

POLICY AND INTERGOVERNMENTAL AFFAIRS COMMITTEE

Council of the County of Maui

MINUTES

July 1, 2014

Council Chamber, 8th Floor

RECONVENE: 9:15 a.m.

PRESENT: Councilmember G. Riki Hokama, Chair
Councilmember Donald G. Couch, Jr., Vice-Chair
Councilmember Gladys C. Baisa, Member
Councilmember Robert Carroll, Member
Councilmember Elle Cochran, Member
Councilmember Stacy Crivello, Member
Councilmember Don S. Guzman, Member (Out 5:37 p.m.)
Councilmember Michael P. Victorino, Member

EXCUSED: Councilmember Mike White, Member

STAFF: Carla Nakata, Legislative Attorney
Sharon Brooks, Legislative Attorney
Tammy M. Frias, Committee Secretary

ADMIN.: Michael M. Miyamoto, Deputy Director, Department of Environmental Management
Richelle M. Thomson, Deputy Corporation Counsel, Department of the Corporation
Counsel
Patrick K. Wong, Corporation Counsel, Department of the Corporation Counsel
Edward S. Kushi, Jr., First Deputy Corporation Counsel, Department of the Corporation
Counsel

OTHERS: Paul H. Brewbaker, Ph.D., TZ Economics
Representatives from the U.S. Environmental Protection Agency (“US EPA”) *via*
telephone conference bridge:
William Jordan, Deputy Director for Programs, Office of Pesticides Programs, US EPA
Headquarters
Dr. Chris Wozniak, Special Assistant to the Director, Biopesticides and Pollution
Prevention Division, US EPA Office of Pesticides Programs
Mike Mendelsohn, Acting Associate Branch Chief, Microbial Pesticides Branch,
Biopesticides and Pollution Prevention Division, US EPA Office of Pesticides
Programs
Don Lott, Associate Director of Chemicals Division, Office of Civil Enforcement, US
EPA Office of Enforcement and Compliance Assurance
Pamela Cooper, Manager, Pesticides Office, US EPA Region 9 San Francisco Office

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Mary Grisier, Pesticides Office Hawaii program lead, Pesticides Office, US EPA
Region 9 San Francisco Office
Dean Higuchi, Press Officer/Congressional Liaison/Public Affairs, US EPA Region 9,
Hawaii Office

Scott E. Enright, Chairperson, Board of Agriculture, State Department of Agriculture
Thomas K. Matsuda, Branch Chief, Pesticides Branch, State Department of Agriculture
Christina Bauske Zimmerman, Pesticides Registration/Licensing Section, State
Department of Agriculture
Todd Suda, Biotechnology Specialist, Plant Quarantine Branch, State Department of
Agriculture
Gary L. Gill, Deputy Director, Environmental Health Administration, State Department
of Health

Lorrin Pang, MD

Additional attendees: 30

PRESS: Melissa Tanji, *The Maui News*
Akaku--Maui County Community Television, Inc.

CHAIR HOKAMA: . . .(*gavel*). . . The Policy Committee shall reconvene.

**ITEM PIA-78: INITIATIVE PETITION TO PLACE A MORATORIUM ON THE
CULTIVATION OF GENETICALLY ENGINEERED ORGANISMS (CC 14-166)**

CHAIR HOKAMA: This is a continuation of a meeting we recessed from yesterday, June 30th, that started at 1:30 p.m., on Policy Item 78, again, which is under the heading of an Initiative Petition to Place a Moratorium on the Cultivation of Genetically Engineered Organisms. We have concluded testimony portion. Today your Chair's intent is to bring forward resource people to start the Committee process of discovery, which is prior to even discussion and which is also prior to decision making regarding this proposal before this Committee. I will tell you the general format. That's how the Chair plans to proceed today and that is why I called for this 9 a.m. At 9:30, we're going to recess slightly before 9:30, we will make our connections, we will be on a conference call type proceedings, Members. We have scheduled the U.S. Environmental Protection Agency to participate. My understanding is we will be dealing with the people from the Washington D.C. Headquarters that was speaking to us as well as being, you will be able to ask questions regarding their comments and questions that you believe is pertinent to the proposal. During the day, and we'll see how it goes, I won't give you a specific time, but the Chair has also requested and we'll have participation from the State Department of Agriculture, the Chairman, Mr. Enright, has agreed to participate along with Thomas Matsuda, the Pesticides Program Manager and Christina Bauske, Pesticides Registration/Licensing Section. And also we have Director Gary Gill from the Department of Health that will also be participating with us sometime during this afternoon. At some point, the Chair is also going to

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bring forward Mr. Brewbaker to give us a financial comment on what he feels may or may not occur with this consideration regarding its impact on the County and its ability to perform. At one point, the Chair is intending to go into executive session with Corporation Counsels to inform the Committee of its responsibilities, liabilities on this item regarding the various issues that I have already asked Corporation Counsel to be prepared to respond in executive session to the Committee. And at appropriate time, I'm also going to see if Mr. Pang would like to participate in a manner that can help the Committee with some understanding. So at some point of the day we'll be talking with Dr. Pang and asking him for his consideration to participate. And I also am considering other University professors, if appropriate, to bring them forth to the Committee. Any questions for your Chair on what I have shared with you this morning? That's the format we are planning to go through for today, Members. Okay. Since there's no questions, I'm gonna recess this and allow Staff to start making the connections on the network for our conference call with the Environmental Protection Agency. We shall be in recess. . . .(gavel). . .

RECESS: 9:10 a.m.

RECONVENE: 9:37 a.m.

CHAIR HOKAMA: . . .(gavel). . . The Council's Committee on Policy shall return to order. Members, we have with us on conference phone this morning representatives from the Environmental Protection Agency Headquarters that will give us comment on the proposal that is before us. At this time, present for this morning's reconvened-recessed meeting is Vice-Chairman Donald Couch.

VICE-CHAIR COUCH: Good morning, Mr. Chair.

CHAIR HOKAMA: Good morning. Council Chair Gladys Baisa.

COUNCILMEMBER BAISA: Good morning, Chair.

CHAIR HOKAMA: Good morning. Committee members, Mr. Carroll.

COUNCILMEMBER CARROLL: Aloha, Chair.

CHAIR HOKAMA: Good morning. Ms. Crivello.

COUNCILMEMBER CRIVELLO: Aloha, Chair.

CHAIR HOKAMA: Good morning. Ms. Cochran.

COUNCILMEMBER COCHRAN: Good morning.

CHAIR HOKAMA: Good morning. Mr. Guzman.

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COUNCILMEMBER GUZMAN: Good morning, Chair.

CHAIR HOKAMA: And Mr. ...

MR. JORDAN: If you want the folks from EPA to be able to hear you, you're going to have to use better microphone system because we, at least, at our end, we cannot hear you very well. It's every other word or so.

CHAIR HOKAMA: Okay.

MR. JORDAN: So, sorry.

CHAIR HOKAMA: No, no, no, we want to have a good communication so we appreciate your comments.

MR. JORDAN: Thanks.

COUNCILMEMBER VICTORINO: And, aloha, Chair.

CHAIR HOKAMA: Okay. And this is Chair Hokama. I'm conducting the meeting. If one of you will introduce yourself and your colleagues that will be participating today, please.

MR. JORDAN: Sure. My name is Bill Jordan. I'm the Deputy Director of EPA's Office of Pesticide Programs. I'm based in Washington and with me are two of the experts in our program, Chris Wozniak and Mike Mendelsohn. Also participating from our Office of Enforcement, Don Lott and three people from the Regional Office in San Francisco, Pam Cooper, Mary Grisier and Dean Higuchi.

CHAIR HOKAMA: Thank you for that, Mr. Jordan. And we'd also ask, and we'll also from this side identify ourselves before we speak so that...we are keeping verbatim minutes of this meeting so we would ask if you can help us since we can't see you, identify yourselves when you make your comments or give us your responses to questions from the Committee. That would be appreciated. Mr. Jordan, I don't know if you had the opportunity to review the initial proposal and if you or anyone else of your team would like to give some opening comments.

MR. JORDAN: Thank you, Mr. Chairman, this is Bill Jordan from EPA. I appreciate the invitation to talk a bit about the role of the Environmental Protection Agency in regulating pesticides as well as genetically, certain genetically engineered organisms. Let me begin by describing briefly our responsibilities at EPA with regard to pesticides, and we are, at EPA, responsible for carrying out a program to register individual pesticide products, that is, grant a license for the sale and distribution of every pesticide product sold in the United States. We base our decisions about whether a pesticide may be sold on a very large database of scientific studies that evaluate the potential impacts on human health and the environment and only approve a pesticide if we conclude that its use will not cause unreasonable adverse effects on the environment, that

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includes concerns both about the people who work with the pesticides, the people who may come in contact with it after a pesticide has been applied, impacts on the wildlife, on water resources, as well as on residues that might be present in food or come in contact as a consequence of being used in around homes and schools and so forth. The decision by the Federal government to allow the use of a pesticide is reflected in the directions that appear on the labeling of every pesticide product, and it is a violation of Federal law to use a pesticide in a manner inconsistent with its labeling. So as part of labeling, EPA will determine where a pesticide may be used, how much of it may be used, when it may be used, how often it may be used, what equipment may be required, and so on. Labeling, therefore, becomes the law for, regarding the use of a pesticide and it is important for people to follow the labeling directions in order to use the pesticide safely and effectively. EPA's decisions are the first step in the review of a pesticide product, but States under the Federal law have the authority to impose more restrictions on the use of a pesticide than are imposed at the Federal level. This authority exists in order to allow States to address situations that they think are not adequately dealt with at the Federal government level. In doing so, however, the States cannot change the labeling of the product but they can use other methods to address whatever concerns they have at the State level. That broadly is how EPA regulates pesticides and I can give you a lot more information about our decision-making process if you have specific questions. But I want to talk for a moment about our role with regard to genetically engineered organisms. Certain genetically engineered plants have been modified in order to give to the plant the ability to produce a pesticidal substance. There are, for example, papayas on the Big Island which had been modified to resist the ring spot virus and those plants are considered to be pesticides because they are working against a pest, namely the ring spot virus. There are other kinds of genetically engineered plants that also express pesticides. Most prominently are the corn, cotton, soybean plants that have been modified to incorporate the Bt, *Bacillus thuringiensis* toxin. It's produced by a bacterium and is harmful to, kills certain kinds of insects but is not harmful to most other forms of wildlife and certainly doesn't have any effects on humans. Bt, when produced outside of a plant, is considered an organic pesticide and is considered one of the safest pesticides that EPA has dealt with. So those plants that are modified to produce pesticidal substances, like Bt or the viral coat protein that resists papaya ring spot virus, are also regulated by EPA and we review those products very carefully also as we do with more conventional types of pesticides. We look at them very carefully to make sure that we have adequate scientific information to evaluate the potential effects on human health and the environment and only approve the introduction of those genetically engineered plants into the environment if we conclude that they are not going to cause unreasonable adverse effects on the environment. So EPA's role with genetically engineered organisms is focused on those plants. There are other types of genetically engineered plants that are outside of EPA's responsibility. They're regulated by the US Department of Agriculture in the Animal and Plant Health Inspection Service, and I encourage you to speak with them if you have any questions about their regulatory programs. Finally I will say that the Food and Drug Administration also looks at genetically engineered plants that are intended for use as either food or animal feed to make sure that they are safe for human and animal consumption. And, again, you should speak to the Food and Drug Administration if you have any questions about their regulatory programs. That concludes my introductory remarks.

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CHAIR HOKAMA: Thank you very much, Mr. Jordan. Is there anyone else on your team that would like to give any comments at this time, Mr. Jordan?

MR. JORDAN: We'll be happy to answer specific questions if you have them.

CHAIR HOKAMA: Okay, thank you very much for your opening comments. Members, we're going to go, everyone will have an opportunity to provide their question to our resource people. So, Mr. Couch, if you would please start it off?

VICE-CHAIR COUCH: Thank you. Thank you folks for being here on the phone and we really appreciate it. We wish you were here. I'm sure you guys do too.

MR. JORDAN: Oh, absolutely.

VICE-CHAIR COUCH: You were mentioning pesticide use. Does the EPA also deal with herbicide use or is that a USDA function?

MR. JORDAN: The term pesticides includes a wide variety of things. It includes weed killers or herbicides. It includes insecticides. It includes products that are intended to control plant diseases, fungus, mildew. It also includes some things that you probably have in your home like toilet bowl sanitizers or insect repellants and they are used a lot in many, many different parts of our economy.

VICE-CHAIR COUCH: Okay, thank you. And you also mentioned that the applicators of pesticides need to follow the label, strictly follow what is on the label. What are the consequences if they don't follow the label?

MR. JORDAN: The use of a pesticide in a manner inconsistent with its labeling is a violation of Federal law. It is also a violation of State law and the responsibility for enforcement lies initially with the State pesticide authorities. In Hawaii, that's the Hawaii Department of Agriculture, as I recall. The actions that a State may take in response to a violation depend on the State system. It can include such things as civil penalties, like a traffic ticket. It can include criminal penalties. It can also conceivably include loss of licenses that may authorize the individual to apply a pesticide.

VICE-CHAIR COUCH: Thank you. And one last, and then, I'm sure everybody has a ton of questions so. You mentioned Bt is the safest pesticide that the EPA regulates or is one of the safest. We had some testifiers saying that on the label it says that if you get it on your skin, and this is an organic farmer, it says if you get it on your skin, you have to wash it off immediately. Is it, I mean, that doesn't sound safe to me. So how does that measure with one of the things we say in our, that it says in our bill, that we must prove the process safe? So you said Bt is safe, or is the safest, you didn't really say it was safe, but it also says you gotta wash off, wash it off your skin immediately. So how does that balance out with the safety of the product?

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MR. JORDAN: I'm not familiar with the details of the labeling on all of the roughly 17,000 pesticides that are registered. What we do when we evaluate a pesticide is to look at a range of possible effects, including, for example, the ability of a formulation to irritate the skin and a standard warning, if there is any indication of skin irritation, is to wash the material off if you get it onto the skin. So without knowing the specific product that you're talking about, I really don't think I can comment on that but that would be our general approach for dealing with a skin irritation issue.

VICE-CHAIR COUCH: Thank you, Chair.

CHAIR HOKAMA: Okay, thank you. Ms. Cochran, any question for the --

COUNCILMEMBER COCHRAN: Yes.

CHAIR HOKAMA: --representatives?

COUNCILMEMBER COCHRAN: Yes. Thank you. Aloha, this is Elle Cochran and thank you for being there, Mr. Jordan, and company. I guess, first question is in regards, so just chiming in on the whole label topic and as in, is it true that the wind speeds on these labels have been adjusted to be better utilized for spraying purposes here in Hawaii? Are you familiar with that?

MR. JORDAN: I'm sorry. I had trouble hearing you. There was some noise, background noise here. Would you please repeat the question, Ms. Cochran?

COUNCILMEMBER COCHRAN: Yeah, no problem. On the label, you said label's the law, and is it true that the wind speeds that applicators are allowed to spray pesticides in this State were raised in order to be more conducive to the spraying schedules that are needed here in this State of Hawaii?

MR. JORDAN: Again, without being familiar with the specific products that you may be talking about, let me say that, when we, at EPA, are reviewing a request to use a, to register a pesticide, we will look at the proposed labeling and the directions, including such things as how often it would be sprayed, and we ask ourselves, if the labeling that the company wants to have approved went into effect, would that be safe for people, would that be safe for the environment? And if the answer is that there are unacceptable risks, then we won't approve the labeling. We do our best, however, to try to figure out a way in which using the product safely can also meet the needs of the users to use the product effectively. So if that means, for example, spraying more often but it wouldn't be safe at a high application rate, we may require that application rate be reduced or we may space out the time between applications in order to assure that there's no buildup in the environment or buildup in the exposure that people get.

COUNCILMEMBER COCHRAN: Okay.

MR. JORDAN: That answer your question?

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COUNCILMEMBER COCHRAN: No, not really. So I guess every, I mean, this is kind of a big thing in my eyes because here in Hawaii there's a huge issue with the talk of chemical drift and if you're familiar with our State, we have prevailing tradewinds that get up to very high speeds. And so, being, you know, the spraying that's occurring here, I'm just trying to correlate, or if you folks have even tried to look into whether, yeah, is it safe? I mean, are there adverse reactions? And to me that's a big question, too. How do you determine what is deemed reasonable impacts or unreasonable impacts? I'm sure it's --

MR. JORDAN: Thank you --

COUNCILMEMBER COCHRAN: --case by case.

MR. JORDAN: --for the question. Let me say that, we have requirements for the companies to conduct and provide extensive testing, including testing on the potential for the pesticide to drift when it's being applied, and we assume that the pesticide will be applied under conditions that are highly conducive to the product drifting so that we are estimating the potential exposure from drift that is not likely to be exceeded. In other words, we're trying to predict what's the worst situation it can be when we are engaging in an assessment of a proposed registration. So we will look at high quantities of drift and if that drift is posing a risk, then we'll say, gee you cannot get a registration to use the product in that manner. You have to change the way it's being used so that there is less drift. There are a variety of ways that can affect drift. There are droplet size, the bigger the droplets, the less drift there is. There, wind speed, as you noted, Ms. Cochran, is also an important factor affecting drift and many pesticide labels have restrictions about how fast the wind can be blowing when application is made. And then another major factor is how high above the ground the pesticide is released. The closer to the ground, the shorter the distance that the drift will travel. Finally, in many cases, we have required buffer restrictions around, between the application site and vulnerable areas such as places that people live, or schools, or playgrounds, or parks, or water resources, and so forth. All of those decisions are based on very thoroughly conducted scientific studies that enable us to quantify the amount of drift and the impact that that drift will have.

COUNCILMEMBER COCHRAN: Thank you, Mr. Jordan.

MR. JORDAN: That help?

COUNCILMEMBER COCHRAN: Somewhat. Chair, a follow-up?

CHAIR HOKAMA: Okay.

COUNCILMEMBER COCHRAN: Thank you. And so you're stating pesticide but I'm would like to plural that and say pesticides. So do you folks test combinations of pesticides in determining, you know, your reasonable, unreasonable impacts?

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MR. JORDAN: We do in some areas and in other areas, we don't. Where pesticides have what's called a common mechanism of toxicity, we will take into account the fact that exposure to chemical A and chemical B is likely to add up. When chemicals do not have a common mechanism of toxicity, then our regulatory approach is to treat them as not being additive. This is consistent with advice that the National Academy of Sciences gave in a report they released in April of 2013 on assessing risks to, of pesticides to wildlife. So generally speaking, we try to look at situations where there are common mechanisms but we don't anticipate any synergistic interactions in the absence of that.

COUNCILMEMBER COCHRAN: Okay. I guess the whole issue in particular if, are you familiar, are you, do you realize that here we have the highest density of field testing and what have you? And so I think the whole issue that I brought up in regards to drift, combinations, impacts, are we as a whole, this State, this County, looked at a little differently from States like Illinois or other larger, more spread out, you know, field testing areas?

MR. JORDAN: Okay. Well, I've been in Illinois and I've been in Hawaii and I gotta say I like Hawaii a lot better. But in terms of density of pesticide application, I think that in Illinois you can find sort of fence row to fence row, being soy beans or corn or other crops and pretty much every acre for large bodies of land are treated with different pesticides, insecticides, fungicides, weed killers, herbicides, so forth. But you may well have unique situations on Maui that need your special attention. That, of course, is why the pesticide law gives States the authority to be more restrictive.

COUNCILMEMBER COCHRAN: And we, the County, also can be more restrictive?

MR. JORDAN: I actually do not know how the State law works in Hawaii. In some States, the authority is reserved only for the State Legislature, in other States, it is delegated to be exercised at a local jurisdiction level and I simply do not know the legal arrangement in Hawaii.

COUNCILMEMBER COCHRAN: Okay.

CHAIR HOKAMA: Okay.

COUNCILMEMBER COCHRAN: Chair, I have many more but I should relinquish the floor at this point. Thank you.

CHAIR HOKAMA: Okay. Everybody will have their opportunity. Ms. Crivello, any questions for our resource people?

COUNCILMEMBER CRIVELLO: Yes. Thank you, Chair. Thank you for being with us today, Mr. Jordan, as well as your team there. This is Councilmember Stacy Crivello. You, in regards to the question as far as County putting more heavy restrictions, and I know you expressed that you really don't know how the local or the State government regulates, but I, what I understood,

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that you said in your opening remarks, the responsibility that comes from your program or department, you initiate if the pesticide is safe to be sold or applied. Is that my understanding?

MR. JORDAN: I think that's right.

COUNCILMEMBER CRIVELLO: Okay. So you also mentioned that the State itself imposes, really, they're strict restrictions, if, I want to say. So they would, you would initiate and the State government then will actually follow through with the regulations? Is that basically how the, I guess, chain of command is?

MR. JORDAN: Let me see if I can explain. No pesticide may be sold or distributed in the United States unless it has first been registered by EPA. Every State in the United States has, in addition to the Federal requirement, has a State requirement for registration, and so the State gets a second opportunity, if you will, to decide whether or not to allow the products that the Federal government has approved to be sold or distributed within their State. Most States treat that registration decision as one where they essentially accept the Federal government's decisions all or nearly all of the time. I think that Hawaii may be in that category but I'm not all together sure how Hawaii exercises its authorities. Once a State has registered a pesticide, they can decide if they wish to impose additional restrictions under their State law that would further limit the use of the pesticide so long as that, those restrictions are not requiring a change in the labeling of the pesticide product.

COUNCILMEMBER CRIVELLO: Thank you.

MR. JORDAN: I hope that answers --

COUNCILMEMBER CRIVELLO: Yes.

MR. JORDAN: --your question.

COUNCILMEMBER CRIVELLO: Yes, it does. It gives better clarification Also, you made mention on our papaya on the Big Island, the resistance to the ring spot virus pesticide, as well as corn, cotton, incorporating the pesticide which is developed to kill certain insects, but it's not harmful to certain wildlife as well as to the human factor. The papaya, the Big Island papaya, has been on the market for consumption for quite a few years now. Have you had any kind of report that it has had any kind of negative effect on people's health or...due to the consumption?

MR. JORDAN: We've had no reports of any kind of adverse health effects and Chris Wozniak, our scientist who's familiar with that, tells me that the protein produced by the papaya is a naturally occurring protein that is in the diet.

MR. WOZNIAK: Yeah, that's correct. Actually the viral coat protein gene that's inserted does not actually produce the protein. It produces an RNA molecule and this is the same thing that would

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happen in a natural virus infection of any papaya. So the components that are consumed in the papaya are the same as eating a virus infected papaya, which is a common occurrence.

COUNCILMEMBER CRIVELLO: Thank you. Thank you for that explanation because what testifiers, many of their concerns throughout yesterday's testimonies were, actually, people, the companies or the genetically engineered plants where, for instance, the corn and cotton that incorporates the pesticide, are they really poisoning our environment and poisoning people? And it sounds as though what has come out of the Big Island papaya, what we call, I think, the rainbow papaya, has no adverse effects. So with the GMO corporations doing this genetically modified process of incorporating the pesticides to kill certain insects, can that too, is that something you, your department oversees and regulates as far as those, I guess you call it Bt plants that produce pesticidal plants? And how are we assured that it meets our safety requirements?

MR. JORDAN: As I explained in the opening remarks, there are a category of genetically engineered plants that EPA regulates, including Bt, *Bacillus thuringiensis*, corn and cotton and soy beans and other crops into which Bt has been incorporated. I'll ask our scientist, Chris Wozniak, to talk a little bit about how we do the human health and environmental safety assessments.

MR. WOZNIAK: Yes, thank you. And I, first wanted to ask, the last part of your question sort of trailed off. You were asking about meeting our something requirements. Could you repeat the --

COUNCILMEMBER CRIVELLO: I guess --

MR. WOZNIAK: --last part of the question?

COUNCILMEMBER CRIVELLO: --the public safety's requirement.

MR. WOZNIAK: Oh, public safety, thank you. Alright, getting back to the assessment of these Bt proteins and how we know that they're safe for consumption, I should mention that this bacterium has been used for well over a century in a variety of countries for insect control. It's one of the oldest biological pesticides certainly that we have used or registered. And the beauty of the pesticide in this sense is that it is very specific to a narrow group of insects within an order. So there might be certain caterpillars that it kills but that same Bt when applied to a beetle larva will not kill it and vice versa, there are some that affect certain beetle larva but not caterpillars or, you know, the larva of moths and butterflies. So that specificity is based on a receptor, a protein in the gut of these insects, that makes them either susceptible or resistant to the action of this Bt protein. We tested in rodents, for example, as part of the human health as well as the wildlife assessment, and a very large quantity, relatively speaking, on a body weight basis, is given to the, typically a rat or mouse, and then they are followed for up to 28 days, looking at things from behavior, body weight gain, changes in organ weights or shapes, histopathology, looking at the more fine structure changes that may or may not occur in the gut. And one of the reasons we use such a large amount in this testing is that we want to have such a meaningful difference between what is produced, say in a corn plant or a soybean plant versus what the test animal gives, such that if there was any inkling or any reason to think there was any

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sort of a negative impact, we would certainly pick it up and pick it up quickly. In all of the testing that we've done, we're looking at somewhere on the order of 100,000 to 1 million times the amount of protein given to that test animal than would be consumed say in a meal of sweet corn or edamame or soybean meal and we have yet to see negative consequences on these rodents from this testing. In addition, there's a variety of other testing on the environmental side looking at birds and fish. A lot of invertebrate testing, including honeybees, beneficial insects that are, you know, killing other pest insects or parasitizing them, are all evaluated as part of this. And, again, the reason that as a biologist I'm not particularly surprised that we don't see these toxic effects on these organisms is really two-fold. One is, I mentioned the specificity of this in terms of its ability to bind and have activity, but equally important to keep in mind is that these are proteins, these toxins, we're speaking about proteins. Proteins do not bioaccumulate in the body. They're used just like other proteins for nutrition after the body breaks them down into amino acids. And so when people ask about well have you looked at these long-term effects, a particular organism, whether it's a fish or a chicken or whatever, our toxicologist in-house as well as the American Institute of Biological Sciences convened a panel, some, probably close to 20 years ago now, to look at the appropriate testing method and they were convinced that this acute toxicity approach was the proper approach with the protein and that if there was anything to be seen it would be seen, you know, essentially immediately or within days.

COUNCILMEMBER CRIVELLO: Thank you. We can move on, Chair.

CHAIR HOKAMA: Okay, thank you very much.

COUNCILMEMBER CRIVELLO: I'll have more questions later.

CHAIR HOKAMA: Thank you for that response, Mr. Wozniak. Mr. Carroll, any questions for our resource people?

COUNCILMEMBER CARROLL: Thank you, Chair, but the concerns that I have have been already addressed by my fellow Council members.

