOREZ: In the manner that you just explained earlier.

MR. DOLEZAL: That's one of the ways. All the other ways are also there: safety buffers, the impermeable films, time to re-entry, all that period.

SENATOR FLOREZ: So you would support—let me just make sure I get you on the record on this—and you would support additional and strengthened buffer zones?

MR. DOLEZAL: Yes. Reasonable buffer zones that are supportable by the science.

SENATOR FLOREZ: And you would support respirators and other types of practical…

MR. DOLEZAL: Those are already mandated. That's another impression from the first panel that was incorrect. There are no applicators. None of these technicians are in the field in their normal clothes. They're wearing Phase 2 respirators and moon suits.

SENATOR FLOREZ: Yeah, I know. It's just that I live among, as you probably know, probably the top agricultural area in the country, and I rarely see anyone doing that.

MR. DOLEZAL: That isn't true for methyl bromide. I'd be happy to take you and this committee on a tour to show the application of methyl bromide on actual nursery crops.

SENATOR FLOREZ: I've seen it. I've grown up around it my whole life. I'd like to take you on a jog one day, where I jog by. I can tell you how they're applying it, and I can tell you that in many cases they are not wearing the respirators. In fact, one of the pictures given to us today has two workers without respirators.

MR. DOLEZAL: What was the source of that image?

SENATOR FLOREZ: Kind of hard to not see—it's film being applied to a field, and there are two workers with—I'll hand it to you. I don't think they're putting film on the field.

MR. DOLEZAL: What was the source of the image? Where did it come from, and when was it taken?

SENATOR FLOREZ: I'm not sure. Are you saying it was taken in the '70s or something?

UNIDENTIFIED: It's a fairly recent picture. It's a late '90s picture. Some of the worker protection standards have changed.

SENATOR FLOREZ: Well, the picture looks very familiar to me. It's my only view of maybe having lived—actually, I live in a farm community.

So you would support those additional requirements?

MR. DOLEZAL: We believe safety mitigation requirements, as depicted on the label and as recommended by the USEPA and CalEPA, are appropriate measures upon registration of this product.

SENATOR FLOREZ: No, I understand; that's what everyone says. But I'm saying, if we're going to ask our DPR to take—that they're moving in a direction to actually prove this, then I assume that we would ask them to make sure that you are applying it in the safest manner possible, not just the lax

standards put forward by the EPA, which threw the ball to California and asked us to make the decision ultimately.

MR. DOLEZAL: We met with the CalEPA people as recently as last Friday and recommended these mitigations to them.

SENATOR FLOREZ: Okay. So we would like to sit down with you and sit with them and figure out what those—if indeed we're moving in that direction.

MR. DOLEZAL: We welcome that opportunity.

SENATOR FLOREZ: With the advocates, as well, to figure out what those standards should be. I don't think that we should even move forward without any very strict standards.

Let me ask another question, just on the larger issues of where the industry's going. What did we use before methyl bromide? We've been growing strawberries a long time in California, and grapes, I know that. What did we use before—we're now phasing out methyl bromide. What did we use before methyl bromide?

MR. DOLEZAL: Go ahead.

MR. COCHRAN: I think I remember some of the people saying—oh boy.

SENATOR FLOREZ: Would it be DDT?

MR. COCHRAN: No, no.

SENATOR FLOREZ: What would it be?

MR. COCHRAN: It would have been—some of the names that we're talking about now: telon and—oh gosh, it's been 30 years, and I'm trying to remember. But there are other materials that were used beforehand.

SENATOR FLOREZ: So what was the push to methyl bromide then?

MR. DOLEZAL: Senator Florez, we have been working on a replacement for methyl bromide for 30 years. So, when you're talking about pre-30-year-ago agriculture, they were using methyl bromide then. They were using metam sodium then. I don't know what those chemicals were. I'll have to go back to when I was in college in order to understand it. I'd be happy to research that and present that to the committee.

SENATOR FLOREZ: Yes, it would be interesting to know, because I think, as we start to think about what the future looks like beyond the consumer and beyond what people are asking for in terms of their products, you know, one can make the argument that methyl iodide could, in essence, because it doesn't have residue in food, would be safe for the consumer and one could just move on. I think we're more worried—I'm more worried—about the actual safety for workers, safety for communities, pesticide drift, horizontal drift, all of the facts listed on Prop. 65 cancer-causing agents. I mean, those are the things that this committee, obviously, should be very interested in, in terms of health effects on rural communities, particularly where it's grown, not necessarily in the store.

Is there anything in your protocols that would deal with pesticide drift; that would deal with water contamination that's been mentioned earlier?

MR. DOLEZAL: Well, quite frankly, our objective is to have it never leave the soil. Everything that we're doing is we're applying it deep, and we're capping it in order to keep it in the soil. We're preventing people from being in the fields during the period before re-entry, as required by the label. And the drift factors that are involved, we're trying to deal with, with this new technology, of spraying this fertilizer over the top of it. That actually chemically breaks down this product as soon as it comes in contact.

SENATOR FLOREZ: Well, I'm just wondering some of the protocols for communities as well: notification and others. I do know where I live in my district, and particularly where my home is and where the new elementary school is, this isn't necessarily very far from some of the fields that will be under this new method. How do you folks stand in terms of notification for communities, notification that application will be occurring?

MR. DOLEZAL: I can tell you with absolute certainty from testimony that took place in the Labor Committee this last year, last session, one of our growers—Dave Cox of the L.E. Cooke Company down in Visalia, California—related how in his situation, in order to spray certain of his fields, he both notified all the surrounding community area and actually moved them out of

their houses during the period of time, to avoid exposure issues on methyl bromide. Not methyl iodide, since methyl iodide hadn't been applied yet. He subsequently has applied, under test procedures, methyl iodide in his fields, and he finds it much easier to control.

SENATOR FLOREZ: But was that a standalone case of his own efforts to notify…

MR. DOLEZAL: No. Those were regulated requirements.

SENATOR FLOREZ: So you'll have regulated requirements for this particular substance as well?

MR. DOLEZAL: Yes. We would presume so, if they get past the risk assessment phase.

SENATOR FLOREZ: Right. Well, I'm only making the assumption that if indeed this moves in a direction that seems—we'll have DPR up in a moment—but what protections are there available for workers, what protections are available for communities, those types of issues. And I'm trying to understand how far you as an industry are willing to go in order to mitigate beyond the standards put forward by, if you will…

MR. DOLEZAL: In nursery crops, and I can't speak for row crop agriculture, application of fumigants is a winter activity—cold air activity. It's not going to be baking and being in inversion layers. That takes place with highly skilled, trained technicians in the field with no farm worker exposure. Those technicians are there; they've been trained. And there's this incredible stewardship program to deal with that. It's such a good stewardship program that when OEHHA sent testers down to the fields to measure air releases from the test fields, they were not properly garbed, and our industry properly garbed them in order to be able to conduct their tests.

SENATOR FLOREZ: We've been making the assumption that DPR does, or in fact approved this particular—what if it doesn't? What's your industry going to do?

MR. DOLEZAL: In all likelihood, we'll move out of state, which is the only option available to us under a zero tolerance.