CHAIR HOKAMA: Okay, thank you very much. Mr. Guzman, any questions for our resource people?

COUNCILMEMBER GUZMAN: Yes. Thank you, Chair. Just a, several questions. On the regulatory function of the EPA, when we're talking about the registration of the products, sale and distribution, when you distribute to a certain individual or entity, is that entity registered or is that part of the data that's collected?

MR. JORDAN: Let me say that, start off by saying that the registration attaches to a product.

COUNCILMEMBER GUZMAN: Yes.

MR. JORDAN: So --

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COUNCILMEMBER GUZMAN: But do you then _____ --

MR. JORDAN: -- by --

COUNCILMEMBER GUZMAN: -- the extra step --

MR. JORDAN: --so the --

COUNCILMEMBER GUZMAN: -- to determine ...

MR. JORDAN: --product is registered and once it is registered that product may be sold to any person. So you could go into the local grocery store and buy a can of insect repellent or Lysol and use it for sanitizing the countertops in your kitchen. We do not require the people buying products to have a registration. We do insist that anybody who is selling products, we do require anybody who is selling products, to tell EPA every year, how much product they sell but not to whom they sell it.

COUNCILMEMBER GUZMAN: Okay, does that also, is that inclusive of high-risk type pesticides?

MR. JORDAN: Thank you for asking about that. There are a category of pesticides called restricted use.

COUNCILMEMBER GUZMAN: Yes.

MR. JORDAN: Those are the pesticides which are the most toxic, generally speaking, and the people who use those pesticides need to be absolutely certain, we need to be absolutely certain that they are competent to understand and follow the directions about how to handle these dangerous materials safely. So if a pesticide has been classified for restricted use, it may be sold only to somebody who has received a certification that they are competent to handle the product. The certification program is administered by the State and the State establishes requirements often for training or education related to obtaining one of the certifications or licenses to handle a restricted use pesticide. In addition, States require people to keep records of who buys restricted use pesticides and the users are required to keep records of how much they use and where they, where and what they're using.

COUNCILMEMBER GUZMAN: Okay, so then for the restricted use pesticides, as you indicated there, you have to be a qualified applicator and you get qualified via the State agency, which would in Hawaii would be the Department of Agriculture, correct?

MR. JORDAN: That's correct.

COUNCILMEMBER GUZMAN: Okay. And then there's an annual reporting of that type of information. Is that collected by the State or is that collected...

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MR. JORDAN: It is a recordkeeping requirement, not a reporting requirement engine at the Federal level. A State may require reporting, but I do not know whether that is the case in Hawaii.

COUNCILMEMBER GUZMAN: Okay. We'll find that out through our State agency. But in terms of the Federal level, are you requiring the State agency to submit to the Federal level those type of, I guess, documentation or information?

MR. JORDAN: No, we do not require States to report to us about that kind of information.

COUNCILMEMBER GUZMAN: Okay, so you're unaware of whether any violations can be detected unless you receive information from the State agency in regards to restricted use pesticides?

MR. JORDAN: Let me ask my colleague Don Lott to address that question please.

MR. LOTT: I'm sorry, I couldn't --

COUNCILMEMBER VICTORINO: Chair?

MR. LOTT: --hear the --

COUNCILMEMBER VICTORINO: One thing.

MR. LOTT: --question. Could you repeat that please?

COUNCILMEMBER VICTORINO: As you stated earlier, you wanted them to identify themselves when they came on. So, they're not, and I'd like to make sure that the person being asked the question or being, or giving us an answer, is the person identified, please.

CHAIR HOKAMA: Okay. The person that is on the speakerphone --

COUNCILMEMBER VICTORINO: On the speakerphone, yeah.

CHAIR HOKAMA: --from the EPA is Mr. Don Watt [*sic*] from the Enforcement component.

MR. LOTT: This is Don Lott from the Enforcement Office.

COUNCILMEMBER GUZMAN: Yes, thank you.

MR. LOTT: And, again, I could not quite make out the question. Maybe, Bill, maybe you heard it better on your phone?

CHAIR HOKAMA: We'll have Mr. Guzman repeat the question, Mr. Watt [*sic*], so you can hear it directly and respond. Mr. Guzman.

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MR. LOTT: Okay.

COUNCILMEMBER GUZMAN: Yes. Mr. Lotts is it?

CHAIR HOKAMA: Mr. Watt.

COUNCILMEMBER GUZMAN: Watts.

MR. LOTT: Lott. It's spelled L-o-t-t.

COUNCILMEMBER GUZMAN: Oh, Lott. Okay, thank you. Let me rephrase or restate the question. So my line of questioning was directed towards restricted use pesticides and I had asked the question whether the applicant of those type of products are reported or there's a database in terms of who is spraying and who is using it. And I was told by Mr. Jordan that it was the State agency and in Hawaii it would be the Department of Agriculture that would regulate or collect that data. The next question was, does that data then get transferred or is there a requirement that it be forwarded to the Federal level? And then the answer was no, I believe it was no. But my next question was, how do you regulate the restricted use applicators if you don't have that data?

MR. LOTT: Okay. I'm still not quite sure I caught all of that, but let me, let me see what I did get. You wanted to know how we regulate applicators who are using restricted use pesticides.

COUNCILMEMBER GUZMAN: Yeah, the enforcement, I guess, let me get it, really simple. How do you enforce the restricted use?

MR. LOTT: How do I, how do we enforce? Okay. Under FIFRA, a State typically has what we call primacy, which is that an authority that FIFRA allows under the Federal law for States to initiate an investigation into any use or misuse of a pesticide. That would include anytime a restricted use pesticide would be misapplied or misused or any other label instructions not followed. Typically that is handled by the State. A State could refer that case for enforcement to the Federal government if they decide to. Depending upon the circumstances, FIFRA does allow for assessment of penalties, issuance of a notice of warning, and we also have the ability to take criminal action, depending upon the, you know, the circumstances. But the primary responsibility for enforcement of misuse of a pesticide in all States, including the State of Hawaii, does initially rest with the State of Hawaii and they would have the ability to take enforcement action based on their own State law.

COUNCILMEMBER GUZMAN: Okay, thank you, Mr. Lott, in clarifying the roles of the State and the Federal level. Can you give me, just briefly, an amount of cases that you may have on record that have been generated from the State of Hawaii that the Federal level has handled or was referred to by the State? Do you have an estimation of how many cases ...

MR. LOTT: Okay, again, your voice was --

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COUNCILMEMBER GUZMAN: Okay.

MR. LOTT: --fading there so I'm not sure I quite --

COUNCILMEMBER GUZMAN: Okay.

MR. LOTT: --caught everything but I believe you're asking if we had any pesticide misapplication cases at the Federal level --

COUNCILMEMBER GUZMAN: Yes.

MR. LOTT: --and the answer to that is yes. I can't think of names offhand of the cases but over the past couple of decades, we've had more than a handful of cases that we have taken action on. They have ranged from simple misapplication to actually use of agricultural pesticides inside of homes, where they are not allowed to be used. We've had a number of cases at the Federal level that actually involved direct exposure to individuals during the application. We've had one case where there was a aerial application that was applied over a ball field with children playing ball, baseball, at the time of the application. We had other cases where worker protection standards were not followed as required by the labels and the cases were taken based on that in a couple of States here in the eastern part of the Country.

COUNCILMEMBER GUZMAN: Okay. Mr. ...

MR. LOTT: And last year we had a --

CHAIR HOKAMA: Mr. Lott.

COUNCILMEMBER GUZMAN: Mr. Lott.

MR. LOTT: --case taken by --

COUNCILMEMBER GUZMAN: Mr. Lott.

MR. LOTT: --another...I'm sorry.

CHAIR HOKAMA: Mr. Lott. Can you hold on please? I think ...

COUNCILMEMBER GUZMAN: Thank you, Chair. I think we were getting a little bit outside the scope. He was then going into mainland jurisdictions and talking. But I'm, let me narrow it specifically again. Do you have an estimate of cases referred to the Federal level or cases that you've handled, an estimate of how many are in the County of Maui? Do you have that information?

MR. LOTT: I'm sorry. I'm really having, I'm really struggling, trying to hear those questions.

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COUNCILMEMBER GUZMAN: Mr. Lott.

MR. LOTT: Are you asking how many States have referred cases?

COUNCILMEMBER GUZMAN: No, I'm asking you if you have an estimate of how many cases have been generated or referred to Federal level regarding restricted use violations or misuse in the County of Maui.

MR. LOTT: I don't have specific numbers but I would imagine...I'd rather not guess, but there haven't been a lot...but most of the cases that we do get are referred to us, I believe, probably did involve a restricted use pesticide.

COUNCILMEMBER GUZMAN: Okay, thank you. Chair, I just have a few more questions. On the ...

CHAIR HOKAMA: No, wait, you're gonna need to wait, Mr. Guzman.

COUNCILMEMBER GUZMAN: Okay.

CHAIR HOKAMA: The other Members have their, will have their opportunity first. Mr. Victorino.

COUNCILMEMBER VICTORINO: I'll yield to Ms. Baisa 'cause she's been waiting and I will go after her, if you don't mind, Mr. Chair, 'cause I was out of order.

CHAIR HOKAMA: Okay. That's fine. Ms. Baisa, any, you have a question for our resource people?

COUNCILMEMBER BAISA: Yes, Chair, thank you very much. And thank you very much, folks on the other end of the line. I appreciate your working with us on this. I'm concerned about what I read in the proposed ordinance before us and it makes a statement like, the reason why we need this is because there is inadequate regulatory oversight. And listening to you folks, it appears that you are, you know, indeed, checking out every pesticide that is made available and you say that you wanna be sure that there is no effect on humans. Now, if these, they're alleging that this is not tested, these things are not tested in short-term or long-term on animals or human studies. How, you know, as lay people who are not scientists, we're kind of in the middle of this where allegations are made, and of course, you're answering, and we have to make a decision. And it's very difficult for us to do that. Try and reassure us that there is indeed, I mean I'd appreciate anything you can tell us, that there is indeed tests. We also heard last night in testimony, and I've heard it before, that these tests are not performed on humans and so how do we know? Could you please address that?

MR. JORDAN: Thanks. This is Bill Jordan again. Let me start with the last question that Councilwoman asked. The studies that EPA uses to evaluate the safety of pesticides for humans are done with laboratory animals, not people. There'd be huge ethical questions about asking somebody to be part of a study that, in which a chemical substance was tested on them that

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hadn't been evaluated fully and that's something that we at EPA do not do, will not do, for pesticides. The model that we use is studies with rats, with mice, with rabbits, with dogs. All of those are warm-blooded creatures, mammals, just as we, people are, and this is the testing approach that has been recommended by the National Academy of Sciences. It has been peer reviewed by many expert scientists independent of EPA. It's the approach that the Occupational Safety and Health Administration, the Food and Drug Administration, uses for food additives and cosmetics and is accepted worldwide. So I think that in terms of the scientific basis for our approach, it's standardized and well accepted. The first question you asked is, what do you do as a non-scientist when you hear one group of people saying this is dangerous and another group of people saying no, it's not. And I certainly appreciate the hard choice that that puts in front of you and I will tell you that you should be careful and taking everything that you hear from anybody, including me, at face value. I certainly --

COUNCILMEMBER BAISA: We will.

MR. JORDAN: --believe and that what we're doing is good work. But I will also readily admit that there are people in different organizations who don't see it that way for EPA. That's why we go to great lengths to explain everything that we do in the public record, to seek the advice of outside groups like independent scientists and ask them whether they agree with our conclusions. And if you had the time and had spent as many years as I have, you'd be able to reach your own conclusions about it. But I will say I think we do good work and that the decisions we make are protective of public health and the environment.

COUNCILMEMBER BAISA: Thank you very much. I have just one more question, Chair, and it's something that we've heard a lot about during this whole discussion. You introduced your remarks by saying that in giving licenses to these pesticide products, you evaluate the impacts on human health and you make sure that they don't cause unreasonable harm, and yet we have heard over and over during testimony about the effects of glyphosate, which is better known to most of us as Roundup, on people. Could you comment, please?

MR. JORDAN: Glyphosate is a weed killer, an herbicide that is very widely used because a lot of crops have been genetically engineered to be able to tolerate being sprayed with glyphosate. Glyphosate has been studied in the kind of animal toxicity studies that I have described, very, very extensively. Both the U.S. Environmental Protection Agency and our colleagues in Canada have reviewed all the scientific literature and we have come to the conclusion that as far as herbicides go, this is one of the safer products and as authorized for use by EPA, it does not cause any unreasonable risks to people or to the environment. There are, to be fair, people who disagree with that conclusion, but frankly, we do not think that the science supports their position on that.

COUNCILMEMBER BAISA: Thank you very much. I appreciate that a whole lot. I defer, Chair. Thank you.

CHAIR HOKAMA: Thank you. Mr. Victorino?

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COUNCILMEMBER VICTORINO: Thank you. Thank you, the gentlemen behind the microphone and on the phone helping us today. I have ...

UNIDENTIFIED SPEAKER: They can't hear you.

COUNCILMEMBER VICTORINO: You can't hear me? No, I don't think so. My question to you is --

MR. JORDAN: We can hear you. At least I can.

COUNCILMEMBER VICTORINO: Yeah. I'm one of those voices most people can hear a long way off. Is the EPA responsible for registering and testing only the active ingredients or the entire product, the whole product?

MR. JORDAN: When I've referred to the pesticide product, I'm referring to the specific combination of both active ingredients and inert ingredients in the product. When we approve a registration, it is for a specific formulation of both inert and active ingredients. For the most part, tests are performed on the active ingredient and that's because the scientific data show that the active ingredient, the thing that kills the bug or the weed or the fungus, is biologically active and because it is biologically active against one type of living organism, there is a distinct possibility it may also affect other organisms and that's why we need to test that so thoroughly. We do require basic tests of what's called acute toxicity for the formulations. That means that a single dose is administered to animals to see whether it, causes any, at what level it causes harm, like skin irritation or causes adverse effects when swallowed or applied to the skin or when it gets in the eyes, or that sort of thing. Those tests evaluate the entire formulation and we review those tests in order to see whether the inert ingredients are changing the overall toxicity that we would expect that we have seen from the active ingredient by itself. So we do have some appreciation for the potential for a formulation to have different risks from the active ingredient alone. We also look at the inert ingredients separately and evaluate whether they are risky. And by and large, most of the inert ingredients are common to, not only to pesticide products but to other products that would be used in or around homes or businesses in things like shoe polish, or floor cleaner, or air freshener, or cosmetics and that sort of thing.

COUNCILMEMBER VICTORINO: Well, thank you very much. You know, following up on that. What is the time frame, how long do you test GMO products that you say, that you have stated that are pesticide controlled? How long? I mean, is there time frames or do you test as long as or until they are proven safe? What is your time frame, if you have a time frame?

MR. JORDAN: The first time that we look at an active ingredient, it's usually a year and a half to two years of a review and then once an active ingredient is approved in a product, the law requires us to look back at that product at least once every 15 years to see if there's any new information that would change our regulatory decision.

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COUNCILMEMBER VICTORINO: Okay, very good. On Maui, I've been told, there are people that are testing their urine and breast milk for...Roundup. Yeah, I just like to use the work Roundup. Sorry, simpler than that. What are your thoughts on these tests? What are your thoughts on people doing these tests?

MR. JORDAN: I'm not a chemist and so I can't get into all the details. I'll tell you what I've heard from the chemists who work at EPA. Glyphosate is a, glyphosate, the active ingredient in Roundup products, is a chemical substance that's very hard to analyze and requires special equipment and special procedures to get an accurate, quantitative measurement of how much residue may be in urine or in breast milk. That said, we've heard from a group of concerned parents that they have conducted tests on their breast milk and found residues of glyphosate but we've not seen the data to support that. And so I can't verify that it has been found in human breast milk. What I will tell you is that we required a study to be done on dairy cows, where high rates of Roundup residues were applied to the food that the cows ate and then something like a hundred times higher than would be in the human diet, and then samples were taken of the milk from the cows and no glyphosate residues were detected.

COUNCILMEMBER VICTORINO: Good. Thank you very, very much and, you know, I have a few more questions but, Mr. Chair, I'll yield like everybody else and if we get two, three questions, everybody gets a chance. So thank you, Mr. Chair. Thank you, sir.

CHAIR HOKAMA: Thank you, Mr. Victorino. Members, our representatives from the EPA has blocked off 'till 11:30 our time so we have about 45 minutes or less remaining with our resource people. After the Chair's few questions, I would ask that you possibly consider some questions as it relates to the proposed ordinance. If you have specific questions on the proposed ordinance that you might want to consider your next round of questions. It'll be one question with a follow-up allowed by the Members. So, Mr. Jordan, one question from myself to you and your group is, I think, is a basic one. Can a State, any of the 50 States, outright ban a pesticide that has been approved for use by the EPA?

MR. JORDAN: Mr. Chairman, the answer's yes.

CHAIR HOKAMA: Okay, thank you for that. Also, I hope you have some of the documents that we have shared with you, Mr. Jansen [*sic*], which, one is, of course, the proposed ordinance that the Committee has received from our County Clerk, and one of the questions I would like to ask as it regards to the legislation, since they are some components regarding the summary statement and whatnot, has the EPA, through scientific testing, performed those type of tests that would demonstrate that genetically engineered organism do or do not present a health risk to humans or the environment?

MR. JORDAN: As I tried to explain, Mr. Chairman, in the opening comments, EPA's jurisdiction over genetically engineered organisms applies only to those plants that have been modified to express pesticidal properties and there are a number of other types of genetically engineered organisms which fall outside of EPA's jurisdiction. For those that do fall within EPA's jurisdiction, we

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have, I think, as Dr. Wozniak described, a very strong body of information from testing performed by the companies, that gives us a very high level of confidence that there are no risks to humans.

CHAIR HOKAMA: Okay, yeah, thank you for that. I know you made comments earlier, Mr. Jordan, so thank you for that. I am hoping you had a chance or members of your team had a chance to review the summary statement that is on Page 1 of the proposal. And in the summary statement, regarding paragraphs two, three and four, where the petitioners highlight part of their concerns, I was wondering if you had any comments, particularly with paragraph no. 2, wherein the last sentence, it states, I'll just read it so there's no paraphrasing, in Maui County, GE Operations and Practices include the cultivation of GE seed crops, experimental GE test crops, and extensive pesticide use including the testing of experimental Pesticides and their combinations in what is effectively an outdoor laboratory. Do you folks have any comments you wish to share with us regarding that statement?

MR. JORDAN: Mr. Chairman, I'm not familiar with the details of what pesticides, or for that matter, genetically engineered crops, may be planted in Maui, but I will say that any experimental use of pesticides is also regulated by the Environmental Protection Agency and that we are applying to the review of those proposals the same standards that we would apply to the registration of pesticides, namely we want to make sure that any experimentation on pesticides to gather data, for example, about how much residue would remain in a crop or how long it takes to break down in soil or something of that sort, is going to be acceptably safe for people and the environment.

CHAIR HOKAMA: Okay. I was just wondering, since the petitioners have, I put in that term outdoor laboratory, and I know you made comments earlier to one of the earlier Member's questions regarding laboratory experiment, is there different procedures or parameters of operating what is being called an outdoor laboratory?

MR. JORDAN: Yes, there is. To the extent that a scientist wants to study a pesticide and the kind of test requires that it be conducted outdoors, that means that the research would be subject to the Federal laws for approval of what we call experimental use permits and a lot of research, for example, on pesticide efficacy or pesticide residues or pesticide environmental fate, how fast does the chemical break down, what does it break down into, that sort of thing, can only really be determined through a study conducted outdoors in the field. But as I said earlier, our goal in carrying out our regulatory responsibilities, make sure that those outdoor tests are not going to pose unacceptable risk to human health or the environment.

CHAIR HOKAMA: Okay, thank you for that, Mr. Jordan. My last question before I ask the Committee members for their final questions to you and your team. Again, I go back to the proposed ordinance, on Page 11, the petitioners have created a Section 11, Definitions. I was wondering if you or your team had an opportunity to review the terms and definitions that are being proposed and if you have any comments you would like to share with the Committee regarding those definitions.

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MR. JORDAN: I had not studied them closely and the people here with me in the Office of Pesticides Program have not offered any particular comments on them. Let me see if any of my other EPA colleagues have things that they would like to offer.

CHAIR HOKAMA: Thank you.

MR. LOTT: This is Don Lott with the Office of Enforcement. The only thing that I noticed, that stuck out to me was in the definition of the term pesticide. I believe Bill had tried to explain earlier the distinction of what a herbicide was versus a pesticide and I think in this definition as it's currently presented, the term herbicide really is duplicative. Pesticides generally are a very broadly defined, it's a broadly defined term that covers all kinds of substances and combinations of substances that will kill, repel or mitigate any kind of a pest. Weeds are pests. Herbicides are substances designed and intended to kill weeds. I think you probably don't need to cite herbicide in this. Similarly, you don't need to cite insecticides, pesticides, miticides, and microbials, and you're talking there about a variety of different types of pesticides. But other than that, that was the only observation I made.

CHAIR HOKAMA: Thank you for that, Mr. Lott. It's much appreciated, your comments. Again, Members, please be aware of the time. Mr. Couch, any final question for you regarding the resources?

VICE-CHAIR COUCH: Thank you, Mr. Chair. I guess to anybody who can answer that over there. We're going to hear, and we've heard in testimony, several, many, many times, and you talked about it a little bit, about these chemical cocktails, the combination of different types of pesticides in use. Can you be really specific as to the testing that's been done versus the potential danger, I guess, 'cause we've heard over and over again that, you know, there's trillions of 10^{23} power or whatever, of different types of combinations, that we can't test them all and so we can't tell if any of them are, if they're all safe. So I guess it's a two-part question is, what about the combinations? And secondly, are they even legal to combine these, some of these pesticides? Is that kinda clear?

MR. JORDAN: It was clear. This is Bill Jordan again. I'll take the easy question first. The pesticide law does not prohibit the combination of pesticide products unless the label says don't use product A with product B or chemical A with chemical B. And even, well, let me stop there and talk a little bit about the first question you asked, the harder one, regarding testing of combinations. You're exactly right that there are so many potential combinations of chemical substances that it is impossible to test every conceivable combination. I mentioned earlier that we have some limited understanding of the, of some combinations when we require testing of pesticide formulations, which consist of both active and inert ingredients, but that doesn't look at pesticide product 1 that contains active ingredient A that may be used shortly before pesticide product 2 with active ingredient B. We don't necessarily have a test of A and B together. This has been an issue that we've asked the National Academy of Sciences how to understand and how to approach that, and in April of 2013 they released a report called Assessing Risks to Endangered and Threatened Species from Pesticides. They advised us that it's really not

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practical to obtain test data on mixtures and so they recommended a qualitative approach where in the absence of data suggesting that chemicals would combine to have some sort of increased effect, that the components should be evaluated independently and only if they cause the same type of toxic effect should they be combined. Otherwise, if the exposure to the components are gonna be kept at a level that does not have any adverse effect on its own, then you should not expect any kind of combined effect to occur. So that's the approach that we have been using for a while and the fact that the NAS said that that approach makes sense, we think it represents an endorsement of what we're doing based on the current state of science.

CHAIR HOKAMA: Okay, thank you very much, Mr. Couch. Ms. Cochran.

COUNCILMEMBER COCHRAN: Thank you, Chair, and thank you gentlemen for being there. I just feel like there's lack of preparedness in a lot of the questions that have been asked thus far and, you know, I really don't feel the conviction and confidence in a lot of the responses and I think that's why this proposal is set here at this table today. In general, I guess, my number one, some of my questions, I wanna get back to this island in particular, and I'm trying to wrap my head around the role, I get the role, what you're saying the State's role is in enforcement and then what you folks do on the EPA level. It sounds like a lot of the enforcement on our own ground level, you leave to the jurisdiction of our State, Hawaii Department of Ag. Is that a fair statement?

MR. JORDAN: That's correct.

COUNCILMEMBER COCHRAN: Okay. And so I think trying to chime in on Councilmember Guzman's line of questioning, he was asking how many times you folks have been called to the scene of sorts to do an investigation here. Have you for Maui in particular? How often has EPA come to inspect farming, practices, of any kind?

MR. JORDAN: I'm gonna, I don't have that information. This is Bill Jordan again. I don't know whether any of my EPA colleagues can provide that. Let me first ask Don Lott and then ask the Regional's, EPA staff in San Francisco. Don, do you have any information about how often EPA staff have participated in any enforcement actions in Maui, in Hawaii?

MR. LOTT: No, I don't have any information on that. I believe if anyone does, it would be Region 9.

COUNCILMEMBER COCHRAN: Okay.

MR. JORDAN: San Francisco folks, Pam Cooper, Mary Grisier, Dean Higuchi, do you have any information on that?

MS. COOPER: This is Pam Cooper and I can tell you in the last several years which, maybe call it five years, we do not typically send inspectors out to do inspections or investigations. The Hawaii Department of Ag typically will do the inspections or investigations. Periodically, not very often, they will send a case to us to take the enforcement action. I do not know off the top of my

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head if any of those came from Maui. Probably in the last five years, we've probably had maybe five cases overall.

COUNCILMEMBER COCHRAN: Thank you. So, a follow up, Chair. So I do know that A&B, who is also Hawaii Cane & Sugar, HC&S, had one inspection by the State DOA, one time in 2012 and Monsanto four times in 2012. In the eyes of the EPA, do you feel this is sufficient? Are those like typical numbers of inspections?

MS. COOPER: This is Pam Cooper once again in the Regional office in San Francisco. We have what's called a neutral inspection scheme, which each State has to develop. The inspectors are not allowed to, what we would easily, very easily, say pick on one company or one farm or one grower. So they put this neutral inspection scheme in place, which talks about how frequently they need to go out to any one farm or grower. So they would be going along those lines unless there was a complaint. And if there's a complaint, then the Hawaii Department of Ag should be responding to that complaint and investigating that.

COUNCILMEMBER COCHRAN: Okay. Maybe I wasn't, I should've probably set the stage. This is because of, you know, restricted use pesticides and the amounts that are used for these particular companies. But last question, Chair. In regards to the, and you brought it up, Chair, about open air laboratories that are, that's in this bill, and you folks were saying that you do not, you think it's very unethical to do human testing. Do you feel, I think this bill is hinting towards these open air laboratories are just that, here in this County, a sort of open air human testing of sorts because of drift, because of close proximity to homes, people, jobs, what have you, and the mixtures and the unknowns. As you stated, combinations are totally impossible to test all. So just want your comments on that.

MR. JORDAN: This is Bill Jordan. I think I've already spoken about the kinds of assessments that EPA does when we are reviewing a proposal to conduct outdoor field trial and our measures that we take in order to assure that any kind of research conducted outdoors will be safe for the people who are performing the research, the people who live nearby, the people who live downstream.

COUNCILMEMBER COCHRAN: Thank you. I guess a follow up is the whole marketing though of GM products on the market. They're not actually testing. So is that of certain sorts an unethical experiment on people, especially lack of labeling at this point?

MR. JORDAN: As I said earlier, to the extent that EPA has jurisdiction over genetically engineered plants, we would not allow those products into the environment unless we were convinced that they were safe for people to eat, and in response to one of the earlier questions about the rainbow papayas, we've not seen any instance of issues with consumption of that commodity. We haven't seen any instances of consumption of food products made from genetically, from corn that's been genetically engineered with the BT protein and, nor do we expect to ever see any such instances.

COUNCILMEMBER COCHRAN: So you're saying the GM papaya, you have documented human studies on that?

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MR. JORDAN: No, we do not have human studies on that. We have not received any reports from the general public about problems from consuming papayas --

COUNCILMEMBER COCHRAN: And the market was --

MR. JORDAN: --or at least the Rainbow papayas.

COUNCILMEMBER COCHRAN: --and the market, and the consumers are informed of this, sort of, they have given consent?

MR. JORDAN: If your question is whether foods that incorporate genetically modified plants are labeled, they are not in the United States.

COUNCILMEMBER COCHRAN: Okay. Still no consent.

CHAIR HOKAMA: Okay, thank you very much.

COUNCILMEMBER COCHRAN: Thank you, Chair.

CHAIR HOKAMA: Ms. Crivello, question?

COUNCILMEMBER CRIVELLO: Yes, Chair, thank you. You mentioned the EPA oversight over GE crops. That being said, and it has been mentioned, as my colleague just stated, that the field testing is like an open lab. Would you agree that genetically engineered planting or processing is a precise plant breeding process?

MR. JORDAN: I'm sorry, I missed the last part of that question. Would you repeat it please?

COUNCILMEMBER CRIVELLO: Sure. Would you consider GE a precise plant breeding process?

MR. JORDAN: Thank you. I'll ask Dr. Wozniak to speak to that.

MR. WOZNIAK: Yes, you know, relative to the specificity of the movement of a gene, a transgene, into the plant, in a comparative sense it is much more precise than say traditional breeding, where you're doing cross pollinations and then selecting from a larger population. The techniques are constantly undergoing refinement to the point where they are looking at more subtle changes at the molecular level, changing a few bases and the DNA code to effect a change in a protein which will then, you know, result in whatever, perhaps insect resistance or sweeter tasting fruit or whatever. So it is more precise in that manner and I would just reiterate that the techniques in the last roughly three or four years have really taken off exponentially as far as their ability to target these genetic manipulations.

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COUNCILMEMBER CRIVELLO: Thank you. And that, that being said, also, you know, with their testing or how they're incorporating the pesticidal effects in their plants, would you have data that the herbicide application has lessened with this kind of crops, instead of increasing?

MR. JORDAN: I think that the data show that the approval of what's called Roundup-ready crops, crops that are genetically engineered to tolerate exposure to Roundup products, glyphosate-based products, has been accompanied by an increase in the amount of glyphosate used. Some other herbicides have actually gone down in usage, but overall, looking across all of the different herbicides, I think use has gone up.

COUNCILMEMBER CRIVELLO: Okay. Thank you. Do you have oversight over organic operations also?

MR. JORDAN: Organic crop production does use pesticides, and to the extent that those, they do, EPA has jurisdiction over the use of those pesticides. For example, microbial *Bacillus thuringiensis* is a widely used organic insecticide and that product is registered with EPA.

COUNCILMEMBER CRIVELLO: Thank you. Does that also include the BT toxin?

MR. JORDAN: It sounded as though your question was, does that also include the BT toxin?

COUNCILMEMBER CRIVELLO: Right. I mean ...

MR. JORDAN: That --

COUNCILMEMBER CRIVELLO: Right.

MR. JORDAN: --yes, the BT toxin is the *Bacillus thuringiensis* bacterium or microbe.

COUNCILMEMBER CRIVELLO: Oh, okay, okay, thank you. You know, this initiative actually, you know, I think we have some component of it is looking at the restriction or use of pesticides, but basically how I interpret it is to ban the GMO crops. And, I guess, the concern in lots of ways is that, I think, from listening to the different testimonies, is that the genetically engineered crops basically are creating the development of poison in the crops and I don't know if you want to comment on that, but I would you to comment if there is any kind of truth to those testimonies that we've heard.

MR. JORDAN: Again, the connection wasn't great, but it sounded as though you're saying that some of the testimony that the Council has heard claims that genetically engineered crops contain poisons that are hurting people --

COUNCILMEMBER CRIVELLO: Yes.

MR. JORDAN: --and therefore they are advocating for a ban on genetically engineered organisms --

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COUNCILMEMBER CRIVELLO: Yes.

MR. JORDAN: --in Maui. I will say that, as I have said before, that the genetically engineered plants that EPA regulates are evaluated very carefully for safety for humans. The materials that are in those plants are safe for people to eat and the evidence of that, I think, in addition to the specific studies that Dr. Wozniak has talked about, is the fact that the overwhelming majority of corn and soy beans grown in the United States are genetically engineered. North of 80 percent, I think, would be the number, and that's been the case for well over a decade, if not longer, and if these crops were indeed as poisonous as your question suggests, we'd be seeing evidence of those harmful effects. I feel confident in the work that EPA does and as I recommended earlier, if you have questions about FDA and USDA, you should get in touch with them.

COUNCILMEMBER CRIVELLO: Thank you.

CHAIR HOKAMA: Thank you. Mr. Carroll, questions? Mr. Victorino.

COUNCILMEMBER VICTORINO: Thank you, Mr. Chair. I guess, you know, you're wanting us to take it off this proposed bill by the SHAKA group. Is that what you asking us to do on this one or ...

CHAIR HOKAMA: Well, I just pointed out to, all of you of the Committee, that, you know, we have a limited time and if you have questions, I would ask that if you needed to clarify points of the Petitions, Petitioner's proposal, this is the time to do it.

COUNCILMEMBER VICTORINO: Okay. Let me ask you a couple of quick questions and then I'll pass it on 'cause time is running out real quick. Is there any difference--I hope you can hear me--is there any difference between organic farmers spraying BT versus when BT is produced by plants?

MR. JORDAN: Dr. Wozniak will answer that question.

COUNCILMEMBER VICTORINO: Thank you.

MR. WOZNIAK: Yes, there is in the sense that the BT's that are sprayed may contain a viable bacteria, so in that sense they could certainly propagate in the soil environment, for example, or in an aquatic environment in some cases, or they could be just the protein crystals, an inert ingredient to carry them. So in that sense, they're also very susceptible to ultraviolet light and desiccation from heating, sunlight. So that's one physical difference, whereas in the plant, of course, they're protected to some degree by just being inside the cell, but they're also likely to be available for a longer period of time when expressed in the plant in the sense that in most cases the promoters, the genetic elements that are driving the expression of these BT proteins in the plants, are active for the majority of the life cycle of the plant. They may not necessarily be in all tissues, but the

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exposure will be a little bit different than is if you went out and sprayed, you know, your garden once or something like that.

COUNCILMEMBER VICTORINO: Okay, thank you. I guess the other question I, that begs to be answered, and we've heard many, many testifiers come down here and ask or state consistently of all these diseases that are being promulgated by genetic modified organisms, by what is being grown out there, and like some of my colleagues have stated earlier, they're using the open air as testing grounds. As best you can say, and it's really hard because I'm asking questions that hypothetically could happen but let me say it in this matter. Is it better for us having genetic modified crops being grown, being used, to produce more sustenance, more food, more insect-related resistant plants than nothing at all or allowing, and I, you know, I use organic farming, they do use pesticides, they have to, and so I guess my question is, is that great danger that these people keep coming and telling us, is it really a chicken little syndrome or is it something that needs more research because you just said, 20 years we've been using genetic modified crops? That's quite a while not to find out nothing's wrong at this point. So I guess my question is, is there any substantial difference between what we're trying to restrict or what is being used out there right now?

MR. JORDAN: The short answer, this is Bill Jordan again, the short answer is I am not sufficiently familiar with the crops that are being planted in Maui to be able to say how they compare to the ones that are already widely in commercial production throughout the Country. That said, the U.S. Government through USDA, the Environmental Protection Agency, the Food and Drug Administration, all exercise regulatory responsibility for evaluating genetically engineered plants, and I think our track record has been pretty good over the years. And as the people who sell stocks say, past performance is no guarantee of future success, but they also try to persuade you to look at their past performance and decide whether you want to put your money with us.

COUNCILMEMBER VICTORINO: Okay. And a follow up question to that. Is BT a protein or is it a poison?

MR. JORDAN: I'm sorry. Please repeat the question.

COUNCILMEMBER VICTORINO: Is BT a protein or is it a poison, 'cause we've heard a lot of discussion about BT?

MR. JORDAN: It's a protein which, to a corn root worm or a tobacco bud worm, is a poison, but to you is just another protein.

COUNCILMEMBER VICTORINO: Okay. Thank you, Mr. Chair, and thank you, gentlemen.

CHAIR HOKAMA: Thank you. Mr. Guzman, a question?

COUNCILMEMBER GUZMAN: Thank you, Chair. I'll be very precise and quick. I just want, when I'm analyzing this ordinance, there's three things that pop in my mind. Number one, are the

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studies out there effective? Number two, is regulations, what are the regulations? And number three, how are they being enforced? So I'm going to start out with my number one question and that's, the studies itself, I mean, and I thank the team, the Federal EPA for explaining their processes and their different programs that they have, but one of my questions is, the EPA relies on studies submitted from pesticide companies when the Agency is considering whether or not to register a pesticide, is that correct?

MR. JORDAN: We at, this is Bill Jordan again, we at EPA look at all available scientific information which includes studies published in scientific journals around the world. We also, sometimes the scientific literature won't answer all of our questions and so we also require companies to do studies that will give us the basis for evaluating all types of potential risks. We tell 'em what studies we want. We tell 'em how to do the studies. We review them and make our reviews publically available and invite public comment on our reviews. We go to external scientific peer review in cases where there are questions about how to interpret the data, and we also have a laboratory inspection program that checks to make sure that nobody is fudging the data and making up information.

COUNCILMEMBER GUZMAN: Okay, so your baseline, most of your studies, are submitted from pesticide companies? That's a question.

MR. JORDAN: That's correct.

COUNCILMEMBER GUZMAN: Okay. And then the other question that I would have is the labeling law, enforcement procedures and mechanism. So my understanding is the label that's on the product is the law. So when an applicant or a, let's say, let's use the restricted use applicant, once they have that in hands and they're using it, what is the mechanism of enforcing that they are following the directions? How do you do the field inspections, or is that even reported? What's the mechanism? Tell me.

MR. LOTT: This is Don Lott.

MR. JORDAN: Go ahead, Don.

MR. LOTT: Yeah. I want to make sure I'm catching the question correctly. You want to know what the mechanism is for monitoring compliance with an applicator's conformance with a product label --

COUNCILMEMBER GUZMAN: Yes.

MR. LOTT: --directions? Is that correct?

COUNCILMEMBER GUZMAN: Yes, yes.

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MR. LOTT: Okay, there are a number of different mechanisms that are used. First of all, if we are doing an inspection, we would expect, if it's a restricted use pesticide, that the applicator would have records of that application, how it was used, how it was applied, the rate that it was used, the location of the application, who the certified applicator was that was responsible for the application and a variety of other conditions pertaining directly to that application. We would then, obviously, compare that information with the requirements on the label. In addition to that, we can also take samples of the area that was treated, the crop that was treated, and do analytical testing to see whether or not the product that was applied conforms with the material that was in the product that was supposedly used.

COUNCILMEMBER GUZMAN: Okay, I get --

MR. LOTT: If there was --

COUNCILMEMBER GUZMAN: --I get the picture. --

MR. LOTT: --an incident where there was --

COUNCILMEMBER GUZMAN: Mr. Lott.

MR. LOTT: --misuse alleged--

COUNCILMEMBER GUZMAN: Mr. Lott.

MR. LOTT: --they would investigate that as well and --

COUNCILMEMBER GUZMAN: Mr. Lott.

MR. LOTT: --again try to compare records to what's required on the label.

COUNCILMEMBER GUZMAN: Yeah, I understand what you're getting at in terms of, I guess you're comparing records first. And the applicant records their application of the, or at least their, when they're following the label, the applicant then records it in a annual report and then you compare that to see whether it's being followed or not? Is that correct?

MR. LOTT: The recordkeeping requirement is something that is required only of the restricted use pesticide application under Federal law.

COUNCILMEMBER GUZMAN: Okay.

MR. LOTT: Now under the State law, there may be additional data that would be required but under Federal, it's that application alone.

COUNCILMEMBER GUZMAN: Okay.

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MR. LOTT: And we would record the, we would compare those application records. We could also make observations visually --

COUNCILMEMBER GUZMAN: Oh, okay --

MR. LOTT: --that may ...

COUNCILMEMBER GUZMAN: --but Mr. Lott, it sounds as though in the last five years you've only done five inspections over here via the natural inspection scheme. So I'm just ...

MR. LOTT: I'm sorry, you were breaking up. I could not hear that. Could you repeat that please?

COUNCILMEMBER GUZMAN: Apparently, through your Regional office, you said, they said that there was only five cases over here that was inspected in the last five years. So I question in terms of the efficiency in your field inspections that you're telling me. If it's, is it all based off of this natural inspection scheme? And I'll get more information on that via the State agency. But I do ...

MR. LOTT: Okay, yeah, I'm not quite sure I caught all of that, but you did indicate that the Regional office had mentioned that they had only had approximately five or six cases in the last five years --

COUNCILMEMBER GUZMAN: Yeah, correct.

MR. LOTT: --that have come to the Regional office for a review. I can't speak to that and the Regional office can possibly add some additional clarification, but because of the way FIFRA is designed, State's do have primacy on use investigation so I would feel very sure that the State has done a lot more than just those five inspections --

COUNCILMEMBER GUZMAN: Yes.

MR. LOTT: --that might have come to the Regional office for enforcement.

COUNCILMEMBER GUZMAN: Yes.

MR. LOTT: The Region probably can provide a little bit more information on that kind of data.

COUNCILMEMBER GUZMAN: Yeah, thank you, Mr. Lott, and I will get that information from the State agency. I have one last question and that is with the custom blend pesticides, just to, for clarification. You do not, I guess this would be to Mr. Jordan. The applicant does not have to register combinations of pesticides. Is that correct? I mean, not register, but they don't have to report when they combine the pesticides into a custom type, I guess, that, what we call here a cocktail mix, and that would be on, in reference to the ordinance on Page 8, pesticide

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combinations? Do they, do the...do applicants have to, annual, report combinations as part of your data collections, and that way you can monitor the misuse? Hello?

MR. JORDAN: Don, this is Bill Jordan. I think the question is whether there is a legal obligation to report the use of a restricted use pesticide with a general use pesticide under the record-keeping provisions of FIFRA and our regulations.

COUNCILMEMBER GUZMAN: Right, right. Do they have to record combinations? And it ...

MR. LOTT: Okay. Again, this is Don Lott. Our regulations only require record keeping, not reporting. But, again, if the, if the application of a restricted use pesticide involved application in combination with other products, that would be part of the tank mix and I would expect the records would reflect that the product was mixed with other materials when it was applied and that would be on the records that we would have, to show how the restricted use pesticide in particular was applied. The State, however, may have different requirements under their own recordkeeping policies and I don't know the details of that but --

COUNCILMEMBER GUZMAN: Oh, okay.

MR. LOTT: --you might want to check with the --

COUNCILMEMBER GUZMAN: Okay.

MR. LOTT: --Department of Ag to find out what their record keeping requirements might be.

COUNCILMEMBER GUZMAN: Okay, I get the picture. So then basically there's some form of recordkeeping and then there would be some type of field testing to see if they're in compliance and that would be under the Department of Agriculture. Correct?

MR. LOTT: I would expect that's the case, yes.

COUNCILMEMBER GUZMAN: Okay, thank you. Thank you very much. Thank you, Chair.

CHAIR HOKAMA: Ms. Baisa, any questions?

COUNCILMEMBER BAISA: Majority of my questions have been asked but I do want to comment. You know, the farmers come out and testify and they object to any more regulations and say, you know, we're already subject to pesticide application training and keeping very detailed records and they don't feel that any more needs to be done. And because it appears from this conversation today that the closest body that is responsible for monitoring this is our State Department of Ag, because they're the folks on the ground here in Hawaii that apparently the EPA is relying on to monitor this. I think that it behooves us to make sure that the Department of Ag is well staffed so that we have that protection. And I'd like to thank the folks at EPA for their time with us this morning. Thank you.

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CHAIR HOKAMA: Okay, thank you very much. We have exceeded the time allotted for review with the Environmental Protection Agency. So on behalf of the Committee, Mr. Jordan, and your team, with Mr. Mendelsohn, Dr. Wozniak, Mr. Lott, Ms. Cooper, Ms. Grisier, Mr. Higuchi, we thank you very much for your participation today with the Committee. You may receive some additional correspondence from us, should we need some clarification on some of the responses for today's meeting, but we thank you.

COUNCILMEMBER GUZMAN: Chair, could we get a written response in terms of the definitions, if they have time to review that?

CHAIR HOKAMA: We'll send your request --

COUNCILMEMBER GUZMAN: Thank you.

CHAIR HOKAMA: --to the EPA and we'll request that written response from them. Yes, we can do that. Yes, Mr. Victorino.

COUNCILMEMBER VICTORINO: And also along with those lines, the restrictions on restricted types of pesticides and chemical cocktails as we have defined it here.

CHAIR HOKAMA: Okay. Staff --

COUNCILMEMBER VICTORINO: Please.

CHAIR HOKAMA: --do you have, are you clear on the requests to be sent? Okay, thank you very much, Members. Again, Mr. Jordan, we thank you and your team for participating with our Committee today and we thank you very much for your assistance.

MR. JORDAN: Thank you, Mr. Chairman, and thanks to the members of the Council for being willing to listen to our, oftentimes, lengthy answers. We wish you good luck with your work.

CHAIR HOKAMA: Thank you very much, sir. Thank you. Okay.

MR. JORDAN: Aloha.

CHAIR HOKAMA: Aloha.

MS. COOPER: Thank you.

MS. GRISIER: Thank you.

CHAIR HOKAMA: Thank you very much. Okay, Members, we have completed this component of our discovery stage. We shall break for the mid-day break and then return to continue again this

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afternoon. Your Chair is planning to bring forward State Agriculture Department, State Health Department.

COUNCILMEMBER BAISA: Great.

CHAIR HOKAMA: I'm also going to make time for Mr. Brewbaker to give us a financial analysis comment on the potential impacts of this proposal, and then the Chair will assess the remaining time of the day for additional Committee work depending on how well we proceed this afternoon. Any questions for the Chair? Okay. It is the Chair's intent to recess 'till 1:00 p.m. Any objections, Members?

COUNCIL MEMBERS: No objections.

CHAIR HOKAMA: Okay, we'll be in recess 'till 1 p.m. . . .(gavel). . .

RECESS: 11:40 a.m.

RECONVENE: 1:05 p.m.

CHAIR HOKAMA: . . .(gavel). . . We shall reconvene this Policy Committee meeting. Once more, we are reviewing Policy Item 78. So this is a continuation of what we started in the morning as part of the Committee's discovery portion. This afternoon, Members, we are very fortunate. We have Mr. Paul Brewbaker, one of the acknowledged leading State economists, and we will be able to hear Mr. Brewbaker's comments on the potential impacts of this consideration that is before us. And so I'll let Mr. Brewbaker give his comments to the Committee. Please.

MR. BREWBAKER: Thank you, Chair Hokama. And I'll, I'll...I sketched something out I'll just read from, but I'll be happy to provide a copy to the Committee and the Council just because I ended up, the footnotes, or endnotes were longer than what I wrote. So...the good stuff is in the back. But I'm not favorably inclined to a moratorium on seed industry operations in Maui County because it doesn't, it doesn't, I don't understand why you need to shut down an industry to study its effects. I guess that's, I can see, you know, study's good, moratorium bad. That would be my sort of input on that. We're talking about, my rough estimate, and I'll come back to this. We're talking about approximately 100 million in forgone economic output and my guess is, you know, upwards of a thousand to twelve hundred full-time equivalent jobs in the event of a shutdown. I know people call it a moratorium. I don't understand what that means, you know, when you lose your job in a recession, you may be unemployed temporarily but the temporary nature of your status isn't beneficial. Genetic modification occurs naturally, of course, and in agronomic research, it occurs under strong safety and ethical protocols and reinforced by oversight, regulatory oversight by the USDA. You heard a lot from the EPA this morning, I understand, the FDA. All major forms of scientific consensus support genetic modification research and development. None recommend banning genetic engineering, and this is where I have extensive footnotes so I'll send you the documentation. But, I mean, the American Association for the Advancement of Science, the American Medical Association, the European Union, National

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Academy of Science and then the plant breeders themselves, the Crop Science Society of America, established broad scientific support for genetic modification and underscore the safety of the resulting products. And when I say genetic modification, I mean involving all techniques, transgenic, cisgenic, intergenic and, of course, the traditional approaches. I think it's important to understand from an economic perspective that the seed industry is at the forefront of knowledge-based industry in Hawaii. It's Hawaii's single largest agricultural activity. And by the way, the economy is not defined anymore in terms of widgets, in terms of the outputs. We define industries in terms of the activities in which people are engaged. So newspapers used to be a manufacturing industry because they were printing and publishing, and today they're an information industry because that's the activity in which they're engaged. So while I think it's important to recognize that the seed industry is farming, it's agriculture, like everything else, we tend to have this obsession with, you know, the food thing, when we're talking about agriculture. I don't quite understand it. My guess is that the future of Hawaiian agriculture or agriculture in Hawaii, I should say, is not going to be predominantly food oriented per se. My guess is that it'll be in biofuels and pharmaceuticals and, you know, what I would call agroforestry, which is not the same thing as forestry. So that's where we're going and right now the leading area is this R&D area where it's about the software, right, it's about the maize genome. That's what we develop and replicate and disseminate around the world. I'm working on the Maui County numbers. I'm actually pitching the idea of being a consultant to the Crop Improvement Association. So hopefully I'll get a contract this week. Try to impress them with my ...

COUNCILMEMBER VICTORINO: We charge for advertising. . .(inaudible). . .

MR. BREWBAKER: That's right. Or you can hire me too. So seed industry outlays, we're informed now by the new *USDA Census for Agriculture* published in May of this year, it's published every five years, as well as the annual statistics of the *Hawaii Agricultural Statistical Service* and the *National Agricultural Statistical Service* published annually since 1967, just so we know that we're talking about an almost 50-year-old industry. Seed industry outlays of nearly 250 million Statewide are associated with about a half billion in total output, directly with 1,400 jobs and through multiplier interactions with a total of 2,500 jobs and about 25, 30 million in State taxes. You know, my guess from the data that I've seen, that outlays in Maui County are in the neighborhood of 20 percent of those totals, maybe 50 million. That would be sort of the low end of the range of direct outlays. Perhaps 650 persons employed, or fulltime equivalent persons employed, on an annual basis. And then, of course, through the multipliers, those numbers tend to double, hence the 100 million I suggested was, you know, a useful benchmark a second ago. But the industry also positions Hawaii in engagement in global collaboration that's responsible for the tripling of agriculture multi-factor productivity during the last two generations. Virtually every commercially-grown corn plant in the world is part of the Hawaii maize ohana. Genetic modification has raised yields, increased disease resistance, drought tolerance, boosted nutritional value and it has directly reduced global pesticide and herbicide use. In this century, genetic modification in maize, I think, will not only contribute to reduction in world hunger but to reducing the amount of agricultural land necessary to feed humanity and to reversal of global deforestation, and to an increase in atmospheric carbon sequestration as a consequence. Aside from the research and development outlays, seed industry sales Statewide comprise -- these are

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important statistics -- seed industry sales comprise 23 percent, 23 percent of the market value of all crop products sold in Hawaii. The seed industry farms, 23 percent, also, of the agricultural acreage exposed to the application of insecticides, including treatment for nematodes, and less than 9 percent of all the acreage treated with herbicides. Therefore, the seed industry in Hawaii is not a relatively heavy user of agricultural chemicals like pesticides and herbicides. Hey, look it up. It's in the *Census of Agriculture*, Table 68. Knock yourself out. My concern with this initiative is that science-based discourse has been substituted with kinda agitprop semantics, placing the seed industry in the middle of its own Salem witch trial. For example, the bill's assertion that cultural and spiritual heritage will suffer irreparable harm if Maui County is contaminated by GE operations and practices. Okay, so this is not an hypothesis in search of a test, right? A hypothesis is the belief in something that can be disproved. Scientific evidence informs its rejection or the failure to reject it. This initiative seeks to halt genetic-based R&D by preemption because we should have faith in the assertion that Maui will suffer irreparable harm. Faith is the belief in something that cannot be disproven. No study will resolve the anxieties of the faithful. The scientific literature is available to them and they reject it. We are all entitled to our faiths, our beliefs in things that cannot be disproven by the same constitutional amendment that prevents faith from being the basis upon which we establish law. That's why it's called the establishment clause. Study genetic engineering and genetic modification, but you cannot preempt industries without evidence of harm or wrongdoing. I'll conclude just by noting that my father and grandfather, both Ph.D. plant breeders, helped start the seed corn industry in Hawaii in the mid-1960s, a half century ago. They were motivated by a desire to feed the world and by principles of conservation, efficiency of natural resource use, stewardship and recognition of our responsibility to the future. At the age of 87, my father, a professor at the UH CTAHR, is in his cornfield today, or I know he was yesterday, pollinating. I hope he took a day off today. Some of my earliest jobs were weeding my grandfather's cornfields in Kekaha on Kauai and with G.I.E. Pioneer France Maï's when I studied in Europe in the Pleistocene era. Countless other local families have shared similar histories through Hawaii's seed industry. Defeat this initiative, that's what I would say. And if you have questions about the work I've been doing, I'd be happy to answer those.

CHAIR HOKAMA: Okay. Thank you, Mr. Brewbaker, for your comments to the Committee. I'll start with Ms. Crivello, if you have a question for Mr. Brewbaker on what he has shared with the Committee.

COUNCILMEMBER CRIVELLO: Well, Mr. Brewbaker, you know, you have the image of being the economist of all economists for Hawaii and...

MR. BREWBAKER: Both of 'em.

COUNCILMEMBER CRIVELLO: I guess I, hoping that you would be able to give us some sort of impact on our community, whether it's Maui or Molokai, say the complete banning or, what they say, moratorium on the GMO crops. I am from the island of Molokai. So I would like to have your opinion, if I may, on the, from your profession, the kind of impact that will have, if there

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will be a domino effect. Does that make sense when people have concerns about loss of employment?