SENATOR FLOREZ: And tell me what that looks like, when you move out of state. We hear that a lot around here. Does that mean you sell land within a two- or three-month period and you pack up and you start growing in areas that aren't suitable for agriculture? I thought we were the most fertile ground in the world. I didn't know it was so easy to pick up our crops and plant them in…

MR. DOLEZAL: Well, it's not particularly easy, in a number of these multigenerational families, to make the decision to simply go into another field of business entirely. But you are talking about a situation in nursery crops where trees take a two-to-four-year cycle to grow. And so, those are fumigated fields. They would continue to grow until they were unable to meet the zero tolerance pesticide requirements, and then they would phase out.

SENATOR FLOREZ: And they have crop insurance as well, correct?

MR. DOLEZAL: No, there is no crop insurance for the nursery industry. Only monocrops have crop insurance. So that would be a total loss for them of their activities.

SENATOR FLOREZ: Of their investment. And what's the rotation for that investment again? It's not like almonds, right? You plant it for 25 years. Or pistachios, you plant for a 100 years, right?

MR. DOLEZAL: In tree crops, it's about three to four years.

SENATOR FLOREZ: I think it's been mentioned earlier by one of the panelists in an offhand way, and I hope a friendly way, that the zero tolerance push, if you will, has pushed us into this chemical pesticide-driven environment. What would you say to that? Is that correct?

MR. DOLEZAL: No. I would disagree with that. I think it's a reasonable expectation that the farmers and the orchardists receive product that is clean and free from pests so that they can have good productivity. If you're going to lose 40 to 60 percent of the productivity over the lifetime of that apricot tree or that grapevine, which is typically the case in nematode bound roots on grapevines, then you're going to not want to buy that product; you're not going

to want to produce it; and you'd have to have twice as many acres of it in order to produce the same amount of yield.

SENATOR FLOREZ: Let me ask our organic—is that the case? I mean, shouldn't you be out of business by now? How do you survive in that type of environment?

MR. COCHRAN: Well, it's clean rootstock that's coming. It's been inspected and it's clean. It's produced organically and it's clean rootstock. So yeah, I agree. You obviously don't want bad rootstock.

MR. DOLEZAL: Right. If you had nematode bound roots on your stock, you wouldn't plant it, right?

MR. COCHRAN: No, no. Yeah.

SENATOR FLOREZ: How about yield-wise?

MR. COCHRAN: It looks good. It looks great actually. They're vigorous plants. In fact, they even look, just to the eye—I'm not a scientist; you know, I just sort of look at things—they're nice vigorous plants.

SENATOR FLOREZ: And what would you say to this debate? You mentioned the Detroit example, which I think is a good fascinating one, because I think agriculture does need to think about various other methods in the future; you know, integrated pest management types of approaches. From your vantage point, where are we heading?

MR. COCHRAN: Well, the exciting thing is that nobody really knows for sure. I mean, I'm sitting here thinking, "Gee, maybe the nursery industry would move down to Bakersfield because of solarization." There's a lot of real exciting stuff in the future, I think. It's not going to be exactly like it is right now. But there's a lot of smart people in the business, and they all sort of start scratching their heads and putting together some…

SENATOR FLOREZ: Well, like our researcher from UC Santa Cruz, for example. I mean, you find in opportunities, I guess—that's the reason I asked the zero tolerance question—is that is what we're pushing—is pushing us in directions that we end up fighting ourselves on, in many cases, sometimes here

in the Legislature. So I'm just trying to get a feeling of where the market, from an organic perspective, is going in terms of some of these applications.

MR. COCHRAN: Well, maybe—I'm not sure exactly how to answer your question. I mean, I'm sort of an entrepreneurial kind of a person. I sort of have it in my DNA. When I listen to this stuff, I think, "Wow. You know, something's not working; it's going to make a big change; things are going to be really different. Wow. That means go over here and try this, you know?" That's what I think ag would really benefit by in literally tens of thousands of twenty-somethings and thirty-somethings who are just itching to get into something new and different. So I see it as a real opportunity for innovation, really. I mean, the research has got to be there, but you know, you look at the research and you see, Gee, it looks like it works pretty well. Bingo, I'm going to go try it over in Visalia. You start a new business—industry.

SENATOR FLOREZ: Okay. Did you want to add to that?

DR. SHENNAN: I just wanted to say, I've been reviewing a lot of the literature on alternative methods for disease management, particularly soil-borne disease management, because I'm on a national academy panel looking at the future of agriculture, and there's a lot of things that aren't being talked about today, that we're really greatly increasing our understanding of what goes on in the soil, in terms of the microbial ecology of the soil. There's a huge difference, and depending on how a field is managed, as to whether a disease or nematode problem gets expressed or not. Research is trying to work out what aspects of soil management change the soil microbial ecology to effectively suppress diseases in some cases and why doesn't it work in others.

I think in looking forward, there's a lot of potential for finding better ways to manage our soils, and that may involve—I mean, one of the concerns for me is that in a soil that is frequently fumigated, you're essentially eliminating a lot of the competitive microorganisms that can compete with the disease organisms. So you've created a vulnerable system which requires, then, to use the very effective chemicals to keep the disease at bay.

My question is whether we can create more robust systems that don't need that level of intervention.

SENATOR FLOREZ: And whether you have the funding for that. Is that correct? You mentioned something of the lack of funding. What is the association doing in terms of additional funding for research not based on methyl iodide?

MR. DOLEZAL: We are working with both USDA, APHIS, the EPA, and the University system to channel funds through the specialty crop block grants and other mechanisms to permit that kind of research.

I would like to say, over the horizon solutions, well over our immediate horizon—our term limits, if you will—you're looking at genetic changes to the actual plants themselves that will make them more resistant to these problems. You're looking at the ability to treat plants systemically prior to them being budded or put into the ground, that gives them lifetime protection from these diseases and from these pathogens. And so, there are some very promising avenues out there.

SENATOR FLOREZ: Is that kind of the Monsanto GMO pathway?

MR. DOLEZAL: No. We're talking about the kind of thing where they're Roundup-ready. That sort of thing. These are rapidly being able to screen millions of different varieties of plants that have come from a variety of sources—wild stock and so on—and being able to get down to those that naturally have resistance to a particular expressed problem, and then being able to deploy those. They're natural plants in every regard. They're not doing clonal gene transfers.

SENATOR FLOREZ: Gotcha. Does your industry see this methyl iodide, at some point in time, being phased out, or simply another 30-year replacement for methyl bromide?

MR. DOLEZAL: We think that the reality is we're looking at safer and safer crop protection chemicals across the board. We made substantial strides in California to have the safest profile of those chemistries available to us. The reality is that progression is going to continue, and we're looking at a bridge,

something to deal with the fact that the Montreal protocol is taking methyl bromide out of the picture.

SENATOR FLOREZ: Right. So you see this as a bridge. Would there be a time limit, from your perspective, then, that bridge? In other words, we would use methyl iodide for "X" years.

MR. DOLEZAL: Well, "X" is a variable depending on how long it takes for her research and for all the other researchers to come up with a solution.

SENATOR FLOREZ: Well, that's why I ask, how much money are you putting into that, yourself as an industry? That's the real question. The only way this research is going to get done is—it's not going to come from our General Fund, that's for sure. I mean, are you as an industry recognizing that the tides of opinion beyond just agriculture…

MR. DOLEZAL: I know one nurseryman who has personally invested a million dollars in research of this type over the last year. So yes, we're putting money of our own into this. Solving these problems is significant to us. It's a choice. We've got our back up against the wall, and we're prepared to try to be able to deal with being able to continue to grow in that most fertile valley that we have.