MR. BREWBAKER: Sure. As I suggested earlier for Maui County, for, you know, Maui the island as well as Molokai, my estimate is that we're talking about, you know, at least 50 million in annual outlays. I'm gonna guess 25 million in payroll maybe, something like that. But for the County, about 650 jobs, fulltime equivalent jobs. Molokai would be the smaller portion of that. So, you know, less than half, maybe a third. And as I indicated earlier, I'm hoping to actually do some of that work this week. I mean, part of the reason I'm here is to meet with people, to get the data and to produce an update. And I sketched over these numbers but I have a more lengthy calculation using the State's input/output model that updates three earlier studies by a colleague of mine, Tom Loudat, and his associate from Virginia somewhere, Loudat & Kasturi, and their most report is 2013 and then mine's 2014. But, again, so that's the ballpark for the County. And as I say for Molokai, you know, it's, I'm gonna guess without having dug into the data, that it's less than half, but maybe a third. So in terms of how those impacts radiate outward, right, these activities are linked up with other industry activities through what are called inter-industry linkages and those are numerically calibrated in the States and put out by model. So when I say, you know, a 50 million outlay becomes 100 million in economywide impacts, those are what are known as direct, indirect and induced impacts. So it's the direct effect on employers, the indirect effects on suppliers, for example, and the induced effects that come from the fact that workers are also consumers and, you know, so they're buying stuff and going out to eat or whatever. It's also important to remember that there's a history on Molokai, in particular, of a very challenging environment for private enterprise in general and these are, thinking back to the exit of Del Monte and pineapple operations, which would be about the time that my, you know, my dad and those guys started going over there to do winter nurseries, about '64 I wanna say, 'cause we would all go when we were kids. You know, that's the, sort of the crossover period and then Molokai had a tourism sector that has waned, shall we say, and then most recently, I think one of the last things I did when I was a bank economist was work with, you know, the then owners of Molokai Ranch as they sort of, you know, left, exited, stage right. So my impression, without having gone into this more deeply yet, is that there's not that much else that's bringing external proceeds into the Molokai economy, other than government support. And as an island economy, you know, you have an opportunity to exist self-sufficiently at one standard living or if you can exploit an exportable of some sort, and tourism has sort of been the classic example of that, but the seed industry's another example, HC&S would be a third example here on Maui, the ability to, you know, leverage a comparative vantage, in this case, knowledge-based human capital, a knowledge-based industry focused on the human capital part of it. That ability to bring receipts to the economy, allows the economy through these direct, indirect and induced effects, to enjoy a higher standard of living that would, than would have been available without the export. And I think if you go back to the experiences of the impacts, the negative impacts, and their, you know, how they transmitted and resonated of the demise of plantation, pineapple, of the closure of the West Molokai Resort facilities and so on, you have a feel for what I'm talking about beyond the numbers. Now the numbers necessarily are small 'cause it is Molokai that we're talking about. But as I said, I should have pretty firm numbers by next week and I'm gonna run 'em through the model, but I think I'm in the ballpark, you know, for Molokai, I'm gonna guess it's in the

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neighborhood of, you know, 20 to 25 million in direct impacts and then 40, maybe to 50 million in total economic impacts, and I don't know what kind of context to put that in except, as I say, in Molokai, it's not a big context. Does that help answer the question?

COUNCILMEMBER CRIVELLO: Yes, thank you.

CHAIR HOKAMA: Okay. I'm going to limit the amount of questions --

MR. BREWBAKER: Sorry.

CHAIR HOKAMA: --for this round 'cause I would like Mr. Brewbaker to try and be around, 'cause I want to take care of his needs as well as our State people who have made the time to travel and participate with us this afternoon. So, Ms. Cochran, you have a question for Mr. Brewbaker?

COUNCILMEMBER COCHRAN: Thank you, Chair. And thank you, Mr. Brewbaker, for being here. So thank you for, I know you're still crunching numbers and trying to get more facts and figures compiled, but I was hoping that you could give another, the other point of view also in regards to if it does pan out and it's figured out that there's negative effects. So, as in, what would be the dollar amounts if there's negative impacts to our environment, such as our, you know, natural resources, our water, the land, the ocean, and then thereby perhaps tourism is now affected, you know, the health effects, medical repercussions, the bills that people will have to, you know, will compile. And so, for me, in your opening comments, I guess you don't believe in precautionary principle? Are you familiar with that term?

MR. BREWBAKER: I'm familiar with it. I wouldn't use it. I wouldn't think that it applied in this case.

COUNCILMEMBER COCHRAN: Hm. Okay. So you don't? And ...

MR. BREWBAKER: I know what it is, but I don't think it's applicable.

COUNCILMEMBER COCHRAN: Okay. That's...

MR. BREWBAKER: The precautionary principle would say, because the risks are, what we would say are leptokurtotic or they're fat tail risks, so there're low probabilities, extremely low probabilities of high loss events, okay. So the hazard is potentially large but the probability is extremely small, then the precautionary principle would say, well maybe we ought to, you know, be more on the defensive. For example, it's an El Niño year, so the odds of a hurricane hitting Maui are really, really low. In fact, I can't think of a time a hurricane did hit Maui but, you know, people haven't been writing these things down for that long. And, but I can think of three times one hit Kauai and each of those was during an El Niño episode. So the precautionary principle would say, in an El Niño year, you know, you better get your disaster preparedness responses ramped up 'cause the odds are higher and we know that the catastrophic nature of the hazard, you know, the outcome, warrants readiness. But you wouldn't commit suicide to prevent yourself from being

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adversely affected by a hurricane. So, and what I, in my impression of what this proposal says is the industry should shut down while the County studies the matter, to which my response is, this industry has been here for 50 years. Surely at this point something would have shown up that would've interested somebody in undertaking, you know, you talk about health costs, and surely the epidemiological evidence has accumulated over 50 years. Even if you believed that say strictly speaking from agriculture chemical use, the exposure brought about by the existence of this industry were any different, which it's not, from that of agriculture in general, or golf courses, or urban uses, or getting your house tented for termites. So I understand the precautionary principle. I'm not sure it applies in this instance. In fact, I'm pretty sure it doesn't.

COUNCILMEMBER COCHRAN: Okay. Well, thank you for your opinion and take on this.

CHAIR HOKAMA: Okay, thank you. Mr. Couch, you have a question for Mr. Brewbaker?

VICE-CHAIR COUCH: Thank you, Mr. Chair. Mr. Brewbaker, thank you for coming by the way.

MR. BREWBAKER: My pleasure.

VICE-CHAIR COUCH: You mentioned, when you're talking about Molokai being self-sufficient and what not, one of the comments in a lot of the testimony we received is that GE farming is not sustainable. So I'm guessing you have some idea of what sustainable might be as far as economically. Can you comment on your thoughts on whether or not GE farming is sustainable?

MR. BREWBAKER: So this is kind of interesting because it's not unrelated to this question of whether, you know, precautionary principle applies. And the way I would say to approach it is to think about the evolution of the pathogens that are out there, the evolution of the meteorological environment, so to speak. You know, there's a reasonably plausible conjecture that increased atmospheric carbon loading is causing, causing, that's causal, with respect to warming generally and an increase in the intensity of the El Niño southern oscillation, you know, all these things that we associate with potentially catastrophic, catastrophic meteorological events. So both in the biological sphere, where you have, you know, pathogens evolving, you know, to stay ahead of our, you know, defenses, our attempts to mitigate their impacts, and in terms of these meteorological events, and it seems to me that a responsible attitude towards sustainability is to recognize that if you have the objective of using resources more efficiently over time, part of which is the motivation for getting higher yield, but also if you want to go beyond that, and I mentioned this earlier, if you're serious about reversing deforestation, most of which in the world today, is about increasing the footprint of agricultural production, then it seems to me that genetic engineering specifically, that is to say transgenic modification, and genetic modification in general, is actually an offensive risk mitigation strategy, right. And it's in that sense that it's sustainable. It's about using resources more efficiently, making sure there's more resources left over out in the future and thereby keeping our options open for resource uses that we can't anticipate but almost surely will, you know, unfold and in all likelihood surprise us. So energy would be a good example, right? You don't pave over the best ag land on Oahu, 'cause you

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might wake up 40 years from now and wish you could plant some awesome biofuel crop on the best ag land on Oahu, right, pave it over, that kind of thing. So it's in that sense that I would say no, this, the seed industry is the perfect example of sustainability if you think of sustainability in these intertemporal and, you know, risk management ways, which is how I think of 'em. Self-sufficiency, on the other hand, is how I think of North Korea, right, as an economic development strategy, self-sufficiency is North Korea and I'm pretty sure it's neither sustainable nor particularly social or welfare enhancing.

VICE-CHAIR COUCH: Okay, thank you. Thank you, Chair.

CHAIR HOKAMA: Okay, thank you. Ms. Baisa.

COUNCILMEMBER BAISA: Yes, thank you very much, Chair, and thank you, Mr. Brewbaker, for being with us this afternoon. One of the things that we heard over and over during the testimony last night was much concern from Molokai in terms of, of course, the loss of employment, which you've addressed. But also along with that there was concern that people felt that that was being over played or over used and that the people on Molokai would have other opportunities to replace those jobs. And one of the things that was suggested was instead of growing GMO crops, that Monsanto could grow organic crops. Your thoughts?

MR. BREWBAKER: So I'm actually not a big fan of organic produce, right. I don't like cleaning off the goat shit or whatever. Nothing...right...so nothing currently prevents people from engaging in organic farming, to my knowledge, on Molokai or, you know, or anywhere. A lot of people are cool with that. I live in Kailua, over on Oahu, where we have a new Whole Foods. We've got the biggest supermarket in Kailua town, right, is all crunchy granola, right, it's all about organic. So I understand that there's a market for this stuff. You know how I know there's a market for this stuff, it's more expensive --

COUNCILMEMBER BAISA: Yes.

MR. BREWBAKER: --and people buy it. So it's, but it's not at all clear to me that one industry's activities preclude another's from occurring. I don't even understand what the mechanism would be, and people talk about, you know, sprayover or something. Well, organic farming uses pesticides too. You have to. Otherwise the bugs eat your plants. So when I was in banking, I used to chill with the bank's ag, the last ag, private ag lender in Hawaii, this guy Stan Fujiyama, and he taught me two things about agriculture. One is that, you know a good farmer when they sold the crop before they planted it. So if there's a problem with Molokai agriculture, that a barrier to entry in some sense, it's probably in the nature of access, you know, market access. But, for example, it could possibly be the scale of the on shore consumption market because the seed companies aren't growing food for this local consumer. The second thing I learned, by the way, is that, in agriculture, unlike other business, in ag business lending, I should say, other, unlike other businesses, all the risk is on the supply side. I mean, most businesses, your concern is whether the consumer's actually going to show up. Maybe they're going to a competitor, maybe there's a 9/11 and they never got off the plane, right. In agriculture, the risk is on the

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supply side, not the demand side. There will never a time when somebody doesn't want to eat your food, you know, if you do a good job at it, right. The risk is you won't have a crop even after you planted it. So, and those two things kind of distinguish it. Those are the kinds of idiosyncratic challenges to commercial agriculture that confront organic as well as conventional agriculture, and are difficult to surmount. I mean, you gotta have some capital. I can tell you right now, you ain't gonna get a bank loan anymore 'cause Stan Fujiyama ain't working there anymore. I mean, I'm just saying, right, agriculture credit is a whole 'nother source of problems. So, you know, without knowing that much about Molokai's current situation, my suspicion would be that those are the challenges that farmers would face whether or not the seed companies were present. And my guess is that those were the same challenges that they faced when Del Monte was present. I'll just add quickly that, you know, these transitions take remarkably long to unfold, these industrial transitions. You think about how long ago Hamakua Sugar closed, you know, shut down, and what is it, like 30 years later, brah, this is, this, my dad tells me, if you don't get something in the ground in the first like two years, all the _____ ironwood going come up and that's it, no more farm. And you can see this over and over. I just saw the guy Paul, who used to work for, da kine, Maui Land & Pine. And he said I'm flying in this morning, I'm looking over there, eh, what's happening to all that Maui Land & Pine land? You know what I mean, you don't get something in the ground soon, brah, the forest is going, nature is going to take over. So these challenges of agricultural transition, of entry, entrepreneurship, I don't minimize them at all. They're challenges everywhere but I can't think of what the impediment would be coming from the presence of the seed industry because I observed its presence elsewhere where agriculture is thriving.

COUNCILMEMBER BAISA: So you don't see that as a quick fix? It probably might happen but would take a lot of time.

MR. BREWBAKER: I think it's neither necessary nor a sufficient condition for the success of other agriculture on Molokai. I mean, you know, my guess is that small market scope and physical geographic discontinuity, right, and, you know, not that cheap transport cost, make it really hard to scale up an agricultural operation on Molokai outside the footprint of the local consumption base. And I'll further say, the wonders of modern logistics and transport, you know, I mean, I can get off the plane every day of the week here, stop at Costco and get fresh strawberries, every day of the year on Maui. That's, you know, logistics, it's amazing. So farmers, for example, that used to grow on Molokai, like Larry Jefts --

COUNCILMEMBER BAISA: Yes.

MR. BREWBAKER: --when they had the opportunity to take down 5,000 acres of old Oahu sugar land, boom, they went to the city. Why? That's where the consumers are, that's where the consumers are.

COUNCILMEMBER BAISA: Yeah.

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MR. BREWBAKER: So I'm guessing that the challenges are more of that nature and the solution is probably to move the high value niche crops and so on and so forth, or legalize marijuana or something like that.

COUNCILMEMBER BAISA: Thank you very much. Thank you, Mr. Chair.

CHAIR HOKAMA: Thank you. Mr. Guzman, do you have a question?

COUNCILMEMBER GUZMAN: Thank you, Chair. Thank you, Mr. Brewbaker, for coming for today's hearing. I had a few questions.

CHAIR HOKAMA: Just one, please.

COUNCILMEMBER GUZMAN: Just one? Okay, thank you. Let me go to the heart of the matter then. You mentioned...can I lay a little bit of foundation, Chair, just...

CHAIR HOKAMA: Quickly.

COUNCILMEMBER GUZMAN: Okay, thank you.

MR. BREWBAKER: I'll make my answer short.

COUNCILMEMBER GUZMAN: Okay. So you mentioned that --

MR. BREWBAKER: Yeah.

COUNCILMEMBER GUZMAN: --the outlay is about half a billion and accordingly --

MR. BREWBAKER: Statewide.

COUNCILMEMBER GUZMAN: --Statewide, and in Maui ...

MR. BREWBAKER: I'm sorry, the outlay is 250 million.

COUNCILMEMBER GUZMAN: 250 million.

MR. BREWBAKER: And the total direct, indirect, induced effect on output on GDP is 500 million, 500 million.

COUNCILMEMBER GUZMAN: Okay. And then but specifically for Maui, it's about 50 million. Is that...

MR. BREWBAKER: I'm guessing it's 50 in outlay and 100 in, you know, 20 percent of the total.

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COUNCILMEMBER GUZMAN: Okay. And then, 600, estimated about 600 in employment?

MR. BREWBAKER: Pending further review, yes.

COUNCILMEMBER GUZMAN: Okay. Twenty-three percent of the crops, crop value?

MR. BREWBAKER: Well, again, Statewide, in the sense of agriculture, 23 percent of crop marketings comprise the seed industry, which, and 23 percent of acreage exposed to pesticide and pesticide use including treatment for nematodes is also 23 --

COUNCILMEMBER GUZMAN: Okay.

MR. BREWBAKER: --percent, 23.3 percent, as a matter of fact.

COUNCILMEMBER GUZMAN: So, and I understand the history of Hawaii, wherein we've, we lost the pineapple industry and it was our State legislation that actually invited the biotech research type farming into the State by offering them somewhat credits to get that industry going. Is that correct?

MR. BREWBAKER: I'm not aware of the credits.

COUNCILMEMBER GUZMAN: Okay.

MR. BREWBAKER: No.

COUNCILMEMBER GUZMAN: Okay.

MR. BREWBAKER: That was, that was, my dad called my grandpa and they called people in Iowa, the seeds men in Iowa, and they all came out one winter and they had a conference in Molokai at the Sheraton.

COUNCILMEMBER GUZMAN: Very good.

MR. BREWBAKER: So, like, look, we can grow all year. We can do back crosses every 70 or 80 days.

COUNCILMEMBER GUZMAN: Right. So what you're stating is, basically, it is a very productive and profitable industry. Correct?

MR. BREWBAKER: Well, to...I'm sorry, I'm interrupting you. But to your point about --

COUNCILMEMBER GUZMAN: Correct.

MR. BREWBAKER: --intervention, I don't believe there has ever been State intervention, not involving money, not like the qualified high technology business tax credit.

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COUNCILMEMBER GUZMAN: I only have a few --

MR. BREWBAKER: Okay, sorry, it's my bad.

COUNCILMEMBER GUZMAN: --'cause, that my Chair is very strict on it.

MR. BREWBAKER: Gotcha.

COUNCILMEMBER GUZMAN: Yes or no. It's a very profitable industry, correct? Yes or no?

MR. BREWBAKER: I don't know about profitability.

COUNCILMEMBER GUZMAN: Okay, but it builds our economy, correct? It helps support our economy?

MR. BREWBAKER: Absolutely, yes.

COUNCILMEMBER GUZMAN: Okay. So, in Europe, how come, if it's such a great industry, are there are countries that are banning GMO?

MR. BREWBAKER: Man, I don't know.

COUNCILMEMBER GUZMAN: I mean, because I'm looking at as an economic driver, as something that is --

MR. BREWBAKER: Yeah.

COUNCILMEMBER GUZMAN: --economically will develop certain industries or --

MR. BREWBAKER: Yeah.

COUNCILMEMBER GUZMAN: --certain economies, right? So I've heard testimony after testimony that GMOs are banned in Europe, in some countries. So why is that, if it's such an economic, I guess --

MR. BREWBAKER: I couldn't tell you.

COUNCILMEMBER GUZMAN: --charger or stimulus?

MR. BREWBAKER: I'm completely mystified by it. I sourced the EU statement on this and the studies. I don't understand it. You know, 80 percent of electricity in France is nuclear, go figure, so.

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COUNCILMEMBER GUZMAN: Okay. I guess, I mean, the numbers that you've presented --

MR. BREWBAKER: Yeah.

COUNCILMEMBER GUZMAN: --are very economically stable, but then in contradiction to that, we see other countries that are not using something that could be available to them, but you have international governments banning them. So I'm kinda confused in some ways.

MR. BREWBAKER: To your point, let me go back to the point about nuclear energy, why don't we use nuclear energy here? Ooh, Chernobyl. I don't know. It's the same, I mean, it's kind of a mystery.

COUNCILMEMBER GUZMAN: Thank you, Chair.

CHAIR HOKAMA: Thank you. Mr. Victorino?

COUNCILMEMBER VICTORINO: Well, that was interesting. You know, Paul, I really don't, you know, a lot of questions I had you, been covered or, you know, when it comes to economics, you're a pretty sharp guy and you put the numbers together. But I really wanted to ask you this question. In regards to this entire picture, we're a global economy, no matter which way we look at it. We're interconnected with the world so closely that when something happens in Japan, tsunami, shut down, oil prices exponentially go up because they start to change over and drop nuclear because they don't want the Fukushima incident to occur again, right. So with all of this being said, the seed industry and this corn seed industry or the seed industry in general, I guess it's really a matter of, and you said it a moment ago, it's a matter of taste. What do you want? Can we afford? And, you know, somebody said something and, you know, nobody's picked up on this, and you guys have all talked today and yesterday and last night, I heard, many time people talk, but nobody picked on the kid that came and said, we've gone broke. Remember, we've gone broke buying whole food. We've gone broke buying whole, natural, organic food. Nobody out there said anything. The kid said we went broke because we wanted to eat healthy. That's kind of a testament of something I don't want to hear. That's a reverse economy, reverse economics, right? I mean, you know, so, my only question here is, it's real simple. This is economically feasible for Hawaii and what we need to do. I mean, there's, we've heard EPA and we're going to hit State Department of Ag and the State Department of Health and all the other guys, but do we want to continue to move along this line and start banning GMOs all over the place so that we'll have more people come up there and said I'm going broke eating healthy? Is that what we want?

MR. BREWBAKER: Well, clearly not. You know, people's personal consumption preferences are something that, you know, the market delights in because product differentiation is what makes the retail world go around. To the point though, I think, you know, my impression is people needlessly expand their personal financial resources in excess of what's necessary, you know, nutritionally or to satisfy their needs, and let's face it, food is so cheap. I mean, food is so cheap that our big problems are obesity and diabetes, what does that tell you? So this, we're at an

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amazing moment in the history of the world where agriculture productivity is so incredibly large that with one, you know, in the United States, with two percent of GDP, we feed the country and the rest of the world and we're overweight. And a hundred years ago, it was 40 percent of employment and 40 percent of the economy, just to feed ourselves, okay. So that's, that's, and genetic modification is at the heart of what I referred to earlier, which is multi-factor productivity, it's the, like the manna from heaven. It's not that the machine is faster or, you know, you got economies of scale from getting a bigger farm and using GPS and, you know, satellite imagery of the soil chemistry so that you can mix the nutrients as you drive across the field in a tractor with the sprayers, right. That's, that's what's going on. But, yeah, Hawaii doesn't have a long list of things that it can do. And governments, leaders like yourselves, sit down and think about what we can do and every once in a while we take a shot at, you know, ooh, let's put PV on everybody's roof, that kind of thing. Most of the time, that doesn't work. It's worth trying, I suppose, better than not trying, but, you know, I think it's fair to say that it's private entrepreneurship that has a better batting average and this is one of these, this industry is one of these instances where it arose because people saw an opportunity and then it built a critical, it's kind of, this is important. There's a lot of places in the tropics you can do everything that's being done in Hawaii, but they're not in the United States, they don't have our intellectual property protections, and if you read trade theory, read Krugman, it's sometimes about being the first mover, the first guy out of the gate, and you build critical mass, you build the knowledge capital base, got all the Ph.D.s running around, and their moving from firm to firm and, you know, the whole thing, and you got a thing going. And that's what we've got. Why would you shut that off in order to study its potential adverse impacts, you know, say, because of the, what you call, principle. Yeah, I would study it, but I wouldn't shut it down until you've gotten the answer. And the answer from 50 years of experience, I mean, 30 years of transgene work, 50 years of the industry, 100 years of modern Mendelian genetics. Dude, where's all the, where's the smoking gun? So I'm all down with studying it, but I don't see why we can't do both. And my guess is that, we'll find, I'll just conclude, going back to this point about, you know, fat tails. Martin Weitzman at Harvard writes in a paper called *Economic Profitability Versus Ecological Entropy*, that a relatively cheap way of buying catastrophe insurance is to cultivate or hold small positive amounts of as many different kinds of potential domesticates as it may be possible to preserve. That is, you know, there's a reason we do biodiversity because you'll never know when you want to back to take advantage of that gene pool for something you didn't know you could have used. But at the same time, moving the genome forward, moving these genomes forward is the principal way in which human welfare has increased over the last century. I see no reason not to be participating in it in this century. And I'll stop there.

COUNCILMEMBER VICTORINO: Thank you, Mr. Brewbaker. Thank you, Chair.

CHAIR HOKAMA: Thank you. Mr. Carroll, do you have a question for Mr. Brewbaker?

COUNCILMEMBER CARROLL: I'll save my comments for later. Thank you, Chair.

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CHAIR HOKAMA: Okay. Thank you very much. Mr. Brewbaker, I would ask, if possible, if you would consider staying. We are going to bring up our State departments at this time but I would ask if you would consider staying around for potential more questions and ...

MR. BREWBAKER: I would love to hear what Gary has to say.

CHAIR HOKAMA: We all are.

MR. BREWBAKER: I'll go move my car though.

CHAIR HOKAMA: Thank you. We appreciate your presence this afternoon. Thank you. We're going to ask Director Gill and Chairman Enright if would come, come forward please, along with if Mr. Matsuda and Ms. Bauske is here also. Do they have a microphone so they can...? Thanks for being here. ...Hey, how you doing, thanks for being here. Tammy, if you can help Mr. Gill, please. Thank you. ...Yeah, I do, I do. I'm sorry, which department? Okay, Members, we're going to continue. Thank you. What I'm going to do, Members, is just introduce two of our panel representatives this afternoon who've made the time to join us to be in person regarding the initiative proposals. From the Department of Agriculture, we have the Board Chairman himself, Mr. Scott Enright, and he has some of his Department's personnel to assist us this afternoon, and we also have Deputy Director of the Department of Health, Mr. Gary Gill, present, who is also going to share comments regarding the initiative proposal. So between the Health and Agriculture Department, whoever wants to go first, please do so. Chairman Enright.

MR. ENRIGHT: Thank you, Chair, Council members.

COUNCILMEMBER VICTORINO: Not on, not on, Chair.

CHAIR HOKAMA: Okay.

MR. ENRIGHT: Good afternoon, Chair. Thank you. Council members, Scott Enright, Chairperson, Hawaii Department of Agriculture, good afternoon. You know, I was on the way over, I was reading this bill and I was reminded of a story of a legislative aide who asked an old seasoned hand, you know, what they needed to know. And he said there were three things. Read the statute, read the statute, read the statute. Well, I've read this, and I've read it three times, and I find it to be wanting in the worst way. It's, the premises that they build the argument for a moratorium are fallacious. I can go through them but Dr. Brewbaker did an excellent job of going through them. You know, any additional regulatory effort on pesticides or on GE crops needs to be driven by science and this is not driven by science. So, seeing Professor Brewbaker hit on most of my points, I will pass this on and be ready for questions from Council.

CHAIR HOKAMA: Thank you.