SENATOR FLOREZ: Right, right. But I think that when there have been times in our past—using the Detroit model again—it all looks bleak, and it doesn't look as though we're going to do well. We know we have the opportunity to be innovative and put money in places we never thought about putting money into, and I'm just wondering if your industry is actually beginning to do that early rather than later.

MR. DOLEZAL: Well, we've been actively looking for a replacement chemistry and alternatives for 30 years.

SENATOR FLOREZ: And is there any reason you wouldn't, then, put a time limit on methyl iodide, from your perspective?

MR. DOLEZAL: I would have to consult with my industry. I'm not prepared to talk to that.

SENATOR FLOREZ: Sure. And if DPR were to put a timeline on it, in terms of giving you some timeframe in which to find that additional alternative, would that make you move quicker, obviously?

MR. DOLEZAL: I guess my answer to that would be: Where is the demonstration of proximate harm? Thirty-five thousand acres are having this chemical applied to it annually, or semiannually, or every four years across the United States, in the other 47 states, and where are the worker incidents? Where are they? Where's the proximate risk? And so, if this product turns out, as we fully expect it to be, to have all of these concerns raised but in fact none of them ever materialize in the real world, we're going to say, "Why should we not continue to use a perfectly safe chemical that does what we want it to do?"

SENATOR FLOREZ: Because you're going to keep getting drug in front of the California Legislature. It says we're California and we want to have better protections for workers, and we want to make sure that ultimately those protections are in place.

MR. DOLEZAL: But the protections only make rational sense when people are being harmed.

SENATOR FLOREZ: Do we wait for people to be harmed to make that decision?

MR. DOLEZAL: No, of course not.

SENATOR FLOREZ: We certainly don't. So this is why we like to be a bit proactive here. I can tell you that when we had pesticide drift in Lamont and Arvin with chloropicrin we certainly should have been way ahead of the curve on that and had some legislation in place to have prevented that. And we should have been well—legislation hadn't been in place. The way we treated farm workers in that particular incident was to have fire departments come out, hose them down in open fields, and have them disrobe publicly. That was just a couple of years ago. I wouldn't necessarily say our industry and the way we're treating these types of incidents are progressively caught up to our time. That's why I'm asking you. There are incidents, things occur, and the goal of

this particular hearing is to bring out the issues so we can get a better picture of what the world's going to look like four or five years from now. And we give you fair warning so you know this is a different Ag Committee.

MR. DOLEZAL: We certainly welcome this informational opportunity to exchange ideas.

SENATOR FLOREZ: As we do as well. Let me just ask a few more questions in terms of the issues that you heard from the prior panel. What other issues that you've heard that you would like to clarify. I interrupted you on your first. But you had a couple of them, and I want to make sure we get those on the record.

MR. DOLEZAL: Well, there was the statement that this chemical would be applied each time that the crop was planted. In fact, you use rotations of these chemistries. In a nursery industry typically this product would be applied every three to four years into a crop. So you're looking at annual exposures that are much less than you would see in a row crop environment. That's one of the primary things.

SENATOR FLOREZ: Is there anything else that you've heard that you would dispute, from the prior panel?

MR. DOLEZAL: I don't have any further comments on the panel.

SENATOR FLOREZ: Thank you. Appreciate the panel.

Yes. I'm sorry, Senator.

SENATOR HANCOCK: Another question occurred when I was listening to some of the answers to your questions, Senator Florez.

This is an "immediate horizon" question. Swanton at least, and other farms, because there's a variety of purveyors of organic strawberries, get successfully started organic starts. What is the difference in producing those starts from a more traditional approach, and why wouldn't nurseries simply move over to that approach if methyl iodide wasn't registered?

MR. DOLEZAL: The soil and environmental conditions where those are being grown, which is an unknown to me, make it difficult for me to answer that question. But I would presume that they are involved in a soil—they're

being grown in a soil that doesn't have a history of problems with the plant pathogens that are involved in the primary destructive nature to the strawberry industry. The question is how much of that soil exists and where does it exists. Is it possible to actually acquire? If it was downtown Beverly Hills, for the sake of argument, it would be very difficult and very expensive to turn that over to strawberry production. If it's in Modoc County, it might be a completely different ballgame. It might be very reasonable to do such a thing. Without more specifics, we don't have the answer to those questions.

What we do know is that the nurseries that are growing by 98 or 99 percent to one, are not using that methodology, and that presumes to me that they have tried both methodologies. I just don't know more about it than that. Sorry.

MR. COCHRAN: Well, I'm not in the nursery business, as you understood…

SENATOR HANCOCK: Yeah, I now understand—nursery and field.

MR. COCHRAN: Right. But I think that that would bring up the issue for the nursery industry of the bioassay before they plant. When you're using all these fumigants, you don't really need to worry about that. But if you are farming organically, then you really need to be concerned about that. But I mean, gee whiz—I mean, there's a lot of acres in California, and there's got to be a lot of places where there are suitable soils. It's just that nobody has had the motivation to look for them. And one of the things that I think registering the methyl iodide will do will postpone the urgency for people to really get serious about looking for these, because they said, "Well, they extended methyl bromide for 20 years, and we'll get methyl iodide for another 10, and then of course, there'll be something else, and so we don't really have to worry about this."

We tried to get the Strawberry Commission to look at alternative—nonchemical alternatives to methyl bromide 20 years ago, and they weren't interested in that 20 years ago. It's just been in the last few years, you know. And so, I think that there's a real sort of sense of urgency that you get when

you, sort of, don't get the candy that you want at the moment. You know, you're sort of forced to deal with looking elsewhere more urgently.

SENATOR HANCOCK: They call it—in the clean air business, they call it "technology inducing rulemaking." I used to watch that when I sat on the local air board.

But I don't understand why we don't know more about the soil conditions where your organic stock is grown versus where more traditional nurseries are. Is this a trade secret or something?

MR. COCHRAN: Can I say that—I mean, we urged 25 years ago that the University be putting more money into basic research, and into soil biology, and soil ecology, and all the things they're starting to do now. And so, the University is sort of behind, scientifically, really, and needs to catch up. I think it would be wise for the University to put a great deal of money into basic soil science, like they were doing prior to the chemicals.

SENATOR FLOREZ: Good point.

SENATOR HANCOCK: Yeah. Thank you. I guess I represent urban consumers in my district who actually care very much about this whole debate. It's an important one.

SENATOR FLOREZ: It is. Thank you, Senator. Thank you. Appreciate the panel.

Let's go to DPR, if we could. Thank you for joining us. Appreciate that. I don't know if you have a statement, but I have questions. How would you like to proceed? How about if I ask you questions, and anything I don't cover that was in your statement you can catch up with.

MS. ANN DOWNS: Just to be clear—I was just here to talk about the process. First of all, I'm Ann Downs. I'm the leg. analyst with the Department of Pesticide Regulation. While I'd like to say I have a Ph.D., I don't, and so I'm not qualified to talk to the science today. I'm here to talk about the process.

SENATOR FLOREZ: Okay. Well, let's talk a little bit about that.

Are you going to be part of the final decision-making process on the "yes" or "no" on this?

MS. DOWNS: No.

SENATOR FLOREZ: You won't be?

MS. DOWNS: Absolutely not.

SENATOR FLOREZ: Why not?

MS. DOWNS: That is in the hands of our director and chief deputy director.

SENATOR FLOREZ: Okay. And what is your role in this particular issue?

MS. DOWNS: Well, basically just to track the process.

SENATOR FLOREZ: I mean, what's your role at the department? What do you do?

MS. DOWNS: I'm the leg. analyst, and I also oversee the risk assessment; again, just the process. Make sure that paper is shuffled and goes to the right places and those kinds of things, and when we get responses, for example, from EPA and OEHHA on those kinds of things, that they're appropriately disseminated.

SENATOR FLOREZ: So I can understand the process, then, the final decision on this particular substance/chemical/pesticide will lie in the hands of the director herself?

MS. DOWNS: And the chief deputy director.

SENATOR FLOREZ: And the chief deputy. Those two alone.

MS. DOWNS: Correct.

SENATOR FLOREZ: And so, how would we get them to join us one day so we can understand their thought processes?

MS. DOWNS: Well, let me say, we have not received the document yet from Dr. Froines.

SENATOR FLOREZ: So you're still waiting for the document.

MS. DOWNS: We're supposed to receive it this week.

SENATOR FLOREZ: Have you received drafts?

MS. DOWNS: No.

SENATOR FLOREZ: Okay.

MS. DOWNS: When they receive that, there will be ongoing deliberations, and we anticipate hopefully by the end of the month there'll be a decision made.

SENATOR FLOREZ: Why the end of the month? What would be so pressing that it would have to be the end of the month? I mean, why wouldn't it be four months, or after the budget, or after the next growing season? What's the reason for "at the end of the month?" Now, you're talking process, so that's part of the process. Why the end of the month?

MS. DOWNS: Well, I don't know that that's—that's certainly not carved in stone. They're going to take into consideration whether or not the product can even be safely registered and used.

SENATOR FLOREZ: And if it can be, would there be a thought process that in their mind that if indeed it could be registered, that they would go out one more round to tell folks how they're going to implement or what protocols they're going to have in place in terms of this particular product before it's actually okayed?

MS. DOWNS: Well, clearly, if they implement mitigation measures, whether it be any of the kinds of things that the previous panelists spoke about—for example, PPE or buffer zones, or whatever it might be—those would all be made aware to the counties and the ag commissioners: this would be a restricted material. So growers would have to have permits, and those would be attached to the permit, and all those kinds of things.

SENATOR FLOREZ: Do we do that before we "hit the flag," that everybody races to this and starts to use it, or do we do that concurrently or after?

MS. DOWNS: I think generally it's concurrently, but I think because this particular product has been so contentious, I'm sure that everyone would be made well aware of the limitations.

SENATOR FLOREZ: One view would be that given it's on the Prop. 65 list itself and that it obviously will have a huge—I think it's going to have huge reactions from Californians. I think this is just a small room right now. But I

think once, indeed, it's allowed to be registered and once people understand its health effects and impacts on workers and communities, I think most people—just my guess—would want to have all of those rules and all of those dots—those "i"s dotted and "t"s crossed well before we would allow for any implementation of this. And that's not necessarily saying that we would disagree with a decision, which we might, from DPR that it shouldn't be registered, but in terms of it, just assuming that it is okayed, I think, only speaking from a small portion of the Legislature, the chair of this Ag Committee, would be that we would feel very strongly that it not be implemented until all of the protocols are worked out. I mean, these statements that were made by the—very much appreciate the nursery associations—but they're just statements. They're not in writing. They're not in stone. They're not anything that we could count on from this perspective.

And I know that you had mentioned that the ag commissioners will have some standardized way to deal with this because they would follow EPA and other types of regs. Correct?

MS. DOWNS: Well, and ours can be more stringent, obviously.

SENATOR FLOREZ: That's what I mean: ours can be more stringent. So I think we'd want to work on, indeed, closing those well before this would be, in essence, approved in a concurrent manner. I mean, just from my view—I won't speak for the committee members—but it seems that that would be—is there an opening for that type of dialogue with your department?

MS. DOWNS: You know, we've had—which is one of the reasons I want to talk about the process, and I know you don't have a nice colored diagram, but it was colored. I wouldn't refer to it in color now. But if I could just draw your attention to the far right column, which are the long rectangles there. We got this package in February of 2002. We found the package was incomplete and went back to the registrant and asked them to submit additional data. In 2005, we initiated a risk assessment. Oh, I'm sorry—do you not have that?

SENATOR FLOREZ: Hold on.

MS. DOWNS: I apologize. It should be, I think, the last page in my packet. I'm sorry.

SENATOR FLOREZ: No problem. You're the whole show today, so take your time. Just go through this so we can understand it.

MS. DOWNS: Could I start at the beginning, if you don't mind?

SENATOR FLOREZ: Absolutely.

MS. DOWNS: What I've laid out for you here is I think it clearly shows our commitment to really vetting the registration of this product or not. And so, if we look at EPA's—the far left triangles—we see that the methyl iodide registration packet went to EPA in 2002. And unlike DPR, they actually conduct a risk assessment before they register a product. So they spent four years conducting a risk assessment and made it available for public comment in January of 2006. If you move down to the third triangle, you'll see that in October of '07, they issued a time limit of one-year registration with restrictions. And then finally, in September of 2008, the product was registered. So, at this time, it's registered in 47 states. It's being used in 12 states.

If I could move over to the circles—your middle column there. That depicts a typical registration by the Department of Pesticide Regulation. So again, if we used a start date of February 2002 for the new active ingredient coming in, it comes in with a battery of data. It's reviewed and generally takes about a year before the product's actually registered. Again, we don't conduct a risk assessment on the front end, and we don't send it out for external peer review, which is what we've done with methyl iodide.

So then if we move over to methyl iodide, the package came in in 2002. We required more data, which was submitted to us over the next three-year period, through '05. In January of '05, we initiated a risk assessment, which again, we don't generally do a risk assessment prior to registering a product, but we did in this case. We asked the registrant for additional data, which they submitted over a three-year period. We developed a risk characterization document in March of 2009, and that was sent to both OEHHA and USEPA for

their comments, for peer review and comment. And again, that's where my role comes in. I collect all their comments and make sure they go to the appropriate scientists within our department. And then, in August of 2009, we sent it to external peer review. Again, that's an exception to what we would normally do. That's the panel that was chaired by Dr. Froines. And they convened their two-day meeting—they had a two-day meeting, which again, we've never done that before. It was open for public comment, and that was in September, and they now have been deliberating for four months. And we were advised last week that the package should be in our hands this week—the hard copy.

SENATOR FLOREZ: Okay. Let me add some things to your particular rendition of the registration process. Basically what this is telling me is that you took the extra step and went even further than you needed to.

MS. DOWNS: Much more so.

SENATOR FLOREZ: Okay. I'm looking at your timeline here. In 2006, the EPA actually rejected methyl iodide as a—they actually basically said that you shouldn't register it. Isn't that correct? I thought the EPA actually rejected their registration in 2006.

MS. DOWNS: I'm not aware of that. They made their risk assessment available for public comment in '06, then registering it later.

SENATOR FLOREZ: And then I think in 2007, they only allowed it as a fumigant for one year?

MS. DOWNS: That's correct. There were some restrictions.

SENATOR FLOREZ: Yeah, I guess my view was that EPA said yes, then no, then one year, and in that realm of 2006 to 2007, all of those yes and no's and stop and go's, your department kept going?