MR. GILL: Aloha, everybody. I'm Gary Gill. I'm the Deputy Director for Environmental Health at the State Department of Health. What I'd like to do is share with you a little bit about what the

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Department of Health's role is in the broader picture of the GMO debate that's been raging across the State. The, so there are different parts of the Department of Health that come into play, and I can only speak in greater detail to the environmental health part. But to put it in perspective, because we often get calls or questions and it's clear to me that there's some misunderstanding of our role, our regulatory role, I thought I'd just sort of lay the basis here so you can understand what does the Department of Health do. So, broadly, our Director, Dr. Linda Rosen, oversees three different Department of Health administrations. We have Behavioral Health, which we don't need to talk about, it's like the State Hospital. We have Health Resources, which deals with disease outbreak and flu epidemics and family health and medical issues. And then you have the Environmental Health administration for which I'm the Deputy, and we do basically four things. We have emergency response and super fun cleanups. So if you spill something like molasses or jet fuel or something, we are the on-scene coordinators and responders to make sure that gets cleaned up. We have food safety functions in our sanitation branch. We regulate radiation, noise, lead and asbestos. All of our restaurant inspectors, that's a second part of what I do. Third part is in more pollution control or regulation, any emission into the environment into the air, land or water, requires an EPA permit. Department of Health is the EPA in Hawaii. We have been delegated that authority. So we will do everything as near and dear to your hearts on this island, like issuing cane burning permits, for example, or any water discharge into the ocean, any smoke stack discharge into the air, any landfill, any recycling center needs permitting from us. And finally, I oversee the State laboratory, which does a lot of the testing for your water quality, for your air, for hazardous materials, as well as influenza and medical health issues. So with that short introduction, when it comes down to GMO, our involvement is as follows. The question is raised about public safety and the Department of Health does not feel that consuming genetically modified food products is a significant threat to public health. So we do not regulate GMO materials in food and we don't intend to. Comes down to the issue of labeling. This is something that's been before the Legislature. Department of Health does not object to the Legislature or County, if you think, feel you have the authority, labeling for the benefit of consumers, products in the market. We do have a concern that the number of the vehicles previously presented to the Legislature required the Department of Health to regulate the labeling, and the problem there is we don't have a scientific test that we can go to the lab, take your corn flakes, crunch it up, run it through a microscope, test it in a GC-MS machine and say, aha, there's GMO product in there. There's no method by which we can do that scientifically and enforce. So if we are going to pursue labeling and it's a legitimate thing to consider, our concern is that if you're going ask us to enforce it, there has to be a scientific way to do that that is defensible in court. And currently, we feel there is not that. Then the other issue that comes before us, which is not unique to GMOs, but is a clear authority of the Department of Health, deals with pesticides. Now while Director Scott Enright quickly passed this to me, I'm sure we all realize that the Department of Agriculture regulates the sale and applications of pesticides. But what the Department of Health does is manifold. We test your drinking water for chemicals, including agricultural chemicals and pesticides. We have very strict standards, both in State and Federal law that means your drinking water has to be pure. There are contamination limits that are imbedded in our rules and in the law and we make sure that your water quality, whomever is delivering it, whether it be your County service or a private water company, is testing the water to make sure that it meets all

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health standards. The second thing where we become involved in pesticides is residue on vegetables. Now this program, we used to do a lot more than we do now, we're trying to build it up, but we test on a monthly basis. We go to a vegetable stand, into a market, or into a food distributor and we'll pull a cucumber and a carrot and some bak choy and some basil and we'll run it to the lab to make sure that the pesticide residue that might exist on that plant and is destined for human consumption, meets Federal regulations and State regulations, okay. So we do that. The next thing that we deal with in pesticide is cleaning up historic contaminated sites. This island and in other islands, historically, from the plantation days, there were pesticide mixing sites out in the fields or near a mill and that pure product, when it was being mixed, was often spilled on the ground and those chemicals can persist, whether it be dioxins or arsenic, these things can remain in the soil and, if at high enough levels, they can be a public health threat. Mostly if a kid is playing in the mud and ingests the dirt, that's a concern. We find these sites, we cap 'em or clean 'em up to protect public health. So that's another way that we get involved with pesticides. And finally, as I mentioned, if something spills, my on-scene coordinators and emergency response operation is there to oversee the containment and cleanup. So that's the Department of Health's role in this big picture. And I wanted to share with the members of the Council and I'm sorry I don't have copies, but all of this should be available to you online, just really quickly I'm going to scan over some of the PowerPoint slides because the Department of Health responded to the public concerns about pesticide contamination. Some of that concern is relating to GMO or large agricultural crops. That concern exists regardless of what the crop is or whether even you're anywhere near a crop. We tested in order to inform the debate about pesticide contamination, tested Statewide, all different kinds of areas to see is there, in fact, at that snapshot, that one time that we took a test, is there any significant pesticide contamination in the environment and, if so, where. We wanted to respond to the community concerns, bring facts into the debate, and determine whether or not additional study is merited and, if so, what kind of study. So I'm going to flip through this really quickly 'cause I know you might have a lot of questions. But what we did and what we, this is all available online, the entire study is available online. But we worked with the Department of Agriculture and with USGS and we put together the money to go out and do sampling Statewide. What we did is, we're looking at a broad range of areas. So agriculture areas, urban areas, golf courses, large ag, small ag, wanted to take a sample of what's out there. We know already, we have data already, from drinking water, we have that Statewide, we've, there's a lot of data that came from the plantations, sampling that they've done in irrigation wells looking for pesticides, atrazine in particular, we had some surface water sampling that was done in various locations around the State, but not a whole lot of data out in the environment. So we designed a study, we looked at different mixes of land, we're doing sampling over December/January, happened to be kind of dry during that time. We're taking a snapshot, one time, right. So the limitations of the study, we weren't in the same spot every month, right. We might, the pesticide might have been put on six months ago, right. So we didn't have the money to do a real long-range study, we're just taking a quick snapshot of what's out there. We looked for 136 different compounds in water, 121 different pesticides in the sediments, and we looked to excruciating low tolerances. We're looking for parts per billion, parts per trillion, okay. So we're really going down as low as the science would let us. We looked for large, single crop, agricultural areas, mixed crop, golf courses, urban areas. We're looking for small water bodies that are downstream from

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agricultural areas, looking across the whole State. We looked at 24 different areas for water samples, only two of which were on Maui, and we did seven sites for sediment testing as well, specifically looking for glyphosate, which you may recognize as Roundup. Again, this was scientifically done with the best science from the Federal government, USGS. We had careful quality control. We used two separate laboratories to confirm the results. So we have a lot of confidence in what we found and what we've published. The first question that comes up when you look at a study like this is well, what is the detection limit or what is the threshold, the safety level, that you're finding? If you find one part per trillion, what does that mean for this particular chemical? So we have contamination levels for drinking water. Those are interesting but they don't necessarily apply in the environment, you know, the amount of contamination that might be safe for a human may not apply to the fish or the algae or elsewhere out in the environment. So we looked at all the benchmarks that we could find. EPA had some aquatic life guidelines. There were, you know, other thresholds that were published. So we looked at how the numbers we found lined up with any published guideline. So to get into the key findings, virtually at every sample, we found some kind of pesticide at very low levels. The kind of land use really determined what you would find and, in fact, the most polluted areas are in urban areas, okay. So, Manoa Stream, in Honolulu, with all the urban inputs that go into that watershed and into the Ala Wai, we found the most different kinds of pesticides and that's where, as we anticipated, and we knew from previous tests, we found violations in the levels of dieldrin, that's a termiticide that has been banned 20 years ago, 30 years ago, and it's still showing up. And we know that because the City finds it all the time. We also found household chemicals, fipronil, which is used in the pet industries, like flea collars, right. So we found that. The thing that we found most throughout the State is atrazine, and atrazine is used in the plantation. It's been historically used in sugar so it's, we're finding it on the Big Island even years after sugar closed down. We find it here on Maui as well and on Kauai. So that's what we found most 'cause it is still very actively used and it has been used in far greater concentrations during plantation days than is used today. We looked into stream sediments specifically for glyphosate, for Roundup, and we found Roundup in all of the samples that we took. All in all, we found 20 herbicides, 11 insecticides, 6 fungicides, 7 locations with glyphosate but no EPA benchmarks, there are no EPA benchmarks for sediment, for glyphosate. So we found stuff but, frankly, we don't know what it means and no one in, we don't know how to compare that to any kind of health standards. So there's additional work that needs to be done there. Okay, just really quickly, on Maui, because we only had two sites. And, again, we're looking for water, surface water runoff and if you think of the whole Central plain here in Maui, where's the stream? There isn't one, right? So we looked at Kealia Pond and we looked out at Black Rock at Kaanapali. So, here we know where there's groundwater input into these water bodies and that's where we tested. So at Kealia we found atrazine, prometryn, and something I can't even pronounce, fluometuron--I'll ask Christine to tell us what all those things are 'cause that's her expertise--but that, it was a limitation of the study particularly on Maui because we didn't have a lot of good places to look. Out at Black Rock, we found hexazinone, found four things, okay, here, you can pronounce those. But, again, all at relatively low levels, nothing that reached a threshold of human concern, but in a few locations we did find chemicals that tip the scale as being of concern to the environment, a threshold that may impact algae or reef life or ocean water life. So it gave us a sense of what needs to be done to follow up. And I'll close with this because there are data gaps

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specifically on Maui that you should be aware of, as I've already mentioned that we didn't have the stream data, we didn't have streams that we could test. So the data we got from Maui is a little bit different from the other islands. And we didn't test glyphosate, or Roundup, in the sediment on Maui. So we don't have that data. It's, we can't, many areas cannot be evaluated with surface water, so that implies that we might want to next look at irrigation wells or nearshore seeps or other places on Maui 'cause we just didn't have that much going here. So, in closing, just to summarize, what are the next steps for us is really we want to hear from you. As I said, we do a lot of pesticide work in your drinking water, in your food. We don't have, we're just building that information of pesticide input into the environment. We did this quick snapshot, which indicated some additional places we should look or where we might want to look deeper, but there was no huge problem out there from all the standards that we could apply, from the guidance nationally through the EPA and other organizations. There wasn't any showstopper finding like, wow, this is really bad, right. So in those simple lay terms, not getting into the science, that sums up our work and our role in the pesticide issue. And I'm really looking forward to community input and political input from our community leaders as to where you would like to go next and how you would propose to fund it. Thank you.

CHAIR HOKAMA: Thank you, Director Gill. Chair Enright, if you have some of your resource people would like to share some comment, please do so, and if you could introduce yourselves.

MR. MATSUDA: Good afternoon. My name is Tom Matsuda. I'm the Pesticide Branch Manager at the Department of Ag and I have a staff of 18 members. They cover enforcement, registration/licensing, education, and we have a chemical lab that does our sampling analysis.

MS. BAUSKE ZIMMERMAN: Hi, my name is Christina Bauske Zimmerman. I work for the Pesticides Branch in the Registration and Technical Review Unit. In that unit, we license pesticides for distribution and sale in the State. We also issue special local needs for specific uses within the State, emergency exemptions and also experimental use permits. So if you have any questions about any of those, I'll be happy to answer them.

CHAIR HOKAMA: Okay, thank you. Todd.

MR. SUDA: My name is Todd Suda. I'm with the Plant Quarantine Branch. I'm the Biotechnology Specialist. I give, I review all the USDA, BRS permits and give concurrences. I also do inspections on the seed industry if they're following all the regulations.

CHAIR HOKAMA: Okay, thank you, Mr. Suda. Just so you are aware, gentlemen and lady, we did have a two-hour discussion with members of the Federal EPA earlier, explaining their role in the review and licensing, I guess is the word, of pesticides for use in the United States. They also indicated that much of the enforcement component regarding pesticide use is under the enforcement jurisdiction of the State of Hawaii and as we understand it, basically through the Department of Agriculture. So maybe if you guys can give us some comment about how the State is approaching this enforcement responsibility and if you have any other comments about, particularly to Maui County, about whether or not the amount of complaints has risen over the

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past five years or so and if it's, is it consistently a specific type of complaint that has been received from the County or this is just part of your general inspections and your findings is within the normal parameter of what you find any other place. Mr. Matsuda, I guess, if you would, please, or Miss Zimmerman.

MR. MATSUDA: Thank you, Chair. Again, the Pesticide Branch and the Hawaii Department of Agriculture, we are responsible for the sale, distribution and use of pesticides. Pesticides, what are pesticides? I hear a lot of people talk about herbicides, pesticides, insecticides, pesticides, rodenticides, pesticides. Pesticides is the general heading and all these herbicides, insecticides, they all come under that general heading, so I need to clarify that. FIFRA, Federal Insecticide Fungicide Rodenticide Act, Federal law. That's part of our, the rules we operate under in the Hawaii Pesticides Law, Chapter 149A. We've got enforcement people. There's one dedicated enforcement inspector on Maui, Lester Chin. We do about nine different type of inspections, okay. You talk about ag inspections, that's one type, and this would be looking at the big seed industry companies, mixed use, the farmers. We have what's called urban structural, this is with the golf courses, the County guys. We have MSIs where we go to stores that sell pesticides to be sure that these pesticides are licensed, okay. EPA registers pesticides. You pick up a pesticidal product, you look for an EPA reg number. If there's a number there, it's been approved. How does the State make money? They charge a licensing fee for registrants to sell the product in Hawaii. Currently, and it varies, but there are over 8,000, maybe 500 products, pesticidal products, available. So our guy is here, as far as the type of enforcement actions, it's pretty much the same. He handles complaints too, whether it's drift complaints, and he takes care, between eight to ten different types of inspections a month. If you looking at the type of complaints on a monthly basis, it may be one to two. Again, it'll just vary. I just want to talk about precautionary principle and risk benefit because a lot of people not sure what that means. The European countries follow this precautionary principle, meaning unless you can prove it safe, we will not use it. United States looks at risk benefit. If the benefit outweighs the risk, we will use this. The other thing is the word medicides. We've all heard of pesticides. We all take medicides. These are medications that you take to prevent bacteria or viruses from getting into it. Your doctor tells you there's a risk, there's a benefit, you decide if you're going to use it. Risk benefit versus precautionary principle. The last speaker talked about, in Europe, why is it that way, because precautionary principle, their thinking is if you cannot prove it safe, we will not use it. United States is, everything has a risk, a benefit, and that's what they look at. The other thing is the label is the law. That label, and you probably heard this morning from EPA, about the human health assessments, environmental health assessments, how rigorous it is to go through before you get that EPA reg number. And about every 15 years, there is a re-registration of the product. There is also a shorter term, if something comes up suddenly, that active ingredient, they don't wait 15 years, they'll take a look at it right away. But, again, I have to share that mantra with everyone, the label is the law. Any misuse of that label, basically, is a suspected violation. I'll pass this on to Christina.

MS. BAUSKE ZIMMERMAN: Did anyone have any questions regarding pesticide licensing, experimental use permits?

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CHAIR HOKAMA: Why don't you tell us the procedure, how it works in Hawaii, and how it will work in this County, please, Ms. Zimmerman.

MS. BAUSKE ZIMMERMAN: For pesticide licensing?

CHAIR HOKAMA: Pesticide license.

MS. BAUSKE ZIMMERMAN: Okay. Normally when we receive an application for a new pesticide product in the State, we check to see if the active ingredient is new to the State of Hawaii and if it is, we put it through a groundwater review. We don't have the expertise to do that in-house so we contract that out to the University of Hawaii, the Water Research Resources Center. And if, in working with them, if it is deemed to be not likely to leech in the State of Hawaii, in our soils, then we go through with the licensing, where we take a look at the label, assure that the label has directions for use that is easy to follow, easy to understand, has all the necessary components, and then we process the license so it can be sold and made available to the farmers as a tool and that's our normal licensing process.

CHAIR HOKAMA: If there is some issues during the process, how is it dealt with? Do you return the application? Do you go and verify outside sources of expertise to deal with an issue that may come up in the review process?

MS. BAUSKE ZIMMERMAN: Yes. If it is, perhaps during the groundwater review process, if we find that the active ingredient is likely to leech in Hawaii soils, we can either require that active to be classified as State restricted, meaning that it will be closely monitored as far as the sale and use, and, or we can deny the registration altogether. If there are other issues like labeling problems that are contradictory or could pose unreasonable risks to humans or the environment, then we deny the label and request, we can't require, we request that the registrant make those changes that we need, and if they don't, then we deny the license.

CHAIR HOKAMA: Do you need to inform the Federal component, the EPA, regarding this change in labeling?

MS. BAUSKE ZIMMERMAN: No, we are not required to ask the EPA anything as far as labeling changes. We often times consult them for the changes, just to make sure that we're interpreting the label correctly.

CHAIR HOKAMA: So potentially, and I don't know the answer, that's why I'm asking, you could have 50 States with 50 different labels regarding the same product because each State found different issues and they adjusted their labels accordingly. So you can have 50 legal labels of the same chemical actually?

MS. BAUSKE ZIMMERMAN: No. The company will make the changes to the general label which will be going to every single State. So sometimes we see language on labels we receive with

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restrictions for New York State, certain counties not being able to use it in those counties, or for Florida, we, you know, we'll see other States' restrictions on there.

CHAIR HOKAMA: Okay, thank you. Mr. Suda, you have anything you wish to add at this time? I don't know your specific area of responsibility but if you do, and you have something to share, we are happy to hear it.

MR. SUDA: Well, usually I do compliance inspections for the USDA on the BRS side and then I also do field inspections so that the seed companies can export their products to foreign countries too. And while doing those type of inspections, I'm looking for a lot of different insect and diseases. And most of 'em are not in Hawaii at this time. So it's kind of benefiting us in a way because I'm actually doing a survey for us to make sure that we don't have these insect and diseases in Hawaii 'cause otherwise it wouldn't be done on a frequent basis.

CHAIR HOKAMA: Okay. So, as an example, just so we can have a sense of your area, Mr. Suda, the fire ant issue that's potentially one major component for our ag industry as well as our conservation rural areas, that would be under your division's jurisdiction?

MR. SUDA: Yes, that's, right now, it's being done with Plant Quarantine and Chemical Mechanical, I believe. So we're doing, we're working together within our Department.

CHAIR HOKAMA: Okay. And if the answer to dealing with this potential threat is a pesticide application, it would go through all the various Departments that are before us today, from Mr. Matsuda, Ms. Zimmerman, Health Department? Mr. Enright, maybe you could help us understand.

MR. ENRIGHT: Certainly, Chair. Yes, is the short answer to your question. And we are, in fact, working with two specific pesticides for little fire ant. It's Plant Industry, which is plant pest control and Plant Quarantine working on it, and they work with Christina to get the labels that they need for applications on little fire ants. The work that we're doing with the little fire ant lab that the Department of Agriculture funds, is world renown. We're doing the best research on little fire ant of any place on the planet. So the answer is yes, sir.

CHAIR HOKAMA: Okay, thank you for that response. I'm going to ask the members of the Committee. We'll do more than one round, so please ask your main question. You can have a follow-up for clarification of your main question and then we'll go to the next Member and then complete the round and then start the next round. Mr. Couch?

VICE-CHAIR COUCH: Thank you, Mr. Chair. Well at some time I'll be interested in the cost for that study because it might be something that we want to do on our own, I mean, have you guys do just here on Maui. But my question's going to be, essentially I heard, you know, the label is the law and everything is closely monitored if need be because of what's going on but we only have one dedicated enforcement officer on Maui. So our concern, I guess, is we have certainly, and by the way, does that include, is that Maui County or just Maui island?

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UNIDENTIFIED SPEAKER: Maui, Molokai, Lanai.

VICE-CHAIR COUCH: Okay, so it's Maui County.

MR. ENRIGHT: Maui County.

VICE-CHAIR COUCH: So we have one person to deal with all of the pesticides. We've got, how many golf courses and then we have two Monsanto locations here, two or three seed locations, I believe, on Molokai. So, and it sounds like you said there's about eight inspections a month.

MR. MATSUDA: Eight to ten.

VICE-CHAIR COUCH: And this is all, and this is all including stores, you know, grocery, I mean, not grocery, you know, Home Depots and whatnot that sells the pesticide, and even grocery stores, I guess. And also pest control companies, too, is that right? So in your estimation if you had unlimited funds, would you only have one person here on Maui or what would your ideal number of inspectors be here?

MR. MATSUDA: Unlimited resources, at least three. But I also have education staff that go out to the neighbor island to talk about pesticide use. They also give the exams for certified applicators.

VICE-CHAIR COUCH: Thank you. And as a follow-up to that, our concern is, you know, the improper use, potential improper use of insecticides, including cocktail, what they call cocktail mixing or mixing the different pesticides either real closely together or at the same time so, and what effect that's having as it pertains to this bill because this bill is very narrowly focused on genetically modified organisms and pesticides combined. So how would you, if we had as part of the provisions of this is more inspections, you would just need more folks? Is that what you're saying?

MR. ENRIGHT: Not necessarily. And, you know, talking specifically to this bill, not at all. The, we're putting in additional personnel to follow up on Tom. We had an ask in for eight positions and we've gotten five. So they'll be additional personnel for Maui.

VICE-CHAIR COUCH: Okay.

MR. ENRIGHT: And there's work to be done, but as you might have noted from the study that Department of Agriculture did with the Department of Health, our problem's not agriculture in a lot of these instances, it's the homeowners, it's urban use. So, that, we start there. And, you know, we're not having a problem with the large, and they're not really large by mainland standards, biotech companies. They're doing an excellent job of applying their pesticides. And, you know, when I was talking about the, what I found to be fallacious arguments, it's often the case when we're talking about pesticides that things get misstated and overstated. And so we do need additional personnel, especially in an ideal world, but they wouldn't necessarily be

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concentrating on the biotech companies. Biotech companies have the resources to get the best equipment, the best equipment we've ever had in the State for applying pesticides. I worked in, on plantations in sugar, I've worked in diversified ag. I was in the fields on Molokai when Professor Brewbaker's father, Jim Brewbaker, was doing research there and we were surrounded by the seed corn companies, which then were Holden and Funks, and they were applying pesticides. Currently, the biotech companies here in this State have state-of-the-art equipment. It's driven by GPS, it has digital readouts, it tells them how much pesticides are getting put on every particular plot. I mean, nobody's done it better. So, no, we wouldn't really need to be looking at these companies with the additional resources we had in the Pesticide Department.

VICE-CHAIR COUCH: Okay. That, I mean, that makes sense. You only limited me to one so I'm done with my one, Mr. Chair.

CHAIR HOKAMA: The Chair appreciates that. We'll have multiple rounds, as the Chair's indicated. Ms. Cochran?

COUNCILMEMBER COCHRAN: Thank you, Chair. And so just a opening general question, Chair, and it's, but, I think Mr. Gill mentioned that they are, this group is the EPA of Hawaii. Was that a correct statement I heard earlier?

CHAIR HOKAMA: Mr. Gill.

MR. GILL: Thank you for that question. One EPA program that the Department of Health is not delegated is the Pesticide Program. So when you talk about the Clean Water Act, the Safe Drinking Water Act, the Solid & Hazardous Waste, super fun things like that, those things that most people think of as EPA functions, those are things that have been delegated to the States, and the Department of Health has the same Federal authority that EPA does. On top of that, we have our State authority. When it comes to pesticides, that's the exception. And so, I think, usually throughout the United States, that Pesticide Program Federally delegated to EPA, usually resides in the Departments of Agriculture at the State level. But we work very closely. The Department of Health and Department of Agriculture work very closely. For example, when we take a raw agricultural commodity, let's just say it's a cucumber, and we run it through the lab and we find that it's violative, that it has too much of a pesticide residue than is allowed by law or if it has the wrong pesticide that's not even supposed to be on that cucumber, the first call that goes out is to the Department of Agriculture and they'll send somebody out into the field to identify and do an inspection of that farm. Similarly, if they find something in their inspections that's not quite right, this farm has, you know, in their shed, a pesticide that they're not certified to have, they'll call us and we'll follow up with the food sampling. I want to be clear, 'cause I maybe wasn't clear early on, we do this food sampling in food distributors mostly on Oahu. We have not taken rack samples, these food samples, on Maui recently because of all the cutbacks. We, like the Department of Agriculture, are trying to build back that capacity to look at the local produce being generated on each island.

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COUNCILMEMBER COCHRAN: Okay. Thank you. And permitting you folks, are you folks in charge of permitting, open-air testing and things of that nature?

MS. BAUSKE ZIMMERMAN: Open-air testing, you mean for --

COUNCILMEMBER COCHRAN: Experiments.

MS. BAUSKE ZIMMERMAN: --planting?

COUNCILMEMBER COCHRAN: Yeah.

MS. BAUSKE ZIMMERMAN: Or do you mean pesticide?

COUNCILMEMBER COCHRAN: Well, I guess that goes hand-in-hand with the open-air ag experiments, growing the seed crop, the, you know, what we're all been, what this bill is about in essence.

MS. BAUSKE ZIMMERMAN: Okay. Number eight in the findings, where it mentions pesticide cocktails, this practice is often being used on test crops in a trial and error manner to test and develop new pesticide-resistant strain crops. This can only be done under a Federal experimental use permit or in a State-issued experimental use permit if it is less than 10 acres. And I can say, for a fact, that in the last nine years, there hasn't been a State-issued experimental use permit for this practice for Maui County. There have been only five EUPs issued for this County, four of which for, were for the U.S. Geological Survey in Haleakala and one for little fire ant trials. So as far as open-air testing of experimental mixture of pesticides, that hasn't been done on Maui, in Maui.

COUNCILMEMBER COCHRAN: And so the, what you just stated, the open-air pesticide use, I guess, versus GMO crop fields are not one and the same to you?

MS. BAUSKE ZIMMERMAN: Well, all, no. All farming uses tank mixtures of pesticides to achieve their goal, conventional farming, even organic farming, mixes various pesticides to kill different pests.

COUNCILMEMBER COCHRAN: Okay. I've been to farms that did not though, but...

MR. ENRIGHT: If I could, Council member. You know, often in this discussion that we're having about, you know, GE crops and pesticides, we conflate the two issues. You know, we use pesticides in every type of agriculture. So it's a separate issue, you know, it's not unique to GE crops, it's often been said, and often misstated, about the overuse of pesticides and the experimental use. This just isn't the case and so they really should be dealt with separately. And that's what Christina was doing. Open air testing of pesticides isn't happening on Maui. Although, you know, there's plenty of people that will give voice to the fact that it is. It's, you know, it's selling fear essentially, but that's not happening. And then there's open air testing of

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GE crops and that gets released, you know, by the FDA and the USDA and we don't have that going on here too. It's released to come for field trials before it comes to Hawaii. So there's no real experimentation happening here. That's done on the mainland, and it's released for field trials, and we have field trials here. So, and I think those are the two differences and we can talk to those differences.

COUNCILMEMBER COCHRAN: Okay. Well, that brings up more questions in regards, Chair, that the climate, environment, in the mainland is very, very different from ours here in these islands, in the middle of the Pacific, especially our tradewind patterns, you know, and things of that nature. So ...

MR. ENRIGHT: Is this specific to which discussion, pesticides or, 'cause they're not, as I said, the same discussion or ...

COUNCILMEMBER COCHRAN: Yeah, I mean, just chemicals and pesticides in general that may be in the drift factor and I brought up a question, Chair, I think, with the EPA and they didn't quite have an answer so I'm not sure if it's this body that perhaps could answer it or maybe Department of Ag that may be arriving and it's in regards to the wind speed as to...and it's 2,4-D in particular, is the actual chemical that as far as I heard that the wind speed factor it could be sprayed in was bumped up quite substantially, somewhere from like maybe three to four miles per hour clear up to maybe 20 or so, or 15, 20, I mean, just, sorta, kinda an ungodly amount of miles per hour, just because of our, you know, traditional tradewind patterns that occur here. So the people who utilize that chemical here can use it on a regular basis. Otherwise with the original label, they could not.