MS. DOWNS: Well, actually, the way the registration process works at EPA…

SENATOR FLOREZ: And why wouldn't you just pull it and stop, and so therefore, all of this timeline would have started in 2007?

MS. DOWNS: Well, I'm not aware that there were huge issues with respect to the feds. I mean, they obviously had something they wanted to put a restriction on, but that's not atypical, frankly. Whenever products are registered at the federal level, they're always conditionally registered. When you get your stamp label back, it's always a conditional registration.

SENATOR FLOREZ: Meaning that it's up to the state to make the hard decision?

MS. DOWNS: No, not at all. Sometimes there's some data that still needs to come in. That's not necessarily critical to the registration. There's not a concern in terms of exposure to workers or the environment to those kinds of things.

SENATOR FLOREZ: In this case, they seem to be telling us that they're going to really look at what this panel says—the EPA—and also, in essence, make some sort of safety decision themselves. So why is our panel in California so important? Why is this report so important to the EPA? Why wouldn't they make their decision? Why wouldn't we get guidance from them versus them getting guidance from us?

MS. DOWNS: Well, I think you stated it earlier. I think we always go the extra mile here in California to make sure…

SENATOR FLOREZ: So why wouldn't we wait for the new EPA folks to tell us what they think, and we would wait for them to, then, to do—I mean, I guess that's my question: Why wouldn't we wait for the Administration's new EPA to take another view of this? And we would put off our entire process here, off six months or seven months, and give the EPA some deadline at which to get back to us, to re-review, if you will, and then we would have some better opportunities here in California to then restart the process. Why wouldn't we do that?

MS. DOWNS: I don't think I can answer that.

SENATOR FLOREZ: Okay. Well, can you ask your folks? Because it's a process issue only in the sense that if, indeed, the EPA said—in 2006 actually rejected it, and then they said "go," and then they said "no, go, but only for one

year" in 2007. They seem to be kind of making these very weird decisions on—and then they say, "California, you do it and we'll watch your scientific panel and send us your results and then we'll make a decision." It seems at the EPA level, this process, everything that you have here normally starts with the EPA. Correct? Our process?

MS. DOWNS: We will not register a product until it's been registered by EPA.

SENATOR FLOREZ: Yes. So why wouldn't we wait? Why wouldn't we kick it back to EPA and ask them to…

MS. DOWNS: Well, they've already registered it.

SENATOR FLOREZ: I mean, given the stops and go's and one year and not, why wouldn't we, just to be really safe, ask them to take one hard look, give them six months—eight, nine months—and then we would continue our process? What's the rush again? The very first question I asked, you know, why this month? What's the rush to do this?

MS. DOWNS: I don't think there is a rush. And I think in this case, because we have gone out for the external peer review, I believe that EPA's waiting to see what comes out of that. We've made this extra step and done our own external peer review.

SENATOR FLOREZ: Okay. So, given that there's no rush, if the peer review—just follow my process. So if the EPA is telling us that they're going to really watch our scientific panel and see what they say, why wouldn't we get our scientific results, that you're going to look at—correct? you're waiting for…

MS. DOWNS: Correct.

SENATOR FLOREZ: Why wouldn't we send them back to the EPA and have them make some decision based on that, since they seem to be wanting to wait for that, and why wouldn't we, then, work in conjunction with the EPA in order to come up with a balanced decision so we wouldn't have states doing different things, I think as has been mentioned earlier? You know, we'd all be on the same page.

MS. DOWNS: Well, again, they've made a decision to register the product. I don't know that they were absolutely against it in October of '07. Perhaps they were and I'm unaware of that.

SENATOR FLOREZ: Well, they registered only for one year is what they said, in '07.

MS. DOWNS: And again, that's not atypical. I mean, that happens sometimes, especially when you have something like a fumigant which has—you know, it is more toxic; it does volatize more easily and there are some things associated with its use that they maybe needed to get data on. But they've made a decision to register it.

And let me say, that when we register a product, we routinely require that the registrant send us everything they sent to EPA. So we've sort of always had, perhaps, an elitist attitude in terms of "we think we do it better," I suppose, and so, we would always get everything that was sent to EPA and our scientists would look at the same data. And there are times that we have reached different conclusions, which is why every pesticide isn't registered in California and is registered in 47 or 49 other states.

SENATOR FLOREZ: Right. So there's an opportunity to disagree with the EPA at any time?

MS. DOWNS: Well, not during their process, no. We would employ our own process here and reach our own conclusions.

SENATOR FLOREZ: From the process point of view, what happens if we actually wanted the new EPA—the new administration's EPA—to make a conclusion on this particular substance? Would that slow us down? Would it do anything in terms of more ozone being depleted? I mean, we still use—I'm sure we wouldn't ask people not to use methyl bromide because they've used that—that's what they're waiting for; they're waiting for this new product, correct?

MS. DOWNS: I would assume so.

SENATOR FLOREZ: Yes. Once you implement this, how long does the decision—this is forever, then, correct? Once you folks say "Register it" it goes on for…

MS. DOWNS: Well, product registrations can be inactivated and they have been in the past.

SENATOR FLOREZ: Have they?

MS. DOWNS: It's not routine, but you can inactivate. . .

SENATOR FLOREZ: When was the last product registration that's you've inactivated?

MS. DOWNS: I don't know.

SENATOR FLOREZ: Has there ever been one?

MS. DOWNS: I believe so.

SENATOR FLOREZ: Are you sure?

MS. DOWNS: Fairly sure.

SENATOR FLOREZ: Okay. How sure?

MS. DOWNS: Fairly sure. (laughter) I mean, obviously we'd rather go ahead and move forward with whatever package we're going to register and be comfortable and confident in our scientific evaluation that the product can be used safely. I mean, that would be our desire always.

SENATOR FLOREZ: Okay. And in terms of a—if a decision is reached from a process point of view, following this chart, again, the protocols, California having higher standards for those—I was very happy to hear—Mr. Dolezal mentioned they're always willing to have higher, if you will, make sure the standards are in place. We can have higher standards than are currently at the federal level and we've done that in the past?

MS. DOWNS: Correct.

SENATOR FLOREZ: We have. Okay. And is that usually concurrent or prior to the authorization of this?

MS. DOWNS: Well, it would be concurrent. We won't register it. It has to be registered at EPA first and then we register it.

SENATOR FLOREZ: Gotcha.

MS. DOWNS: So whatever kinds of restrictions we might attach to that registration become known when that product is registered. The label is the law, so folks are supposed to read the label and follow it.

SENATOR FLOREZ: And how long does that all take—that process—once you make a decision to register it?

MS. DOWNS: We do a…

SENATOR FLOREZ: By the time it hits the field? By the time it's ready to go?

MS. DOWNS: We do a 30-day posting for public comment, and that is just what it is; there's 30 days folks have to provide public comment.

SENATOR FLOREZ: And what's the public comment for if you've made a decision already?

MS. DOWNS: Actually, for anything. It can be anything.

SENATOR FLOREZ: We all don't like it and you go, "Public comment is over." I mean, what is the purpose of the public comment if indeed you've made a—would it make sense not to have 30 days public comment prior to you registering?

MS. DOWNS: I'm sorry.

SENATOR FLOREZ: Wouldn't it make sense to have 30-day comment prior to registering?