MR. MATSUDA: Yeah. One part about the label, if it says avoid drift, that means, off, movement, off target movement. So even if you had a wind speed and they stayed within that wind speed; however, if the particle moved off sight, then that's a violation. So the label, again, we look for those statements. If it says avoid drift. I sprayed according to the wind but it moved off target, that's a violation.

COUNCILMEMBER COCHRAN: Right. But I guess this raised the level at what's acceptable to spray in, you know what I mean?

MR. MATSUDA: Again, the commercial guys, if you look at, they're very savvy. They're not going to say, well at 14 miles an hour, I'm okay, I'll spray. They look at nozzle size droppings to mitigate particle drift. They'll put surfactants in. They'll do all these practices and, again, they've got the, some of the best equipment out there.

CHAIR HOKAMA: Okay, I'm going to end this --

COUNCILMEMBER COCHRAN: That's fine, Chair.

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CHAIR HOKAMA: --question and response time. I want to be fair to all the Members. I allowed you three questions. Ms. Crivello?

COUNCILMEMBER CRIVELLO: Thank you. In reference to the certification of pesticide applicators using restricted pesticides, is there, well, we heard earlier that there's filing of their recordkeeping so that we can, I guess, crosscheck if they're following what is required of them according to the label, that the State submits.

MR. MATSUDA: Right. One of the conditions being a certified applicator, you have to keep application records for two years at the site of business. When our inspector comes out to do an inspection, one of the type of inspections is a certified application records, he'll ask, let me see your RUP records. He will look for all the different components. There's about 15 different components that the applicator, when he makes an application, has to jot down, date, place, common name, active ingredient, EPA reg number, REI, restricted entry and so forth, all this person has to keep those records for two years.

COUNCILMEMBER CRIVELLO: Chair, if I may. Are those records accessible via some sort of web, online, or ...

MR. MATSUDA: It is not a requirement right now. The only requirement by our statute is that applicator has to keep that record available at the place of business.

COUNCILMEMBER CRIVELLO: Okay, thank you. May I have a question for Mr. Gill? You mentioned earlier that most of the residues of pesticide use is much more prevalent in the urban area. So do you have any data or information in reference to Maui's groundwater and what kind of detectible residues, that, your findings, your Department's findings have?

MR. GILL: Right, okay. Thank you for that. Let me try and clarify. So what we have a lot of data on and what you have access to data on is groundwater that's being used for municipal drinking water. There's lots of tests and you get your consumer confidence report every year. By Federal law, your Board of Water Supply has to tell all the consumers what's in their drinking water pursuant to all the testing that's done. So everybody in this room should have received that or is in the process of receiving those consumer confidence reports in the mail. But that's not all groundwater, that's groundwater that's being used for human consumption. There are agricultural sources of groundwater or surface water as well. Most of the data that is available, we've published that data, vis-à-vis atrazine. We collected a lot of data that the plantations had collected starting in the 1980s and published that, you know, put all that together and presented it to the Legislature some months ago at the beginning of the session. So we did that research. We have availability to other studies that USGS has done. We don't typically sample and test for groundwater contamination unless it's, has some kind of environmental impact. And that's why we did this study is because there wasn't a lot of data out there. There was fear or assertion and presumption, perhaps, so we tried to take a snapshot to see what was really out there. One thing that we probably would want to do if someone were to ask, what more needs to be done

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specifically on Maui, it would be that groundwater study. We have very little data but it is, what we do have is available on our website, which is included in the handout that I gave you.

COUNCILMEMBER CRIVELLO: Thank you.

CHAIR HOKAMA: Thank you. Mr. Carroll?

COUNCILMEMBER CARROLL: Thank you, Chair. It seems like we have a lot of regulations and inspections and they seem to be very thorough. However, in the Kihei area, we've heard many complaints about, still yet, about having drift and misting off a property. Now I realize, even with all of the constraints you have on industry and what they're supposed to be doing, still yet, that does not mean that it is applied. With so many complaints, I realize when you go over there, the records are straight, they have the criteria to use the spray properly. However, with all these complaints, it seems like there would be some way, unannounced, to be able to test, going off the property and seeing if unannounced and seeing if you're actually having spray and misting off of the property. Now if there was just one or two complaints, I would say, well, you know, but there's a lot of complaints over a long period of time. What could you do to make sure that they are complying when you're not around and even with all of the compliance that they have to do, making sure that it's actually being done?

MR. ENRIGHT: Council member, is this germane to the biotech industry? Are these biotech fields that have the drift coming out of them?

COUNCILMEMBER CARROLL: I'm sorry?

MR. ENRIGHT: We're speaking to the bill on this petition initiative. I was wondering if the drift you're talking about in Kihei --

COUNCILMEMBER CARROLL: Yes.

MR. ENRIGHT: --if the drift was coming out of biotechnology fields? Was it coming out of a Monsanto field or ...

COUNCILMEMBER CARROLL: In that area, yes.

MR. ENRIGHT: And that's the drift you're talking about, is coming out of one of those fields?

COUNCILMEMBER CARROLL: And I don't know if it's pesticides or what is involved --

MR. ENRIGHT: Or irrigation.

COUNCILMEMBER CARROLL: --what is in this overspray. I do not know.

MR. ENRIGHT: Okay.

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COUNCILMEMBER CARROLL: However, it has been noticed by far too many people that there's obviously something coming off the property.

MR. ENRIGHT: I haven't, we're unaware of any complaints, so, but we will work with you --

COUNCILMEMBER CARROLL: Thank you.

MR. ENRIGHT: --you know, to the extent that we're now aware that there's a concern.

COUNCILMEMBER CARROLL: Yeah, because of these hearings, we've had a lot of testimony about this and it seems like there is enough smoke, there might be a fire. Thank you, Chair.

CHAIR HOKAMA: Okay. Thank you very much for your question, Mr. Carroll. Mr. Victorino?

COUNCILMEMBER VICTORINO: Well, first of all, thank you, ladies and gentlemen. You guys have been very informative, like this morning. We learn a lot by listening to what you guys do and how you do it and the methodologies involved. You mentioned urban, and I'll start with Mr. Gill, you mentioned urban, that, and your counterpart from the Department of Ag mentioned that urban seems to be where the larger challenges with pesticides has been reoccurring. And, in fact, if I'm not mistaken, a number of incidents in the recent years with pesticides overspray have been schools that were affected by private properties, not ag, private properties. Am I correct in saying that?

MR. MATSUDA: Yes, you are.

COUNCILMEMBER VICTORINO: Okay. And unfortunately we don't regulate private properties and homeowners. Maybe we ought to think about it. You need something else to do, Gary, right, just a little more work, right? No, but, we laugh about it but yet, really, we tend to forget where the real problems lie, okay, okay. So let me finish, that, so restricted use pesticides, which you can buy off the counter--you can't buy it off the counter? Okay. So I can't get something, like a homeowner, like chlorine, or something like that, isn't that a restricted pesticide?

MR. MATSUDA: Restricted use pesticide --

COUNCILMEMBER VICTORINO: Okay.

MR. MATSUDA: --you need to be a certified applicator and even the product you buy --

COUNCILMEMBER VICTORINO: Uh-huh.

MR. MATSUDA: --you have to be certified in a certain category.

COUNCILMEMBER VICTORINO: Okay.

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MR. MATSUDA: And you would go, not to a Home Depot or Lowe's, you'd go to one of these big ag dealerships and they have to see your license to purchase and they track your sales.

COUNCILMEMBER VICTORINO: Thank you for that clarification because I think there's been a lot of misinformation because many of the testifiers are saying that Roundup, it falls under that category. Is Roundup falls under that category?

MR. MATSUDA: General use. There's different formulations --

COUNCILMEMBER VICTORINO: Yeah, but, general use.

MR. MATSUDA: --but, yeah, and lot, I guess, poll you guys, how many of you have Roundup at home?

COUNCILMEMBER VICTORINO: Yeah.

MR. MATSUDA: Yeah, everyone.

UNIDENTIFIED SPEAKER: I got it too.

COUNCILMEMBER VICTORINO: Yeah, no, so, no. The point I'm just trying to get across is, you know, we regulate the agribusiness, we regulate commercial businesses, but one of the worst infractors of all of this is really homeowners and private users who really don't know what they're doing or don't even really think about how they apply. And I think, the other, the last and follow up with that question as far as the overspray, do you think that, in your mind, that if you're a company and you're trying to do what is right and, you know, make a profit like it's been stated earlier, that you're going to try to spray at the best times, the optimum times and not have the spray flying all over the place, because you'd be wasting your money if you're not hitting what you're supposed to be trying to target and you're hitting the neighbor or a property two blocks down the road, or two lots down the road, or two farms down the road, wouldn't that make good sense economically?

MR. MATSUDA: Definitely. All farmers, not only the big guys, the small farmers, while profit margin real small --

COUNCILMEMBER VICTORINO: Uh-huh.

MR. MATSUDA: --pesticides are expensive. You will not be indiscriminately spraying, number one. Number two, the label will tell you how many pounds per acre, per year, you can apply.

COUNCILMEMBER VICTORINO: Right.

MR. MATSUDA: So you cannot just keep pumping and pumping that stuff out on this small plot.

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COUNCILMEMBER VICTORINO: Uh-huh.

MR. MATSUDA: It'll tell you, if you exceed that, you are in violation of the label.

COUNCILMEMBER VICTORINO: Okay, thank you for that clarification and just so that the public understands what's going on. Thank you, Mr. Chair.

CHAIR HOKAMA: Thank you. Mr. Guzman.

COUNCILMEMBER GUZMAN: Okay. Thank you, Chair. Thank you for being here as well. There is a, I waited a long time, now I'm all tired. Anyways, let's see, where to begin. I think first of all, what's important to me is to try to connect what the Federal level does and what the State, what your duties and responsibilities are. I understand by this morning's dissertation, it was the Federal level responsibility. So that being said, there are records that are required or mandatorily imposed on the applicants, correct? And, so, you mentioned that, that all the requirement or mandatory responsibility for the applicant is to, the applicator, sorry, is to have the records available on site. They don't have to submit to your agency on a yearly or annual basis or semi-annual basis, correct?

MR. MATSUDA: Correct. The restricted use, well, applicators purchase RUPs, gotta have the license --

COUNCILMEMBER GUZMAN: Right.

MR. MATSUDA: --keep records every time they apply, and there's about 15 different components. There's a form they gotta fill out, keep it at a--

COUNCILMEMBER GUZMAN: Right, right, right.

MR. MATSUDA: --place and when, if we, and when we come on site, we ask to see those records, you better have 'em.

COUNCILMEMBER GUZMAN: Right.

MR. MATSUDA: If not, suspected violation.

COUNCILMEMBER GUZMAN: So I assume in speaking with the Federal level, they're talking about natural inspection scheme.

MR. MATSUDA: Neutral.

COUNCILMEMBER GUZMAN: Oh, neutral, yeah, sorry, neutral inspection scheme and they mentioned that, according to the Regional Office of the EPA, there were only five cases that they

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had detected, but I want to ask you guys, how many cases did you find in violation or misuse using the neutral --

MR. MATSUDA: Neutral inspection scheme.

COUNCILMEMBER GUZMAN: --inspection scheme because obviously you're not keeping the records, they're not required to give you records on an annual or semi-annual basis, so you're not overseeing it on a, but you have to actually go in the field and randomly check.

MR. MATSUDA: Okay, yeah.

COUNCILMEMBER GUZMAN: And so ...

MR. MATSUDA: That recordkeeping is one type of inspection. We do what's called a ag use inspection. We may not ask to see your RUP records.

COUNCILMEMBER GUZMAN: Uh-huh.

MR. MATSUDA: We will pick maybe a glyphosate product, which is a general use product, and do a ag use inspection. Where did you use it? How much did you mix? Did you wear the proper protective equipment? All this stuff, okay. If there's a violation of that general use label and all the documentation proves it's a violation, then it's a violation. Now whether it goes up to EPA, the cases that go up there are sort of what I call the hardcore, the farmer consistently violates, maybe basil product, when we had this back in 2012, keeps spraying dimethoate time and time again. So these, kinda, I call 'em hardcore, we send 'em up to EPA. Federal type inspections will go up to EPA. Import inspections, sometimes there's that Chinese chalk you find in the marketplace. It's a unregistered product. We will document that. We'll send that up to EPA for disposition, okay. We have a consent agreement with EPA Region 9 that, and the question came up, are you the regulators, EPA, yes, we are. We have a consent agreement to do enforcement. And we have Federal, well my inspectors, Federal and State credentials to be on property. We have to show these credentials.

COUNCILMEMBER GUZMAN: Okay, thank you. You mentioned that there were at least nine inspections you do a month?

MR. MATSUDA: Different types.

COUNCILMEMBER GUZMAN: Different types.

MR. MATSUDA: There's different types, okay, that inspector can pick from, but they do between eight and ten a month.

COUNCILMEMBER GUZMAN: Oh, okay.

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MR. MATSUDA: Part of 'em are complaints. If there's a complaint coming in, and that takes a lot of time, that's one type of inspection. Also, within a year's time, if you got cited, received a warning notice from us, the inspector has to do a follow-up for compliance verification, go back out, do another inspection to see, did you learn anything from the last inspection with you? So they're trained, it takes at least, kinda, two years, just to get up to snuff on all the different type of inspections. Sampling protocol is another thing our inspectors have to do. And we've got protocols they have to follow.

COUNCILMEMBER GUZMAN: I just, getting back to Councilmember Couch's inquiry wherein he somewhat inquired about the manpower issue. It seems to me that one person assigned to Maui to cover eight or nine different types of testing seems a little bit lacking. And I'm wondering, do you have stats of how many each test in category you were able to do in one year, 'cause you said eight or nine different types of tests.

MR. MATSUDA: Different types, right.

COUNCILMEMBER GUZMAN: So how many, like if you're gonna, A, B, C, D, and you categorize each test, well how many tests in each category were you able to do in one year?

MR. MATSUDA: The year will vary. Some imports inspection, that may be only two. It's the product coming in, like your mosquito coils, first times it comes in for the year, we go out and check that product. Every time it comes in during that year, we don't go out. There are producers of pesticides, we may go out. And there's probably only about, I don't know, a dozen or so of those guys, Statewide. So, again, those numbers gonna be very small.

COUNCILMEMBER GUZMAN: I just, it just doesn't seem too efficient, you know, in terms of randomly going out in the field and checking whether they're not in violation. Seems more efficient to mandatorily require them to submit on an annual or semi-annual basis their records so that you could comb through them and that's like a second layer of monitoring. It just seems like it would be more efficient that way.

MR. MATSUDA: Are you talking about their sales records for what they purchased?

COUNCILMEMBER GUZMAN: Or what they're applying, aren't they, don't they record what --

MR. MATSUDA: Yeah.

COUNCILMEMBER GUZMAN: --you know, their usage on their property, as, what you said dripline and all that drift and --

MR. MATSUDA: Yeah.

COUNCILMEMBER GUZMAN: --and you're saying that they're required to keep on property these records, the RUP records and you also said that they don't have to submit them. They just keep

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'em on file until and when you guys go on the field and do the test. So it could be months with, you know, misuse, until you finally catch them.

MR. MATSUDA: Yeah.

COUNCILMEMBER GUZMAN: But I'm just saying that it would be probably, and I'm just --

MR. MATSUDA: Okay.

COUNCILMEMBER GUZMAN: --asking the question.

MR. MATSUDA: Yeah.

COUNCILMEMBER GUZMAN: Wouldn't it be simpler to just require them to submit on an annual or semi-annual basis their usage documentation so that you can monitor it and kinda say, okay, I think you're using too much here and there instead of having the field testing.

MR. MATSUDA: Again, the label is the law.

COUNCILMEMBER GUZMAN: Alright.

MR. MATSUDA: Right. That's one part.

COUNCILMEMBER GUZMAN: I guess that's my point. How do you determine that you're enforcing the label?

MR. MATSUDA: One part we're trying to find in this inspection is that the sales records. We know what they purchased and we will target, again, not target, we'll pick one of those products. We'll show up unannounced and say I want to see your records for this pesticide. We know what you purchased. We look in your storage, what you got. We do the numbers and we're supposed to have x number of gallons, if it's not there, your records don't add up, where is it?

COUNCILMEMBER GUZMAN: No, no, I totally --

MR. MATSUDA: So that's ...

COUNCILMEMBER GUZMAN: --I agree with your neutral inspection scheme because you're trying to avoid discrimination.

MR. MATSUDA: Yes --

COUNCILMEMBER GUZMAN: I get that.

MR. MATSUDA: --that's one.

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COUNCILMEMBER GUZMAN: But what I'm saying is it would probably, is there, it's not discriminatory if you say everybody submit your records.

MR. MATSUDA: But the records wouldn't tell us ...

COUNCILMEMBER GUZMAN: They won't tell you their usage?

MR. MATSUDA: Only what they used.

COUNCILMEMBER GUZMAN: Only what they used?

MR. MATSUDA: Yeah, but --

COUNCILMEMBER GUZMAN: So that's ...

MR. MATSUDA: --not violation. It wouldn't say ...

COUNCILMEMBER GUZMAN: So you wouldn't be able to determine a violation on the usage of what they put in their records?

MR. MATSUDA: No.

COUNCILMEMBER GUZMAN: Oh, okay.

MR. MATSUDA: No.

COUNCILMEMBER GUZMAN: Thank you. I mean, I was just trying to get things clear in my mind.

MR. MATSUDA: Yeah.

COUNCILMEMBER GUZMAN: Okay.

CHAIR HOKAMA: Okay. Ms. Baisa?

COUNCILMEMBER GUZMAN: I'm good.

MS. BAUSKE ZIMMERMAN: Can I add something? One mechanism where people can monitor in a way how much an applicator is using is the RUP sales records, okay. Every RUP dealer which is licensed to sell restricted use pesticides has to submit a monthly report to our office of how much pesticides they sold, to what certified applicator, what product, how many gallons, how many pounds and what the intended use was for. If the inspector knows, and they're most times familiar with that farm and how much acreage they have already, if they see a product that they know is not, they don't have a crop that, they can use that product on, or that's too much product

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for the acreage that person has, they'll know that they can go out to that farm and do an inspection.

COUNCILMEMBER GUZMAN: The applicator doesn't have to, is not required to make the documents, I mean the records? The applicator themselves?

MS. BAUSKE ZIMMERMAN: No. They're two different recordkeeping things we're talking about here. So the one is the applicator records which, you know, they keep a record of how much they use and what acreage they applied on and, you know, all the essential information Tom was talking about. But the RUP dealers, the stores that sell the actual product, they have to document who purchased the product, their certification number and what farm they work for and how much they bought, what product. And so, that's submitted to us monthly and that's inputted into a database where we can monitor how much each farm is purchasing.

COUNCILMEMBER GUZMAN: Okay, and you guys monitor it?

MS. BAUSKE ZIMMERMAN: Yes.

COUNCILMEMBER GUZMAN: Okay, great. Thank you.

CHAIR HOKAMA: Okay, thank you. Ms. Baisa?

COUNCILMEMBER BAISA: Thank you very much, Chair. And, again, thank you to the panel members for being here today. We are struggling with some tough decisions here and we appreciate your help. Just wanted to briefly mention the subject of the pesticide drift and the testimony we've gotten. We got conflicting testimony. We had one testifier said that there was a problem with drift coming from a GMO farm onto the neighboring farm, which is organic, and another person testified and said they got along beautifully. So, you know, take it for what it's worth. What I did want to ask you guys was, you know, there's been a lot of talk about pesticide applications and records and all of that. Who trains people in the use of these pesticide applications? Whose job?

MR. MATSUDA: Ms. Baisa, for the restricted use pesticides, in order to purchase that, you need to take and pass an examination and that covers label comprehension, okay, and the State, the Federal laws and just about everything under the sun. If you took this exam, there's like 12 labels that you gotta look at and extract information. It's about understanding dilution rates, PPE, all this stuff. So for those that purchase and use restricted use pesticides, these guys are akamai. The general use stuff, anyone can buy, you can buy it, I can buy it. If you use Clorox at home, that's a general use pesticide, it has an EPA reg number on it. When's the last time you read that label, probably never, okay. It has a signal word.

COUNCILMEMBER BAISA: I learned how to use it from my mother. Portuguese are into cleaning.

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MR. MATSUDA: Oh, okay. But it says, you, if, when you pour that, you've gotta wear eyewear, protective eyewear 'cause it's the back splash, okay.

COUNCILMEMBER BAISA: Uh-huh.

MR. MATSUDA: So it's the label, I don't know if that was touched upon this morning, about signal words on pesticides. That gives you an indication on toxicity and even exposure.

COUNCILMEMBER BAISA: So who teaches these people this so they can take these exams?

MR. MATSUDA: We do.

COUNCILMEMBER BAISA: You do.

MR. MATSUDA: We're one source. The other is the College of Tropical Ag, Charlie Nagamine. But general use stuff, kinda you're on your own. Now we are working with the Department of Education, the Hawaii pest control industry and the Department of Ag, it's in partnership, to introduce school IPM, okay. If you haven't heard this word, integrated pest management. All the big guys use this, the farmers. It's about reducing the use of pesticides, looking at cleaning, sanitation, clean up your home, plugging all the pukas where the mice come in and stuff like that. Then if you gonna use pesticides, you established a threshold, at this level of roaches, I'm gonna use this product. And you can say, I'll start with green product. If that doesn't work, I'll go up to general use product. If that doesn't work, I'll call a pest control operator. So IPM, if you haven't heard that word, it's gonna be rolling out in the schools very shortly, integrated pest management and this is to educate, we're starting with the keiki, on what are pesticides. And, again, I started, someone says herbicide, pesticide, insecticide, pesticide. Pesticide's the broad title, all these others come under that.

COUNCILMEMBER BAISA: Thank you very much, Tom. It's really interesting to learn all these things. What I was trying to drive at is, you know, if we wanna make sure that people are doing these things correctly, we're gonna have to make sure they can learn, you know, and that certification's available. Thank you.

MR. MATSUDA: You're welcome.

MR. ENRIGHT: If I could, Council member.

COUNCILMEMBER BAISA: Yes.

MR. ENRIGHT: The, you know, we've had, if there needs to be a discussion in the community and the Council about pesticide use and about agriculture, you know, we're there for you and we'll be out there. But to be clear, you know, pesticide use in this case, it's not, our problem at the Hawaii Department of Agriculture in terms of regulatory and inspections, is not the biotech industry with pesticide use. So, and again, as I pointed out earlier, these are two separate

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conversations and to the extent that we need to have that conversation in this community about agriculture and pesticide use, we're happy to do that. But it's a totally different topic than what we're taking up here today.

COUNCILMEMBER BAISA: And it sure sounds like it when you find it more in urban areas. I suspect that a lot of it is household stuff. Thank you.

MR. ENRIGHT: And, you know, the question in the past several speakers, about water quality. What we find in the water sampling we're doing, these pesticides are left over from plantation agriculture --

COUNCILMEMBER BAISA: Uh-huh.

MR. ENRIGHT: --from sugar and pine, because back then the pesticides that were used were far more toxic and far more pervasive. The trend is towards less toxic, less pervasive pesticides. We're not seeing that, as Gary pointed out in the study of surface water. We meet next week with Deputy Director Gill to plan out the next studies that Gary will be doing and will be funding.

COUNCILMEMBER BAISA: Thank you very much.

MR. ENRIGHT: Very welcome.

COUNCILMEMBER BAISA: Money's everything. Thank you.

CHAIR HOKAMA: Thank you. I'm gonna ask for a short break for our panelists as well as Committee members and the Staff. So we'll be in recess 'til 3:15. . . .(gavel). . .

RECESS: 3:07 p.m.

RECONVENE: 3:23 p.m.

CHAIR HOKAMA: . . .(gavel). . . We shall reconvene this Policy Committee meeting. Members, we'll have a second round. The Chair will allow a second round for you to ask questions to our panel here of five representatives from Health, State Health Department and State Agriculture Department. So at this time, I gonna reverse the trend and ask Ms. Baisa, do you have a question for the panel, please?

COUNCILMEMBER BAISA: No, nothing specific, Chair, at this moment.

CHAIR HOKAMA: Okay. Mr. Couch?

VICE-CHAIR COUCH: Thank you, Mr. Chair. I guess this question goes to Mr. Gill and Mr. Enright. If you look at the bill, number 10 on the Findings, Section 2, the Findings, Page 3. Couple of comments in here and I just wanted to see what your response would be to this. It says the rapid

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development and introduction of GE organisms, combined with inadequate regulatory oversight at the State and Federal levels, have left the citizens of Maui with significant concerns. The Hawaii Department of Agriculture does not have an adequate regulatory structure in place to monitor GE operations and practices or to aid in the understanding of the impacts of these operations and practices on Maui's economy, environment, cultural heritage, or public health. The direct, indirect, and cumulative impacts on Maui County regarding the long-term intensive GE operations and practices and associated pesticide uses have not been properly or independently evaluated. Can you kind of talk to us about that? I mean, it seems pretty straight forward that it's saying you guys don't have enough regulatory structure in place or I don't know, can you just comment on that please.

MR. ENRIGHT: Certainly, Council member. Consistent with all 50 States in the Country, the Hawaii Department of Agriculture relies on its Federal partners to do the testing on all agricultural technologies, be it biotechnology, crops and/or pesticides. And, you know, what I hear _____ speaking to is sort of a mistrust of government, you know, which is part of what I see as context in this conversation, that you can't trust the Federal government to get the regs right. And, but that's what we do. Now the role that we play, that's played by Todd Suda on the far side, and I can hand the microphone over, we're asked by the USDA once a biotechnology crop is released for cultivation and for testing in the fields here to grow out, we check on the testing and that's what Todd does. So we have our role, we do it, we have adequate resources to do what the USDA asks us to do. You know, this is an overstatement of fact. You know, I've watched the work that the FDA does and that the USDA does on biotechnology crops and that the EPA and the USDA does with pesticides and they're doing their work, and then we do ours.

VICE-CHAIR COUCH: So you're basically saying that it is adequate then, it is an adequate regulatory structure, you have been properly evaluating the long-term intensive indirect and cumulative or direct impacts on Maui County?

MR. ENRIGHT: Well, you know, that's done by the Federal government. The Hawaii Department of Agriculture doesn't have the resources to be testing. So before, that's taken care of before it's ever given to be grown out here. That's been addressed by our Federal partners.

VICE-CHAIR COUCH: Okay.

MR. ENRIGHT: That's the point I was attempting to make.

VICE-CHAIR COUCH: Okay, and the other half of that, and Member Carroll talked about, all these complaints about drift and pesticides smells. It's my district in Kihei and we had testifier after testifier come up and say, hey, we've been smelling this pesticides and we've had pesticide drift and whatnot, and I was concerned, you said you have not had any complaints, nobody has called you and complained about pesticide drift.

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MR. MATSUDA: We've had from that area, Kihei, and our enforcement inspector has gone out. Again, if there's a complaint, please direct those people to call our office so that we can do the follow-up. If we do not receive a call, you know, we don't know.

VICE-CHAIR COUCH: Uh-huh.

MR. MATSUDA: But we have gotten calls from that area.

VICE-CHAIR COUCH: And lastly, are there any restricted use pesticides that are okay to drift? You said, some that says, on the label it says avoid drift and basically those are the ones you can't, you shouldn't go off of, offsite. Are there any that, that don't say avoid drift or even general use that don't say avoid drift? So everyone says ...

MR. MATSUDA: Some of your homeowner products won't have that on.

VICE-CHAIR COUCH: Okay.

MR. MATSUDA: But the RUPs, even the general use used in the ag production, again, some labels may vary but most of 'em would have that precautionary statement about avoid drift.

VICE-CHAIR COUCH: And, you know, there's been talk about that we have, you know, 15 to 20 mile an hour winds, there's lots of places that have 15, 20 mile an hour winds and there's no difference as to the labels, it just says avoid drift no matter what, right?

MR. MATSUDA: That's correct.

VICE-CHAIR COUCH: Or 100 mile an hour winds --

MR. MATSUDA: That refers to --

VICE-CHAIR COUCH: --just avoid drift.

MR. MATSUDA: --do not have particle move off target, when we see that word, avoid drift.

VICE-CHAIR COUCH: Okay. Thank you. Thank you, Chair.

CHAIR HOKAMA: Okay.

VICE-CHAIR COUCH: Oh, Mr. Gill.

MR. GILL: I never want to miss an opportunity to talk about how we need more resources. But I just, apropos of your question, there are a few things that I mentioned I'd like to reiterate. We used to do raw agricultural product testing Statewide. We only do it on Oahu now because we've lost staff. So if someone is concerned about potential pesticide residue, and Tom mentioned we had a

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big debacle about basil, 10 out of 13 basil farms that we tested were violating. This is, this is not big corporate ag, these are small producers. A lot of that crop was being exported. One small farmer, for example, we followed up with Department of Agriculture three times, told him to plow his crop under, keeps doing it, now I have to fine him on top of plowing his crop under, you know. There are incidences like that. We don't, and not to beat up on the small farmers, but that's where it takes the most resources to follow up. And when it comes to the genetic engineered seed crops, we don't test that 'cause that's not in the food market, right. That's not going into your grocery store. It's not like a tomato that's going off to the mainland to grow a crop. So where it comes to the resources that we need, what we're trying to build up, I would say it's two-fold. One is to build back that testing of the food that's coming into consumers' homes and secondly, as I addressed, there were data gaps as to what kind of long-term environmental impacts or residues are out there from the use of pesticides. It's not, you know, to be fair, this is not all scare tactics. Concerns about agricultural contamination in our drinking water are real and we're still dealing with it. We're still, on Oahu, putting carbon filters on our drinking water wells because of these chemicals that are still there after 20 years of being banned. And, in fact, the levels in some of these chemicals are stable or increasing, they haven't finished soaking down a thousand feet into the drinking water well. So these are reasonable concerns to be raised by the public and I appreciate that they are raised, that's our life, and the Department of Health to deal with those. It's a tough question in terms of allocation of resources. A lot of this is prevention. A lot of this is trying to get ahead of it. And that's the toughest thing, as you all know, to fund, right, to put money into stopping something bad from happening 'cause typically what happens is there's a crisis and then you throw money after the fact. So I think your resource question is appropriate and it requires some good policy thinking.

VICE-CHAIR COUCH: Along those, real quick follow-up, Mr. Chair. Along those resources, you had mentioned this pilot project and plus the data gaps. If we were to do something for Maui to be very comprehensive or, as, much more comprehensive than this test, what are you talking about in dollars, if we were to have to fund something like that?

MR. GILL: Okay.

VICE-CHAIR COUCH: For just Maui County.

MR. GILL: Oh.

VICE-CHAIR COUCH: Which essentially ...

MR. GILL: I can't be Oahu centric when I'm on Maui.

VICE-CHAIR COUCH: No.

MR. GILL: Okay. I'm just checking. Well, you know, this screening that we did, a one-time snapshot, took about \$100,000, roughly. So, you know, and you can just look at the number of samples taken. So, you know, say it's about 30, alright. So 30 samples, broad spectrum, one time, is

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\$100,000, right. So you want to do that every quarter? You want to do it every month? You can just run the numbers from there. You'd probably get some cost efficiency by, you know, doing a lot of sampling, you know get better breaks at the labs for the test results and things like that. But if you really wanted to do, maybe a couple year, in-depth review similar to what we did here on Maui, I would just throw out a ballpark of a half million dollars or so. That's just to test what's there, it's not necessarily the next step, which is, is there an environmental impact, right. We can find it in parts per million but, or parts per billion, or parts per trillion, but is that level actually having an impact? Is it having an impact on human health? Is it having an impact on ocean life or stream life? That's an entirely different study. For human health, an epidemiological study like that, we have experts in the room, or at least they were in the room, about, you know, that might be 30 years and, you know, millions of dollars to try and get enough statistical weight to determine whether there's an impact on public health or environmental health.

VICE-CHAIR COUCH: Okay. Thank you, Chair.

CHAIR HOKAMA: Thank you. Ms. Cochran?

COUNCILMEMBER COCHRAN: Thank you, Chair. And thank you for bringing up the point about past pesticides and things that were once deemed okay in the levels that were applied and used and today we're finding in our groundwater and we got GAC filters on our wells to clean them out for consumption. So how has that changed or shaped your way of approving or testing or regulating, whatever words you want to use, you know, chemicals used today because of, from past experiences, DBCPs, PCBs, you know, dioxin, heptachlor, I mean the list goes on and on. So the things that are here today hopefully doesn't turn into situations of the past and how are we addressing that?

MR. ENRIGHT: Well, I think I would point out some analogies. You know, we've learned a lot over the course of time. We know that, you know, smoking cigarettes causes cancer, that wasn't understood when people first started it. When asbestos first came out, everybody thought it was wonderful, now they understand that's not the case. Science gets better is what happens. People are far more educated. Information's out there. This is the information age. So there's a lot better understanding of pesticides and their use and abuse in the environment. And that's why the whole trend with pesticides is to less toxic, less pervasive pesticides. You know, the trend I see is towards you won't have many restricted use pesticides. Most of agriculture will move to general use pesticides and things that would almost be considered, would be considered safe by organic agriculture. That's the trend, that's where we're going. So there, the Federal government that does this testing is a lot better with the science. And that, I believe, is the real answer to your question.

COUNCILMEMBER COCHRAN: Okay. And in particular, though, you said that the, your Department of Ag hasn't had the, I guess, luxury money wise to do testing, but if I recall, testing at Waimea, the elementary school there and the air quality testing and in particular Table 15, the information

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that was gathered in that graph. What happened to that and how was that utilized, the findings in those tests?

MR. ENRIGHT: I would have to go back and check that. I don't have it in front of me. As I remember from what was found in those dust studies were, the majority of the pesticides that were in there were left over from sugar cane. I think there were two that might've been from current use agriculture and they were well below the benchmarks, but the ones that, you know, anybody might have had any concerns with, were from past use, from past practice, pesticides that are no longer in use. And, your, how's that, your question would be how did we apply that?

COUNCILMEMBER COCHRAN: Well, I mean, you said you didn't do test, but you did in this particular case. And so I'm just curious what the outcome is, regardless if it was from the past or it came from yesterday.

MR. ENRIGHT: Well, you know, we can control what's happening now. You know, we can't, just as, you know, atrazine in the water in the Hamakua Coast on the Big Island left over from sugar cane that's no longer there, we can't effect change on that, but we can effect change on agricultural practices that are happening now. And so, you know, I'm not sure where to take the question, Council member.

COUNCILMEMBER COCHRAN: Okay. Well, Chair, follow up on atrazine. That isn't heavily, being heavily used today currently on this island, right?

UNIDENTIFIED SPEAKER: It is used.

MR. ENRIGHT: It's used.

COUNCILMEMBER COCHRAN: Right. And there's a gentlemen, Dr. Tyrone Hayes, who had some pretty compelling documentation and test studies and what have you as to adverse effects of that particular chemical, which was pretty eye opening as far as I saw in his presentation. So how are you folks looking towards those types of, you know, findings in regards to that particular chemical that is widely used here?

MR. ENRIGHT: Not necessarily by the biotech companies though.

COUNCILMEMBER COCHRAN: Yeah, I didn't say, I'm just --

MR. ENRIGHT: I know.

COUNCILMEMBER COCHRAN: --pinpointing the chemical itself.

MR. ENRIGHT: I was just pointing out the difference between, you know, the pesticide questions and the biotech questions. Science always has dissenting views, it's the nature of science. You always want to look at the preponderance of evidence to see where the strongest voice for

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science is. And so, we, you would expect to have someone like Dr. Hayes, is it, from Berkeley I believe, out there with his opinion. Now to the extent that you see follow-up studies, you see other professors, because academics are very competitive, that would be jumping in and reproducing that and then coming up with their own studies. Then you know that you've got something, that there might be something there. If you have somebody that's been out there for years as a lone voice and there isn't any other research being done except by that one person, it calls into question the validity of that science. There should be dissenting voices though, he's one, but where's the preponderance of evidence. And the same thing is true with biotechnology. You can always find studies that will show you the dissenting voice but the preponderance of evidence is with the science. I think that's where we find ourselves today.

COUNCILMEMBER COCHRAN: I'm sorry, Chair, I have a comment to that. In particular, Dr. Hayes has --

CHAIR HOKAMA: We'll take, we will do that discussion at another point.

COUNCILMEMBER COCHRAN: Okay.

CHAIR HOKAMA: This is for questions at this time. So if you have a follow-up question, you can ask that.

COUNCILMEMBER COCHRAN: Yeah. I guess the other thing is in regards to, I guess Department of Health, there was a big runoff that had occurred quite a few years back in the Kihei area, North Kihei area, and the beach, the oceans off the shoreline were closed for I think ten days, and what was, you know, the determination as to the runoff and what had happened there?

MR. GILL: I'm sorry, Council member, I'm not familiar with that specific case. I could look into it and provide you with more evidence but just generally to say, and I'm not sure how this is related to the measure that's before you, but generally in Hawaii, I believe, that when the issues, the threats to water quality, the primary threat in Hawaii is polluted runoff, it's storm runoff. We don't have a lot of industry so the number of pipelines or outfalls that go into the ocean are relatively few, but the science shows quite clearly that impairments to our water quality happen mostly when rain hits the island and it runs over land that's been impacted by human development either agriculture or urban and that's where the impairments to our water quality, to our streams, and to our nearshore waters come from, far more often than from a wastewater spill or some kind of industrial discharge.

COUNCILMEMBER COCHRAN: Right but I guess the follow-up is how do we mediate or prevent that, you know, the runoff but then what's gathered in that sediment that now has gone into the ocean and now has, you know, permeated the reefs and everything?

MR. GILL: So there's two basic approaches that we take with this in the Department of Health and in Urban Environment, we have storm water permits for which your County is in the midst of getting one. Oahu County has storm water permit for, we call it an MS4, so it's requiring the

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counties of a certain population to better regulate the discharges that go into their storm sewer system. It may require vegetated swales and sweeping the streets or cleaning out the storm drains or green development, permeable surfaces, things like that, because what washes off your street from your parking lots into the storm drain and into the stream is a major water quality issue. Similarly on the agricultural side, there are things that we have been promoting, soil conservation techniques, watershed studies, for example, to help the farmers keep the soil on the farm, that's where they want it, that's where the stream wants it, that's where the ocean wants it to be, stay on land. It's been a huge challenge because it costs a lot of money and it requires, you know, a lot of cooperation from farmers to do that. But both of those efforts are a major part of my personal priorities for the Department of Health.

COUNCILMEMBER COCHRAN: Okay. Thank you.

CHAIR HOKAMA: Thank you. Ms. Crivello?

COUNCILMEMBER CRIVELLO: Thank you. Thank you, Chair. You know, we've been, and I've mentioned this before, this initiative in one end talks about the banning of GMO crops and then, it's been, there are notations or other pesticide concerns. But pesticides are basically used by conventional organic and GE crop producers, right? So they all have your oversight. With, knowing that, how much harm or is there much harm to our soil and, you know, when people farm, it's either once they clean up and prep their land, they're probably going to use pesticide before they start planting or, and as the crops are growing. So in your opinion, during these cycles, do you find considerable harm to our soil resources, and how are you able to measure that by the usage of pesticide if there is such a test, or do you have any kind of data to say, nah, maybe not that much, but, yeah, quite a bit?

MR. ENRIGHT: If I understand the question correctly, Council member, you're talking about the effect of pesticide usage, whether organic or conventional, on soil fertility?

COUNCILMEMBER CRIVELLO: Right.

MR. ENRIGHT: That's something that the Hawaii Department of Agriculture doesn't measure.

COUNCILMEMBER CRIVELLO: I see.

MR. ENRIGHT: You know, good stewardship is the, is what one expects from all agriculturists. It's part of the tradition, especially the tradition of family farms, so that you took good care, in this case, the aina so that it remained productive. There's a school of thought that, you know, if you wanted to produce high level of microorganisms in your soil profile, you would limit certain pesticides. But, I mean, organic still uses fairly toxic pesticides sometimes but they're, you know, certified for organic. So, no, that's, I don't think that's an issue with regulating pesticides. It's more an issue for the individual agriculturist and what they were looking for in their soil profiles.

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COUNCILMEMBER CRIVELLO: Thank you for your comment. Along with that, some of the testimonies we've listened to or heard, there is, well, you know, there seems to be mistrust with government, then there's mistrust with corporations. I would like to think that what you're saying runs true with the backyard farmer, the organic farmer, the conventional use and the GE crop production, all have that mentality that it is to malama or to care for the land because then if they don't, how will they continue to grow their crops? Am I hearing that from you?

MR. ENRIGHT: Yes.

COUNCILMEMBER CRIVELLO: Thank you. Thank you, Chair.

CHAIR HOKAMA: Okay. Thank you very much. Mr. Carroll?

COUNCILMEMBER CARROLL: Thank you, Chair. I have no further questions but I'd just like say I really appreciate you bringing the people over here today. I think it'll be a real help to the Council. We cannot make any substantive changes to what is before us. However, with the knowledge we have, I think we can make, more clarity to the general public about what will actually be on the ballot to give them the opportunity to make a really informed decision. And I think that is the best thing that has come out of today and the meetings we've had. Thank you.

CHAIR HOKAMA: Thank you, Mr. Carroll. Mr. Victorino?

COUNCILMEMBER VICTORINO: Thank you, Mr. Chair, and I'll echo my colleague's sentiment. I tend to believe that you brought a lot of facts to the table today, along with the EPA and the amount of regulations and amount of experimental as well as other trials that are being done before it actually hits the shelf to be used as pesticides and as far as all the work that the GMO programs do. So thank you very, very much. I do appreciate it. I guess, the question I have is, this is all about biotech and, you know, the pesticide use. Can you tell me, and I would go with the two end and maybe the pretty young lady, any of you, any of you, you know, I no like leave nobody out. In fact, I'd like to ask him a question 'cause I feel bad, he's been left out all day. He sat in that corner, and like, just a foreign child, just left out in the corner. I know, 'cause I sit on this end, I know how it feels to be left out, no feel bad. But in a way, like you said, if they don't ask me questions, I don't have to answer 'em, right?

MR. SUDA: Right.

COUNCILMEMBER VICTORINO: Okay. You know, can you tell me, are there major concerns in regards to biotech and how they've been applied in this State for the mass 20, 25 years? And you guys have been around it. Do you have major concerns in how they've been applied, following the rules, following the letter of the laws, both Federal, State, not in the county level, but, you know, now some of the counties seem to have rules and regulations, which, by the way, I wanna point out, are being challenged in court right now, both on the Big Island and on Kauai, okay. And they're not only being challenged by the big company, they're being challenged by small farmers also. So small farmers are also being adversely affected. But do you, Mr. Gill, and you

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can go right down the table, have any major concerns? I started with you because you're closest to us.

MR. GILL: Okay, thank you. I'm tempted to do my Paul Brewbaker imitation here and just say whatever, but thank you for the question because I think what you're getting to is what I believe to be the heart of this whole debate because I don't think at its core it's really about public health or that it's really about pesticides or environmental impact. I think those are related issues but I think what's really driving this question in many people's minds, whether they realize it or not, it's a question of local control and self-determination and maybe distrust. You know, growing up in Hawaii, I have problems with big ag, I have problems with the sugar plantations polluting my drinking water, I got problems with the, how come we had to export raw sugar and import refined sugar instead of making it here, right. They're economic questions. If someone is coming from the appropriate, from Hawaii, looking at what's good for Hawaii and they see these outside companies with, you know, records in the third world and, you know, trying to dominate agriculture and disrupt food democracy or keep us from feeding ourselves because of the profit motive of planting something here and exporting it instead of feeding ourselves here, all of these things come into play. Are they being good citizens? Are they helping the local economy? You know, all of these things come into play and I think it culminates into the question and this issue which is now on your ballot. But those are the fundamental concerns that I think should be applied to any industry, to any business. The hotel industry, is it good for us or not? Does it provide enough high-paying jobs or does it just make some foreign investor rich? These are things that we deal with as a society and you deal with in the political realm and I think that's fundamentally what you're dealing with here. So those foundational questions, I think, are appropriate to be discussed. I think where it's more difficult to address is, you know, legally, how do you control this kind of activity and it comes down to, oh, pesticide use or regulation of something small but that's kind of missing the bigger picture, which is economic and cultural in Hawaii.

COUNCILMEMBER VICTORINO: Good, thank you. And, again, you know, putting in the word moratorium, again, then paints another whole new firewall in this whole picture, which we've just discussed. But, go ahead, I'm sorry.

MS. BAUSKE ZIMMERMAN: I'm only going to speak to my experience as part of the Registration and Technical Review Unit. In my experience in that unit, I've only had positive interactions with GM companies. They are willing to release information that we request. They're willing to comply with label restrictions that we impose. So that's, in my view, based on that, I don't have any worries about GM companies.

COUNCILMEMBER VICTORINO: Thank you.

MR. MATSUDA: This is my personal take. I don't have any issues with GM companies. They, I majored in agriculture back in the '70s at the University of Hawaii, so I can talk from some experience of wanting to be a farmer. Also how tough it is and to take tools away from even backyard growers, okay, you restrict pesticides that can be used, organic guys, conventional

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farmers, the big ag. Do not take these tools away. It's tough enough to want to do agriculture and that's coming from me, who wanted to be a farmer back in the '70s. It's tough, folks.

MR. ENRIGHT: Council member, my concern is small agriculture. That's what we have here in Hawaii. We don't really have any big agriculture. Even HC&S by mainland standards is a small farm. That's what we have in this State and that's my concern. As the Director of the Hawaii Department of Agriculture, I'm charged with assisting agriculture and agriculturists are asking for technology and tools to be used. There's research that's ongoing for drought resistant pasture grasses and I know people that are running cattle Upcountry that are looking to put those grasses in play because they're having a hard time grazing up there with the reduced rainfall. And, you know, we're looking for it on the Big Island, on Molokai also. That's a biotech crop. That would be, you couldn't do that in Maui if something like this bill were to move forward. It precludes that. That's a tool that agriculture is asking for. So, you know, what happens with this conversation is it gets conflated. There are different issues. If you're anti-biotech, that means you've got a problem with the science of biotechnology, but you have to speak to it with science. What is your problem scientifically with it? And then, but it gets conflated with the pesticide usage, as we see here, which is a totally different conversation. It's one we can have and maybe should have, but it's a different conversation. And it gets conflated again with corporations and their corporate history, which is a totally different conversation again. One maybe society should have, but it doesn't necessarily speak to the science of biotechnology that's being done at UH Manoa and being done on campuses all around the world. It's, you know, and that's a distrust of large corporations but it doesn't speak to the science. And then there's the perceived health effects, which for the most part as far as I can tell are mostly anecdotal but they're thrown in the mix and then we argue with them. And my concern is that agriculture in this State, which we're trying to assist in rebounding from plantation agriculture, and as Professor Brewbaker pointed out, Dr. Brewbaker, that, you know, we're still in transition from plantation agriculture. It's going to take a generation or better. Most people thought that, you know, when sugar closed up and pineapple closed up, we would transition to small farms. That's not going to just happen. There's no institutional knowledge. So my concern, Council member, is that agriculture doesn't have the tools that it needs because there's public policy that comes forward that's not based on science. That's my concern. And thank you.

COUNCILMEMBER VICTORINO: Well, I thank you very much for all those answers. I mean, it is, hit the nail right on the head and I hope the public at large understands what we're trying to do here. And bad policy only leads to bad and, people, maybe in America, who will starve because they can't afford food. And it's bad enough as it is already. So, again, I relate to that young man who said they had to go back because they couldn't afford whole food or natural foods. Come on now. These guys, the organic farmers, well then show me where the proof is that you could do this. And if you drive out to West Maui, and I'll close with this, go drive West Maui and you see nothing by fallow land all of the way over starting from Ukumehame all the way until you get to Launiupoko, which is ag lots, not really ag, but ag lots. Thank you, Mr. Chair, and thank you very much, Members.

CHAIR HOKAMA: Thank you very much. Did you want Mr. Suda to respond?

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COUNCILMEMBER VICTORINO: Yeah, Mr. Suda, I don't want to leave you out. Come on, Mr. Suda, please, a quick response. Thank you, Chair.

CHAIR HOKAMA: Mr. Suda, you have the microphone in front of you. You can use that.

MR. SUDA: So part of my job is to review the USDA BRS permits. So the USDA sends it to me and I review it. If I have concerns, I'll add any additional conditions they need to follow when they plant these crops in Hawaii. So, for example, one time, rice was going to be grown for the first time in Hawaii, a GE crop. So I worked with that company to add additional conditions because what I'm afraid of is that I don't want that seed to spread throughout the island. So I worked with that company to have berms in place so that if there's a big rain, that this big berm will catch the existing water inside that area and also to add filtration in case that, again, if the water was to run, to strain out all the seeds so that it would be contained in that area so we don't have any problems with runoff. And another concern was having birds eating the rice seeds and spreading it all over the island. So we required them to have netting small enough so that the birds cannot go inside and also to surround the whole paddy area so that animals cannot go underneath the netting too. So working with them, they agreed to those terms and 'til today that's part of their growing conditions. And also other field crops like canola and wheat, too. They're required to have netting over it so that the birds cannot get to those seeds and eat it and spread it all over the island. And it's from the time, it's before the plant flowers until they harvest all the seeds and then they can remove the netting from that crops. And then, just to give you an idea, like last fiscal year, I did over a thousand inspections on fields, over a thousand fields I inspected. There's no violations on their part on our side. So they're, I mean, and since I started this job in about 2008, there has never been any violations I had working with the seed companies and they're always more than willing to give me whatever information I need and whatever, if I have any questions, they're always there to answer.

COUNCILMEMBER VICTORINO: So one follow-up. This thousand inspections, what, you personally did this?

MR. SUDA: Personally.

COUNCILMEMBER VICTORINO: All, and what, just on Oahu or throughout the State?

MR. SUDA: Statewide.

COUNCILMEMBER VICTORINO: Statewide.

MR. SUDA: Yeah. And I do roughly about 99. something percent compliance a year, inspections...sorry, getting nervous. But, so my mandate is to inspect every regulated field in the State. But the only reason why I don't get to inspect some of the fields is because it's grown in greenhouses and they determine, for some reason, that they're going to destroy the crop and they

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dispose of that corn or whatever it is, soybeans, before I get to that greenhouse. And that's the only reason why I don't inspect those.

COUNCILMEMBER VICTORINO: Well, thank you very much. You sound like you're working very hard and you need some help. So there's another, you know, expansion we need to put some money with you. But thank you, Mr. Chair. And thank you for participating and I'm sorry, I didn't want to leave you out and thank you, Mr. Hokama, for reminding me.

CHAIR HOKAMA: Mr. Guzman?

COUNCILMEMBER GUZMAN: Thank you, Chair. Yeah, I just...must be getting tired. Anyways, I do very much so appreciate the panel and I've learned a lot. And just reading through the ordinance itself or the initiative, I can see where Mr. Enright, is that right, can, you know, the analysis would probably be better presented if it was bifurcated, the issues. The, I have a little bit of an issue with, it's with the Federal government, this morning, they indicated that the EPA regulates the GMO products that have pesticide resistance to it and those are kind of like a small crop, a small percentage of the categories, which is corn, cotton and soybean. And it's my understanding that that type of GMO is not a pesticide in itself. Is that correct? Okay, so now you've got a section in this ordinance that's talking about pesticides and how the GMO, I guess, the seed companies use the pesticides. So my line of questioning today for you folks were how were the pesticides being regulated and used but I still haven't, I guess, had the information of how the GMO genetic portion of it has an impact on our County. And so it's a little bit convoluted in terms of understanding what pieces go where and that's where I, where my position is, and that's just a statement. And if any of you can clear that up and helping to analyze or interpret this ordinance, then that would be greatly appreciated.

MR. ENRIGHT: I'll take a shot at that, Council member.

COUNCILMEMBER GUZMAN: I guess, let me refine that. You said that it would be better if the issues were separated. Why? In what area do see that it should be separated?

MR. ENRIGHT: Well, you know, and I'll give this a shot. The, what the EPA was talking about was Bt corn and Bt soy. So they, and, you know, that bacterium is used in organic agriculture. So they spliced it in. So it's in the genetic --

COUNCILMEMBER GUZMAN: Yes.

MR. ENRIGHT: --sequence. So it's not being sprayed, it's not being applied.

COUNCILMEMBER GUZMAN: Right.

MR. ENRIGHT: There can't be drift, right. And so, but, because it was and is a pesticide, the EPA regulates that, then the FDA, then the USDA. So, but for the most part and especially with something as broad as this, you know, that's just one small part of the work that's being done in

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biotechnology. And, you know, this is broad brush. This takes everything out. So you don't have any of the tools. You know, if you've got a problem with a specific product that one of the biotech companies is putting out, then maybe that should be looked at if that's, you know, what the County wanted to do. But, you know, you don't want to take out absolutely all the science that's being done with biotechnology.

COUNCILMEMBER GUZMAN: So it's my understanding in Section 5, where it says, unlawful for any person or entity to knowingly propagate, cultivate, raise, grow, or test genetically engineered organisms within the County of Maui. That is a blanket for everything, including the wheat grass you're talking about Upcountry.

MR. ENRIGHT: Yeah, the drought resistant grasses, yes. You know, that would be ...

COUNCILMEMBER GUZMAN: They're not making a distinction between those crops that have that Bt, I would say, genetically modified gene within it.