MS. DOWNS: Well, it's not fully registering until the public comment period is up.

SENATOR FLOREZ: Okay. So you can change your mind in the 30 days?

MS. DOWNS: Correct.

SENATOR FLOREZ: Okay. That's what I mean. You can say, "We heard something in public comment that, you know, three scientists came and basically even took our scientific panels report and changed our mind"?

MS. DOWNS: That's correct.

SENATOR FLOREZ: That could happen.

MS. DOWNS: Um hm.

SENATOR FLOREZ: Okay. So it's 30 days posting and then—go ahead.

MS. DOWNS: And that in that point of time it's just a matter of a couple of days for the registration part of the Registration Branch to actually register the product. And then, depending on whether or not where the registrant is in terms of staging a product to come into the state, it just depends on how fast it's sold.

SENATOR FLOREZ: Sold, but with a label?

MS. DOWNS: Oh, absolutely. Because we proof all the labels. Every label has to be completely proofed and enrouted to the various branches to make sure that signal words match the tox data and those kinds of things.

SENATOR FLOREZ: What is the label? I'm not on the technical side; what does the label normally include?

MS. DOWNS: Oh my goodness. Signal words, EPA registration number, directions for use, personal protective equipment, timing of application, the crops it can be used on…

SENATOR FLOREZ: Oh, okay. Pretty thorough in terms of the way…

MS. DOWNS: Oh, absolutely.

SENATOR FLOREZ: Absolutely.

MS. DOWNS: Well, some labels are 80 and 100 pages long.

SENATOR FLOREZ: Okay. Alright. Okay. Is there anything else you want to take us through in terms of process?

MS. DOWNS: No. I think just that it's fairly clear from this, that we've been committed from the onset to making sure that we've got a thorough package from the registrant. We've had two opportunities for the stakeholders to provide public comment. And we've sent it out for the external peer review, which, again, we've never done.

SENATOR FLOREZ: Were you going to do that prior to the letters that were sent by the Legislature?

MS. DOWNS: Yes. Absolutely.

SENATOR FLOREZ: Okay. I just wanted to make sure.

MS. DOWNS: We absolutely were.

SENATOR FLOREZ: The letter was sent, and then also 27 days later you guys said you were going to do something different.

MS. DOWNS: I can assure you that we've always been committed. . .

SENATOR FLOREZ: To do the external.

MS. DOWNS: Absolutely.

SENATOR FLOREZ: Okay. I'm just wondering on the timing of it. And so, your best guesstimate of when you'll get this scientific report.

MS. DOWNS: We're supposed to get it this week. We've been advised it was Fed-Exed. And at that point in time, they'll sit down and review what they, the risk managers, in conjunction with some of the other folks on staff, and look at their findings.

SENATOR FLOREZ: So how does that work when it lands; to whose desk does it go; and how gets to read it; and how transparent is the process?

MS. DOWNS: You know, I'm not exactly sure who gets to read it. And I apologize. I don't know the answer to that.

SENATOR FLOREZ: I mean, is it something you post on your website so the public can they can view it?

MS. DOWNS: Yes. Absolutely. It will become publicly available as soon as we have it.

SENATOR FLOREZ: Okay. And so, that will be publicly—and do you know what the time frame in terms of when that will be?

MS. DOWNS: It will definitely be this week. And depending on when they Fed-Exed it, it might be as early as tomorrow.

SENATOR FLOREZ: Okay. And do you have any indication where—it's never just a report? Is the report making a recommendation or is the report allowing the director of DPR to make a conclusion from a report that may not actually lead to…

MS. DOWNS: The director will make a conclusion based on—the external peer review panel looks at our scientists' findings and comments on them throughout the document. And then, again, I'm not sure who it goes to

within our department, exactly who plays a role there, but our chief deputy director and director will then make a registration decision.

SENATOR FLOREZ: Okay. And in you mind there is no sense of rush to do this; this just falls within the normal process?

MS. DOWNS: Correct.

SENATOR FLOREZ: Okay. Thank you. Appreciate it.

MS. DOWNS: You're welcome. You're most welcome.

SENATOR FLOREZ: Okay. There's some time for public comment if anyone would like to make any public comment, or, make any comments on anything you've heard. Now would be the time to bring that up.

MARTHA GUZMAN: Mr. Chairman, Martha Guzman with the California Rural Legal Assistance Foundation.

About a year-and-a-half ago I remember when the Bush Administration registered this product federally on their way out it was almost laughable and really unthinkable to think that even our Republican administration here would consider registering this. I actually recall just thinking, "There's no way, even regardless of party, that a California governor would consider registering this product." And in the last year-and-a-half, almost two years, it's been almost a complete shift. And in it's the arguments that we've heard, that we can set something up to mitigate for this. And there's so many responses to comments I could—I'll try to narrow them but…

But really, you spoke of the reality out there, and there's nothing here in the process, although they did go above and beyond by doing the risk assessment prior to a registration decision. They are still making—they still have not taken mitigation measures for products such as metan sodium, chloropicrin. We've just finished some of those risk assessments a few years ago (in some cases more than a few years ago) and we still don't have mitigation measures. And what are those? Those are buffer zones. Those are more protective equipment, etc.

You know, I think some of my colleagues will speak to some of the nursery workers that, I think the gentleman from the Nurserymen's Association

called, "highly technical," or, I forget the term he used, "trained technicians." There was a case a couple of years ago of hundreds of H2A workers who were not trained technicians and who were, in fact, not even fed and housed correctly, so it's—the reality and what's on paper does not match up and you know that better than anybody.

Also, to talk about—this is not just a drift issue, but to remember that this is a groundwater issue in particular.

And I feel even more motivated by this because I actually have a thyroid problem. And about 10 years ago, when my doctors and my special technicians, which only people with health insurance have, made the decision to use iodine to treat my thyroid and it was no more than this. And that's going to be loaded into our groundwater to a population that does not have health insurance; that can't monitor this; they can't smell it; they can't taste it. And the side affects are things that are really not—it's not a rash; it's a neurotoxin; it's an endocrine disrupter; it's things that really mess with your system and you can't always tell. So it's really easy to say that, you know, there's no evidence of this and we're going to wait, just like we're going to wait—like we waited with DBCP; and this came up in the scientific review panel. We waited with DBCP. It's in our groundwater. Who's paying for it? You know, Cutler High School, Cutler-Orosi is paying for it. You know, Dinuba is paying for it. Raisin City is paying for it. It's not like we have this—it's a silver bullet only in one sense; it's not a silver bullet in totality.

And I definitely appreciate the restrictions, particularly for the Nursery Association and bare root crops. But this is the time, like Jim said, for us to move forward; for us to see that this is not going to be a continuing exemption after exemption, but that we do have to move forward.

I was at Davis about 10 years ago at the ag economics program there and my professors invited me to do a study by the Strawberry Commission and they wanted me to do my doctorate on studying the economic impacts of farm workers if we got rid of methyl bromide. That was almost 10 years ago. We're, like, reliving this. It's like deja-vu. It's like what happened—who killed the

electric car? Who killed the organic strawberry? It's happening all over again. We need to draw a very direct action here and say we need to move forward.

So I appreciate you bringing this forward, and really just knowing the reality that it's time to stop using our environment in our worker health, in our community health; to have more production. We have to figure out how we can do it all together.

SENATOR FLOREZ: Okay. Thank you.

LORI CHEN: Thank you for this opportunity. Just to back up everything that Ms. Guzman said. I'm Lori Chen with Clean Water Action. Our concerns are public health, particularly not only the burden on the public systems for insuring our water is drinkable, but ultimately the body burden that our bodies get from many different sources. So please consider delaying this.

SENATOR FLOREZ: Okay. Thank you.

LARRY JACOBS: Hi. My name is Larry Jacobs. I've been a farmer for 40 years.

One of my first experiences in pest problems growing a nursery crop was being told that I couldn't sell my crop because it had aphids on it and I had to spray it. The inspector gave me some instructions on what to get. I got some pesticides. I sprayed the pesticides. I found myself with a headache and I passed out in the field where I was spraying. Because of that experience, I found something else to do. I learned about biological control. I found the source of insects that ate insects. I learned about ways of displacing the population of aphids and managing that so I didn't have a problem. In the next month when I was inspected again, he was surprised to see that I had no more aphids in my crop.

Necessity breeds solutions. And there is no silver bullet when we're talking about biological systems.

Our soil systems are very complex. There's no way to understand the biology of those soil systems. There are millions and millions of organisms.

What our friend didn't say was, there's millions and millions of beneficial nematodes—these little small worms in the soil. They aren't all pests.

Seven years ago, we had a problem with nematodes growing tomatoes. We grow 2,000 acres of tomatoes. We bred the problem away. We found a genetic solution to our nematode problem.

Again, there is no silver bullet. If we don't have the silver bullet, we will find solutions.

Two years ago, we started a company to work with mustards. We began taking the mustard seed from two varieties developed at the University of Idaho, pressing them for the oil. We thought we were making a local biodiesel. We found that we were making a local biocide and herbicide. And on tests on Jim's farm, we were getting 30 percent increases in yields. We weren't looking at nematodes, we were looking at verticillian. We saw a depression of verticillian loads and we weren't sure, what were the other reasons for the increases in yields?

But again, if we look for solutions, we will find them.

Steaming has been something else that's been in use in Europe. Steaming the soil. Hydroponic solutions. Growers who farm—we have greenhouses in the Watsonville area. We know at some point we are going to have soil problems and the answer to those soil problems will be going out of the soil and growing those things hydroponically. Nursery plants can be grown hydroponically. It's another solution. So breeding, hydroponics, other materials, other ways of handling some of these disease problems are certainly there.

And the most important thing, I think I want to say is, this approach of continuing to kill, sterilize the environment we live in, it's backwards. It's a backwards approach. If we have to live in moon suits, work in moon suits to work, it's dangerous.

This water contamination, we don't need to find out about it afterwards.

Thank you.

SENATOR FLOREZ: Thank you.

TRACEY BRIEGER: Hi there. My name is Tracey Brieger with Californians for Pesticide Reform. I just want to go over a little bit, the stories that I've heard today. And the first panel to me, unequivocally presented this story that to register methyl iodide would be in the words of Dr. Schore's colleagues, insane, and I think that's undeniable. It was a very strong panel and I think it's quite clear that the health effects and the water effects would be an absolute tragedy to even considering registering this.

But the other story that I heard on the second panel with the exception of Mr. Dolezal, is that registering methyl iodide is unnecessary because there are alternatives and there are alternatives that work. We all know, as well as industry knows, that the future of agriculture is using non-fumigant alternatives, and so, the quicker we get on that road, the better. However, we can reliably count on industry to prophesy the apocalypse when change is near, as Mr. Dolezal did. And with all due respect, sir, I think you're crying wolf a little bit on this one.

We heard from the panel that there are alternatives at the field level. We heard from Mr. Gutierrez with NRCS, that there is money to support growers through these alternatives. And the story that didn't come out so much, but Jim Cochran talked about some, was the story at the nursery level. And I think the myth that was propagated here is that it can't be done. You cannot actually grow nursery starts without using methyl—without using fumigants. And, particularly in this case, they're arguing for methyl iodide.

But I want to tell you a different story, and this is a little bit more about the story of the grower who—the nursery grower that Jim works with, and that's Prather Ranch, a guy named James Rickert, who I've had the honor of speaking with. He grew up in the Redding area right around where most of the California nursery starts are in California, so right in that industry. He grew out right from his bedroom window. He's been able to look out at the Driscoll fields that make their nursery starts. And he was told what you have heard today; that it can't be done. You actually cannot grow strawberry starts organically. And so, having that exact same innovative spirit that Jim Cochran

talked to about himself, and Larry, too, in terms of a grower always thinking, "Wow, how can it be done?" And so, he asked that very same question and within a year he solved it.

And as you've heard from Jim, Jim buys his plants grown organically. In fact, absolutely meeting the zero tolerance standard for nematodes. In fact, he's scrutinized twice, because as you can see, it's an industry who doesn't want to believe that this is possible, who tries to pretend that it's not. And so, he actually gets inspected twice by the Shasta and the Siskiyou County—county ag commissioners—because of the difference between where his fields are and where the trim sheds are. So, in fact, I think he's—the Shasta County inspectors have told him, "Wow, you have some of the nicest plants. They're big. They're robust. They're absolutely disease and nematode free." So he meets the zero tolerance.

And in fact, this year, as in some other years, he's had a great excess supply in terms of his plants. This gets at bit of the question that Senator Hancock was asking. It's like, "Wow, this guy is able to do it organically and he has excess supply," like, there's other people who could be buying this and they're not yet. What's our biggest barrier here? And I think it's one of the biggest barriers is an industry who doesn't want to believe that it's possible and who's pretending that it's not. But it absolutely is. And one of the reasons that he has excess supply is that nobody's requiring growers to buy his starts even though they can be done organically.

So, I mean, what's the role of the regulators and the legislators, is to make sure that actually, you know, people are actually buying the highest best practice organic standard nursery grown strawberry plants, because they exist and they can be done and he's been growing for five years—well over—enough to supply all the starts for organic in California if people were buying them. And so, he's growing them to scale is also a point. This is not a small operation, and he has room to expand, so he's made that extremely clear.

The last thing I'll say is that this really would be a tragedy in the making; to register methyl iodide. I know you all know this already, but the people who

stand the most to lose from this registration are predominantly not rich, predominantly not white, and who don't have the money to come to Sacramento, here, to lobby, like Arysta does, to have this registered. And they're your constituents—of this committee. They're residents of California, and they deserve protection too. And the strongest protection is to not register methyl iodide. If we have zero protection for—zero standard tolerance for nematodes, I would ask why we don't have zero tolerance standard for water contamination, for cancer, and for worker exposure?

Thanks.

SENATOR FLOREZ: Thank you.

PAUL TOWERS: Thank you, Senator. Paul Towers, with Pesticide Watch. I wanted to mostly share some testimony from a group of residents from the central coast who were unable to make it up today. Picture where they live in Moss Landing, which is surrounded on three sides by strawberry fields, so literally, on three sides of their community. Over the past few years, because of methyl bromide applications, they've actually been—have drifted upon and had numerous health effects. And so, picture this introduction of a new pesticide with that potential to drift, one that is more toxic and poses these serious threats to groundwater.

I think just anecdotally: I remember when some of those applications were taking place in the fields, literally 25 feet from their houses. There were, actually, several folks in moon suits. But those were the people 25 feet away working in the field; the folks living 25 feet away in their homes, looking from their front porches, wearing no protection at all.

So I wanted to share just a few words from them. This is on behalf of Marilyn Linds(?), Dianna Keto(?), Christa Henny(?), among other mothers and business owners all within Moss Landing.

The testing grounds being proposed are thousands of acres of land at the rate of 175 pounds per acre. The laboratory animals in this trial will be farm workers; they'll be school children, and rural communities. People in positions of power in this state are being told that it is too urgent of an issue to take the

time to fully test the safety and wisdom of using methyl iodide to control pests and are being urged to go ahead—go ahead and register this. We cannot help but wonder if the reason for this urgency is that methyl iodide is already a known carcinogen to cause fetal insult up to and including, late term miscarriage; to interfere with the function of the thyroid; to cause neurological damage among other adverse effects; not to mention that it will be used also with a mixture of chloropicrin, another known carcinogen and one that can cause severe pulmonary damage among other effects. In other words, if methyl iodide were to be fully vetted for safety, it would not stand up to this scrutiny.

Instead of using our countryside for what amounts to the opposite of chemical reform as is in green chemistry and other initiatives, let us turn away from the most deadly of pesticides and support our farmers in any way we can to growing healthy, sustainable crops.

Thank you.

SENATOR FLOREZ: Thank you.

ALEGRIA DE LA CRUZ: Senator, thank you for doing this today; for taking time to learn more about methyl iodide and why its registration should be blocked completely. My name is Alegria De La Cruz. I'm an attorney with the Center on Race, Poverty, and the Environment. But I'm also here today as a mom and as the granddaughter of the one of the first women who organized in the fields with Cesar Chavez in the early 1960s. For six years I was an attorney with California Rural Legal Assistants in the Central Valley and had the privilege of working for many amazing clients in some of the most dire circumstances. The worst of my cases were the pesticide drift cases. I represented the some 300 people who were poisoned in the weed patch chloropicrin incident two nights in a row, and I would hate to see those same people affected over and over again by decisions like the one to register methyl iodide.

Also, when I was at CRLA, I was on a case involving some 400 H2A workers, as Martha referred to. The trim shed where these workers were employed, brought up from Mexico, finds it difficult to find local workers who

have those highly skilled—who are highly technical and highly skilled as expressed by Mr. Dolezal. And so, what this company decided to do was go to Mexico and find some Mexicans to bring and work in their trim shed. Needless to say that the Mexicans they found were not highly skilled, highly trained farm workers or technicians, but factory workers who got on the bus and drove 24 hours up to Tule Lake to be housed in what were once the interment camps for the Japanese Americans. They were housed in absolutely horrible conditions that were not only illegal but also inhumane. They were given no protective equipment to do the work that they needed—that they had to do. And they got sick and they got hurt. And then to top it all off, they were not being paid properly. So this is what's happening on the ground.

And I find it very difficult to believe that we will find the moon suits to give the hundreds of H2A workers with no training, who were driven up in a bus in the middle of the night and not told what they're actually going to be doing when they're using this highly toxic pesticide—I always keep my grandma up to date on what I'm doing and she finds it intolerable that after some 40 odd years of people knowing the plight of farm workers, that some of these things continue to happen. And when I explained to her about methyl iodide, she dropped her head and said that those top 10 pesticides on Cesar's list in the late 1970s, many of those are still being used. And while that's still happening, we're also looking at things like methyl iodide.

So for her, my son, and for my clients, thank you for doing this; taking this time today for this hearing. And please do all you can to make sure that methyl iodide is not used in California.

SENATOR FLOREZ: Thank you.

ANNE KATTEN: Hi. Thank you for having this hearing. I'm Anne Katten, from California Rural Legal Assistance Foundation. I'm an industrial hygienist by training, so I'd like to address my concerns that I just can't see mitigations as solving this problem at all.

Firstly, the Department of Pesticide Regulations draft risk assessment found that the exposures could be up to 3,000 times higher than the level they

consider could result in a risk of miscarriage or early term delivery. And I just—that's a lot to reduce by mitigation. And the methods that have been proposed are—that's including use of respirators. Respirators are always considered the last resort for protecting workers because they're uncomfortable. They have to be carefully fit to the face. You have to keep changing the cartridges every day. And as you've observed, in agriculture, sometimes the attention to detail isn't quite there.

This virtually impermeable film, I have two concerns. One is when do you decide things have decomposed enough so that you can cut it, so you can remove it? You know, if you don't make that decision properly, you're going to get a big poof of it coming off. Also, California tried very high barrier types for methyl bromide a number of years ago and it seemed to leak out the sides because they found a lot when they did adjacent monitoring.

And then, there's also the concern that if you put on more tarping and you inject deeper, you're going to increase the risk of groundwater contamination, as was discussed. And I just wanted to emphasize that even once the methyl iodide breaks down, you're still going to get iodide in the soil, and that's there permanently. And I checked that with Dr. Schore before I came up here.

And on the external peer review panel in their August meeting, Dr. Ted Slotkin observed that DPR's prediction that you could have loading up to 18 parts per million iodide in the soil, he said that at that level of loading and drinking water, if you drink a liter of water, your orders of magnitude above the upper recommended iodide intake.

And then just finally, for nurseries, there is already an approved steam treatment for containerized plants which is very efficacious. It is expensive but maybe with solar treatment—you know, heating of the steam—it could get less expensive, and I believe there is research underway to use that in the soil type nursery operations.

Thank you.

SENATOR FLOREZ: Thank you. Is there any other public comment for the record? Okay. Then I want to thank everyone for coming. I can tell you, obviously, this is not even close to being over. We have a lot of work ahead of us, including a not too transparent report that's on some Federal Express package coming our way.

And so, I will tell you that the goal of this committee is to make sure that once that report is public and posted that we will have another hearing; that we will get the thought processes of the director of DPR and the assistant—the decision makers. That's our role in the Legislature. We're an oversight body. Our role is to understand the thought processes of our decision makers, particularly in the Administration. So we will have a hearing on that immediately—not a month from now. So when we are ready to have—that means we have to have the report as well.

And we very much appreciate the public's comment on the report. We very much appreciate your emails. And I want to make sure you have my email address. It's very simple. It's deanflorez@yahoo.com. And if you can send that to me, that will get directly to me and to my staff—once you have the report, or if you have any other comments after this particular hearing that may not have made it on the record, we very much appreciate it that.

It's clear that the approval process in this particular case is one of fits and starts. This has not been a seamless process. And we're very worried with the fact it is such a major, major decision that could well impact us for the next 30 years. And so, I don't think that simply saying that this is a simple replacement or safer replacement for methyl bromide should, in my mind, make us all walk out of here feeling any better. I think in the end, we have to, then, have hearings after this on alternatives and have some very serious hearings on alternatives; that we need to bring in our universities and talk about funding; and we need to ask our industries to see what they're doing—and they are doing something, which is great—in terms of funding those alternatives. Because the day is coming where we're going to be moving past these particular substances; it has to.

So I hope that everyone will please stay in touch with the committee. We very much appreciate the comments. And particularly, the scientific panel, thank you very much. Any of your documents that you would like to get to us before we close the transcript would be appreciated, so we can at least keep it on the record.

And we will adjourn the Senate Food and Agriculture Committee until our next meeting. We will notice that as soon as this report is out for all of us to read. So we'll close the hearing. Thank you very much.

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