MR. ENRIGHT: And it really is, what's being spoken to is the argument that the problem is so large that you're gonna shut down an industry to take a look at it. You know, that hasn't been demonstrated at all. But that's the argument that's being made here. You know, if you want to have a conversation about it, by all means, that's the democratic process, but, you know, I think it's extremely short-sighted, especially in terms of agriculturists and the way we feel about it, to take away all of these tools that we're looking at and not have science to back up the contentions that are being made for prohibition on biotechnology. You know, I really think that's the argument we're speaking to.

COUNCILMEMBER GUZMAN: Thank you, Chair. And thank you for your explanations. And at least I can get points of views and that's always helpful for the Council and our Members.

MR. ENRIGHT: You know, as you go forward, please, all of you, feel free to contact the Hawaii Department of Agriculture and we will be as responsive as we possibly can to any of your inquiries knowing the work that you're doing, but we always will be.

COUNCILMEMBER GUZMAN: Thank you. Thank you, Chair.

CHAIR HOKAMA: Mr. Couch.

VICE-CHAIR COUCH: Thank you, Mr. Chair. I really appreciate everything you guys have told us and, Mr. Chair, I appreciate you bringing them here and the EPA as well. As you know, this is only one portion of the bill and one portion of the regulatory group that handles genetically engineered, you still got the USDA and the FDA, right? Are you planning on trying to get them involved at some time in this proceedings, not necessarily today, but ...

CHAIR HOKAMA: I am sending them written correspondence if they have comments on the proposed bill for an ordinance.

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VICE-CHAIR COUCH: Excellent, thank you. And the other thing that gets to me, Mr. Chair, is, you know, this is the type of meeting we should have had before, you know, we went into the whole exercise about the initiative and everything. This is something that if we sit down at the table and talk about it, we could've probably come up with something really good but this, you know, this isn't Maui style. We're not doing it Maui style and that's, kinda disturbs me a little bit. It's not our, you know, your fault or anybody in this Council's fault, it's just that it's been shoved to us, we got 60 days to figure out what's going on. So I sure hope we can learn something about this and get everybody together at the table, all sides, and hash it out before we have to go into all these legal things. So, thank you, Chair, for bringing this up.

CHAIR HOKAMA: Okay, thank you. The Chair will allow last few questions for the panelists. They also have their schedules to attend to, Members. So is there any pressing question any of you would like to ask the members of this panel? Ms. Cochran.

COUNCILMEMBER COCHRAN: Thank you, Chair. And, I guess, just, probably for Christina in regards to a pesticide disclosure law that was passed two years ago and that is in regards, 'cause we were talking about the sales receipts or records and it's supposed to be posted online but as I understand as of today, I mean, as of yet it has not. And so, what, it's been two years.

MS. BAUSKE ZIMMERMAN: Unfortunately we've been in discussion with our AG's office in regards to confidentiality of some of the items in those records. Under Chapter 92F we are not allowed to disclose certain information. So we have to go through a lot of the records to make sure that nothing is being disclosed that is confidential to businesses or to personal individuals, personal information.

COUNCILMEMBER COCHRAN: So what was the point in this disclosure law then? Is that not to be open and transparent?

MS. BAUSKE ZIMMERMAN: So part of, a lot of the items that are confidential are personal information because RUP sales records lists the applicator's name, their certification number and personal, sometimes personal information, like where their address is. So we can't disclose personal information like that.

MR. MATSUDA: We are close. We're working with the AG's office and it is moving, it's in their ball court now. We've been asking them, what do you think about this part? So it's not like it's not moving, it's just taking a little longer time than we expected.

COUNCILMEMBER COCHRAN: Okay. 'Cause I had requested copies too and most of the information is redacted and you really just can't gather any information. It's basically just numbers, not so much who, addresses and social security numbers, I mean I understand that, but it's the basic who's using what, how much, when and all that. I mean, who's purchasing what and that's not even disclosed. So it's kinda a hardship in trying to figure stuff out. But, thank you, Chair.

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CHAIR HOKAMA: Okay, thank you. Any last questions, Members? If not, I'd like to thank the members of the panel, starting from Chairman Enright to Mr. Matsuda, Ms. Zimmerman, Mr. Todd Suda, and of course, Deputy Health Director, Mr. Gill. We thank you for making the trip to Maui, except for Mr. Suda who's lucky enough to live here. We thank you for your participation and we will utilize you for further resource and need for clarification. So thank you very much, members of the panel. The Chair's gonna take --

COUNCILMEMBER COCHRAN: Chair.

CHAIR HOKAMA: --a short break to bring up the Department of Environmental Management to respond to some of the needs of the Chair and for the Committee to find out, as the proposed implementing Department, some of their concerns and comments that would help us make a better informed decision. Yes, Ms. Cochran.

COUNCILMEMBER COCHRAN: Chair, real quick, before you move on. Because we were kinda limited in our line of questioning, is, if we have further questions to ask of different departments and people, can we send that via this Committee for further --

CHAIR HOKAMA: Please forward it --

COUNCILMEMBER COCHRAN: --answers?

CHAIR HOKAMA: --to the Committee Staff --

COUNCILMEMBER COCHRAN: Okay.

CHAIR HOKAMA: --and the Chair will forward it on the Committee's behalf for a response.

COUNCILMEMBER COCHRAN: Okay, great, thank you.

CHAIR HOKAMA: Thank you. Okay, we'll be in recess for 10 minutes. . . .(gavel). . .

RECESS: 4:14 p.m.

RECONVENE: 4:31 p.m.

CHAIR HOKAMA: . . .(gavel). . . This meeting shall return to order. At this time, the Chair will have before the Committee, the Department of Environmental Management, which if this bill moves forward and becomes an ordinance, would be the Department that would have some responsibilities in implementing the provisions of the proposal. This afternoon we have Deputy Director Miyamoto with us to share some thoughts with us regarding this consideration. Mr. Miyamoto, if you would please.

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MR. MIYAMOTO: Thank you, Mr. Chair. My initial reaction would be that this, we would treat this very similar to our other complaints that the County receives. We would go through the similar procedures like this Request for Service, someone would call in a complaint, we would have to get a name and, you know, contact information for that individual and the alleged allegation and everything. The Department of Environmental Management isn't quite staffed or prepared for any kind of investigation. We don't have the technical expertise, the funding to hire someone to do the analysis to confirm or either way whether or not it is actually a valid complaint. So at this point, we're really at the beginning of this process and we have no one assigned at this point for this type of enforcement action.

CHAIR HOKAMA: Do you have some ballpark figures regarding budgetary requirements for your Department's needs, Deputy Director?

MR. MIYAMOTO: Mr. Chair, at this time we don't really have any estimated, we don't have a idea on how much the analysis will cost on any sample and to try and guess at the frequency of how much, how many complaints we may get in a year. We have no historical data. So right now, we don't have any guess at this time as far as budgeting.

CHAIR HOKAMA: Okay. And so we can take that to mean also you have no, at this time, specific range of potential employee count, job description or classification types as well as any, I guess, we call it, equipment or operational budgetary estimates?

MR. MIYAMOTO: Correct. We have none, none of that's available.

CHAIR HOKAMA: Okay, I appreciate your candidness. Mr. Couch, any questions for our Deputy Director from the Department?

VICE-CHAIR COUCH: Thank you, Chair, no.

CHAIR HOKAMA: Ms. Cochran, any questions for the Deputy from Environmental Management?

COUNCILMEMBER COCHRAN: No, I guess not, I mean, 'cause they haven't really looked into this a whole lot and don't quite have, you know, any detailed, I guess, descriptions for us either. So I guess if it happens, they'll get on it and figure something out. 'Til then, as Chair, no questions.

CHAIR HOKAMA: Thank you. Ms. Crivello?

COUNCILMEMBER CRIVELLO: Thank you. No. It's, it appears as though the Department have no clue what this initiative is really about so I don't have any questions. It's not like they're ready to delve into it should it be something that would be assigned to them.

CHAIR HOKAMA: Okay. Mr. Victorino, any questions for the Department?

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COUNCILMEMBER VICTORINO: No. Like the rest of us, you know, I know they're ill-prepared at this point and I don't blame 'em because I have no idea what we're going to do with this, neither does the public. So at this point, I think we can wait and see what happens. And I think the next segment will be very intriguing and I think that's where we'll kind of formulate our plan. Thank you, Mr. Chair.

CHAIR HOKAMA: Thank you. Mr. Guzman?

COUNCILMEMBER GUZMAN: Nothing further. Thank you, Chair.

CHAIR HOKAMA: Thank you. Ms. Baisa?

COUNCILMEMBER BAISA: Not at this time, thank you, Chair.

CHAIR HOKAMA: Okay. Again, the Chair just wanted to bring up Environmental Management. They are part of the proposed ordinance. I can appreciate your comments as well as the Department's response. This Committee is still in discovery and therefore, I would agree, even we are not sure of the fate of this proposal as of yet. So, Deputy, any final comments for you or from the Director that may assist us in making a better informed decision?

MR. MIYAMOTO: Not at this time. Thank you, Mr. Chair.

CHAIR HOKAMA: Okay. The Chair would request that if you and your Director does come up with some comments, that we request that you share that with the Committee prior to our decision making.

MR. MIYAMOTO: We will. Thank you.

CHAIR HOKAMA: Okay. Thank you very much. We have time before I bring up Corporation Counsel. So by request, I will ask Mr. Lorrin Pang if he would like to come up and share some comments with the Committee regarding the proposal and if, and then after that the Chair will ask the Members if they have questions. Why don't you come here and have a seat please.

MR. PANG: Do you want me to go over my qualifications? But I do speak as a private citizen.

CHAIR HOKAMA: Yeah, for the record, since you know, the one thing I wanted to make clear for the Committee. Those that the Chair's brought up as resource person comes as a part of resource that has some level of qualifications. The Chair does not intend to use this as another opportunity for testimony or to rebut other people's comments. This is for resource to provide their point of view on the proposal as the Committee has received it. So let the Chair make it very clear on how he provided the resources for this Committee and what it takes to be a resource. Dr. Pang being one of, is my understanding, one of the five, I guess, authors of the proposal, would give them their opportunity through Dr. Pang to share some information

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regarding the proposal and then if the Committee has questions for clarification, the Chair will go through the membership of the Committee. So, Dr. Pang, if you would care to --

MR. PANG: Okay.

CHAIR HOKAMA: --share some comment with us please.

MR. PANG: Thank you, thank you. First of all, I'll go over my qualifications for the record. I am the Maui District Health Officer but I speak as a private citizen. I'm retired after 24 years with Walter Reed Institute of Research and the World Health Organization. I taught clinical research, that's research that has to do with humans. Before it comes to humans, we assess the animal and the lab research and the variability and consistency of the product. So the final stage is clinical but we're responsible to cover everything up 'til then. Currently I am a reviewer for US Congress of the research proposals, clinical research. We fund hundreds of millions of dollars of research proposals per year. I have been on the faculty of UH, Mahidol University in Thailand when I was stationed there, and currently I am a professor of medicine at the University of Brasilia. I would like to make some comments about the proposal itself, specifically as raised, the initiative as raised by all the comments you heard this morning. First of all, we spent a lot of time figuring out if we should go after a moratorium or a ban. And I, as a scientist, refuse to put out a ban, I refuse. I put a moratorium because if they can show us that that they can overcome our concerns, then it goes forward. If they can show us that the benefits, if they got the cure to cancer, and we take a little extra risks, then we go forward. So I, as a scientist, don't like ban. I would speak as a scientist. Next, specifically, like one of the commenters said, we go by the consensus of the general scientific opinion, especially if you hear all this testimony that, well you're going after this initiative, but it's not backed by good science. What is good science? What is good science? I can tell you. Good science used to be by a pivotal study, one pivotal study where you got a product, a chemical, a chemical combination or a GM mixture, and it comes to human trials with big numbers for statistical certainty. We did away with that idea because we found out there were not a single pivotal study, but there were two or three, maybe one in Africa, one in Molokai, because of the conditions against the pesticides. So we have two or three, but it is not hundreds of studies. So when they quote repeatedly, they have 1,700 studies and I reviewed 400 chosen at random, I'm working on 1,700, bring me forth two or three what you think you got. There are none. There are none of my quality which I review for. I'm asking for human studies. This is exactly the initiative, when I'm saying the studies are not adequate. I'm asking for human studies when it involves food. We eat it, we test it. We test it long term and we test it against the window of susceptibility, specifically fetus and young children. This is supported, not for food, but for pesticides by the American Academy of Pediatrics. They're asking for increased regulation and looking at the pesticides. What was said today about pesticides is true. We cannot test pesticides on humans but anything we eat chronic, consistently, we move forward and test in humans. So, yes, we do have two issues here, pesticides and the GE mutations themselves. And why did we lump them together? Because when I looked at the pesticide use, I found it was remarkably more with the GE methods of farming. I am privy to, I'm part of the suit in Waimea, Kauai, because of two GE companies, not Monsanto, they'll remain nameless, because we have forced them to divulge the number of

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pesticides and chemicals used, 80 plus. Now in my estimate, weed killer on the roadside, four chemicals. Maybe in the history of sugar cane and pineapple, maybe 15, okay. The most non-GMO today, strawberries and I forgot the other one, apples, 30. But when GE, genetic engineering, use 80 plus chemicals, not just the restricted use pesticides, but 80 plus chemicals, that rings a bell, that crosses a line, at least to me. And if you think, well, what's a little more, what if it was 8,000, what if it's 800? I use a basic principle of pharmacology that when you combined, now here we go, we're going to have a question of general consensus versus a lone opinion. The chemicals combined have a new effect that we don't know about and have to be studied than each component alone. I'm not saying it has an effect, but you have to look for it. It's either antagonistic and blocking, there's no affect or they're additive or synergistic. And when I calculate 80 pesticides, I come up with a trillion trillion, 10^{24} possible combinations which we have to worry about, a trillion trillion. I think, I wasn't the one who coined the term cocktail but I'm proud to use it. Now if you say, wait a minute, you mean we're combining 80 pesticides at once? I never said that. Every time I talk about the cocktail, I define what a combination or cocktail is. You could use, apply it together, you could apply it separately, well how far apart is separately? It depends on the persistence in the environment or in the human body. Some of these things in general, pharmacology, half-lives, we use five half-lives, which could be a hundred days. When they overlap in the body and environment, to me that's a combination effect, whether or not you apply them together. And, finally, for the human body and the environment, when the damage they cause, although the chemicals never see each other, when the damage they cause doesn't cure by the time the next chemical comes along or next five chemicals comes along, that's combination toxicity. Now, today we heard all about this thing, this is a strange argument, toxicity, Mr. Cocktail. And today we heard from the EPA, wasn't it, commenting about some of you asked point blank, are you testing the combinations? There was long silence and they said, well we have this different approach. We have an approach, we can't test 10^{24} . I have offered repeatedly a solution, to test the mixture. I call it the stew. That's how we test a lit cigarette. Lit cigarette, 500 chemicals, we test all at once in a burned cigarette, creosote. I have said that. But today we hear from the EPA that they cannot look at the septic components, look at common pathways and go with that because that is what the National Academy of Science, the NAS, proposes. I read the NIS, I quote the NAS, sorry, N-A-S. I pulled that paper, the one they referred to. I gave you a handout. That's not what the EPA was saying this morning. The NAS says to test the cocktail mixtures, test the entire mixture especially when the number of components is high, like above nine. That's when the combination theory, selecting separate ones break down. It actually says the EPA's position is little bit opposite of what they have. So all I ask is that when the EPA quotes their own reference, National Academy of Science, please quote it correctly. And I can quote, this _____, this is a big deal from them. I would just read one line here. It is highly relevant to examine the frequency at which environmentally relevant chemical mixtures, that means you don't have to put 'em together, they were there together in the environment, illicit cumulative toxicity. That's the National Academy of Science. This is not a small issue. Now when the GE companies use this enormous amount, that puts it in another area, okay. That's why I lump 'em together. I don't really care about spraying Roundup on the roadside, et cetera, et cetera. So we hear a report, didn't you just hear a report, that when we look, the State agencies look, it's from the home users, it's from the home users. Really? Did you look very carefully at the schools

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surrounded by the GE companies? Waimea Elementary School, West Kauai, sandwiched by Pioneer and Syngenta. It's not even about Monsanto. This is about GE farming practices. After the outbreaks at the school, which I investigated, Department of Ag came out, Department of Health came out, Department of Health withdrew the report because it didn't make sense. But the Department of Ag submitted the Department of Health report under their name. First of all, there's nothing magical about being in the medical field, but they don't have the credentials to go by the report. The report has been published on the website of Maluhia Group. So what happened after the repeated outbreaks at Waimea School? UH, University of Hawaii, and Department of Ag said they would do a study, a drift study. It's called the Kauai Air Drift Study. Final report published March 2013. We spoke against that study, me and my counterpart on Kauai. We said that when the outbreaks occur, these companies will behave and when you sample, whatever you see now doesn't represent what occurred when the children were sick. We spoke against that study. Nonetheless the study went forward. And they said that the study of air sampling compared to Waimea, sandwiched by the two, compared to a school in Hanalei, which is far away from the GE fields, it showed no, no elevated levels. The Maluhia Group, the group in Waimea, Kauai, published Table 15. I wished I had asked them. Table 15, it shows hundreds levels of elevation of three chemicals --they only tested for like five-- of three chemicals, chlorpyrifos, you know, carcinogen, highly toxic. Another chemical, neurotoxic. Another chemical, teratogenic. So they give a report and, out of their own report, you can say hey, look at those high levels. So to sum this up, I'm worried about the combinations and I believe rightly so. I'm worried about drifting off the fields if you do the correct sampling. And this is where, what pushes me into, according to the National Academy of Science, areas of unknown and uncertainty. When it's this uncertain, I don't even want to talk about the mutations yet. When it's this uncertain, you got two roads here. You can say, well I'm not stopping what we're doing until I see harm. To me, the recommendations I give to the U.S. Congress and the World Health Organization, this needs a moratorium. This needs a moratorium. It's not a ban. Furthermore, to me, if somebody brought in these animal studies and said let's go forward with the human studies, we don't even go with human studies. And you heard some of this this morning. You will not test your pesticides on humans, well that's unethical, but yet it seems to drift into our community, doesn't it? And you do not know the toxic effects even in animals of the combinations. No. And then they misquote or mislead me by misquoting the National Academy of Science, which clearly says, you have the handout, when we go forward, let's test the mixture, the stew. As you apply it to us, 80 chemicals, let's test that, not in humans, but at least in animals. A couple things I want to clarify. I only use and only understand the precautionary principle. The precautionary principle does not say, it never says, something has to be perfectly safe before you go forward. Nothing is perfectly safe, zero. Number one, that's the point, nothing is perfectly safe. And even if it was, you would never know it with certainty, the confidence interval. So let's, who in their right mind would say nothing is perfectly safe? That is a straw man set up to discredit the precautionary principle. What it says is, you will know the risk within relevant uncertainty levels and we go over this repeatedly. I'm going to give chemotherapy to your mother, the risk of her dying is 20 percent plus or minus 3 percent, and the risk of cure is 80 percent plus or minus 25 percent. Now you know the risk, you even know the benefits, you weigh it against each other. I really don't understand in this day and age how we go over again and again the straw man set up as precautionary principle. Finally, let's move

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to...interrupt anytime you want. This is how, the normal rapport I'm used to. Usually you interrupt when you don't think you're getting that much useful information. The GM papaya, I was very surprised that EPA said that's their jurisdiction because one of the modified proteins put in, they consider a pesticide, okay. So let's look at the GM papaya. There's stuff in there I worry about, glucuronidase, but never mind, there's stuff I'm worried about. It is a food. Why did we not go to human trials? You heard the EPA, Dr. Wozniak, he said, we think it's safe because the proteins of the mutation occur naturally. That's it, that's your answer, because the proteins occur naturally? That is, what they put in occurs naturally in another virus and they just stuck it in the papaya and express a protein. I've said this repeatedly on the Big Island, just because it occurs naturally doesn't make it safe. Now, shall we give examples? Water, at the wrong place, wrong time, it kills you, salt, Hepatitis B Virus, the exposure before the age of 3, you get liver cancer. Oxygen, wrong place, wrong time, blindness of newborns. That mutation is in every cell of the papaya with the marker I'm worried about, glucuronidase, plus the antibiotic resistant markers. It is a question of quantity not just quality. And I've repeatedly said this but they refuse to debate on this issue. So I'll leave that as it is. Next we hear the argument, we heard this afternoon, that this gotta be safe in the last 20 years, then they said 50 years, but then it's 30 years, but it's 20s, we've eaten trillions of GM meals, including papaya and we just don't see anything. This has been repeatedly argued and published and I consider this is the science behind that statement. It's called the trillion meal argument, three trillion meals. After three trillion meals, don't you think somebody went to the emergency room with a heart attack in the next two weeks maybe? Don't you think somebody had cancer in the next year? Don't you think so? Of course, after three trillion meals. What you really need to say is compared to a control group, but there's no control group 'cause it's not labeled. Certainly we seeing a rise of many things, autism, severe allergy in girls. I cannot make the comparison 'cause I don't have a control group. Even if I compared it, they would then tell you the argument, great, Dr. Pang, association doesn't mean cause. Yeah, that's right. There's five things that support cause, association, one of 'em. Alone it doesn't mean too much but if there's no association, probably no cause. But let's look for an association, okay. That's all we're asking, we're looking at associations of autism in GM foods and glyphosate. Continue on the three trillion meal argument. How many trillion cigarettes did we smoke before we figured out that in 1950 it causes lung cancer, in 1950, the Ochsner brothers, Tulane University? I think we smoked about seven trillion cigarettes, maybe plus or minus three trillion, before we saw it cause lung cancer. So three trillion doesn't mean a whole lot and at least in cigarettes we could solve it because it was labeled. He smoked, he didn't. GM food is not labeled. We heard this afternoon, oh that was the cigarette days. We figured that out, we do good science since then. Ever since learning from cigarettes, we could pick up GM food problems because we learned from cigarettes. Did we? How many years before we saw second-hand smoke, with the industry fighting and kicking, before we said second-hand smoke causes harm, another 20 years, okay. So as much as you think we learn, we don't learn or we forget. The final argument on the three trillion papaya is one of, part of the three trillion argument, is that you are giving me retrospective reports. Having eaten three trillion meals, and having seen nothing, let's give you that, that God tells you, Pang, you didn't look but God tells you it really was harmless, good. Thirty years ago, before we started eating the stuff, you didn't have this data, did you? And you are supposed to take a product, which is unknown in the health fields 'cause you don't have the three trillion meals, not 30 years ago, and you are supposed to

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present it to a community and say, here's the risks and benefits, precautionary principle. We saved the papaya industry and we kinda don't know what this will do, the health effects, we certainly don't have three trillion. You can tell them, we think the proteins occur naturally but some people say in this amount, that's pretty unnatural. So was there written informed consent? That's how we clear something that's not fully tested, written informed consent. My wife and I are going to contact Cornell University, that's where he comes from, and find if it was submitted. If it was submitted, I want to see the document, why there was no written informed consent. Furthermore, having worked and taught in this area for 20 years, there's a double ethical clearance. One is by the producer of the product, Dr. Dennis Gonsalves. I give him all the respect, I could never do what he did. But it is a ethical clearance by Cornell and the lowest level on the Big Island. If UH Hilo forms a ethical approval committee, so be it. It is a dual clearance. One is not dependent on the other and nobody depends on the FDA's claim of substantial equivalence, they ask for data. So there you have my arguments as we move forward case by case. This is not a general blanket on GMOs nor is it a general blanket on 80 plus chemicals. But every time they bring out a new product, I'm going to ask for the same thing. How's the written informed consent or do you really have proof? Did you do human studies? Now, lately, I'm supposed to be the science point of the Shaka Movement and I'm keeping up with the science. There's a lot of science coming out now, human stuff, out in the field, Dr. Carrasco, Argentina, showing that birth defects. Dr. Seralini, he was criticized but he republished again showing that glyphosate plus the surfactant has stupendous effects, not only in combination, there you go, combination, just two, and a lot of things about Dr. Seralini are just straight GM food and tumors. He republished. He was first to retract. He republished along with an article about scientific conflict of interest in publication. They blocked his publication, he republished. The world stands by him today. There are nine studies. I gave it to you previously by the American Academy of Environmental Medicine. Animal studies, on that alone, I would not move to human trials but yet they're marketed aren't they? Hey, how did we get this far ahead? I don't know. You got a letter from me, given to you yesterday, I submitted for support from the American Academy of Environmental Medicine, 300 Ph.D.s and M.D.s. They supported us for the GM Kalo Bill. I drafted a letter, the president said fine, she'll move it to the board. It's adding the pesticide issue. You know, when people speak science, you're obliged, as insulting as it might sound, to ask their scientific credentials and their financial conflict of interest, okay. You're obliged to say that. We do this all the time. You know my credentials. I have not yet declared my financial conflict of interest. I have no straight financial conflict of interest but the National Institutes of Health define political activity is conflict of interest. So the point is, have I met any one of you in a closed meeting? And I've disclosed this, I don't know if I did it publically, I met Elle Cochran once. The public wasn't disinvited but I didn't invite them either, in a closed meeting and we talked about exactly about the precautionary principle. I will never do it again, without inviting the public. I do not like closed meetings. That is by definition, National Institutes of Health, I'll give you the quotes, conflict of interest, political activities. That sandwiched between bribery and nepotism. But I want to congratulate all of you. You guys not taking the money. But you know there's stuff besides money. It's called enticement, the voters, you get elected. It's subtle, it's all over, I have it. People look at me the wrong way, I feel like I should change my opinion. It's subtle but let's let the science speak for itself. What were their credentials, their scientific credentials, especially in the health

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field? They're talking about health. What are their scientific, and will they be sued? Like I'll be sued if I say something wrong, I'd be dis..., whatever, not disbarred, but I'll lose my Board certification, I risk stuff saying this. But I'm backed by the American Academy of Pediatrics, their position paper, and I gave you that reference. So it is very easy, repeatedly for non-scientists to tell you, well let's just agree to disagree. Yeah, let's agree to disagree. To me, that's a copout, that's not the kind of science I do. And that's why, maybe, the U.S. Congress asked me to drive the science to the bitter end rather than say, well, you think that, I think that, so let's be it. Head of USDA, you didn't hear from them, did you, Tom Vilsack? I give you the quote. He said, you can bring me three scientific articles with three different interpretations. What he's trying to tell us, like the Department of Health told me in confidence, science can show you anything. That's not the kind of science I do, but if that's the kind you do, then I ask this Committee to look a little further and let's go with some of these debates, especially when the EPA references National Academy of Science and it wasn't their position at all. So if you have any questions, I'll be happy to be called at any time. I will not have closed meetings with anyone on this issue or any issue again. And I think I've covered all the major topics. I'm keeping abreast of all the science and it's coming in by droves now and so that's half my work. Any questions?

CHAIR HOKAMA: Okay, thank you very much for your opening comments, Dr. Pang.

MR. PANG: Thank you.

CHAIR HOKAMA: We appreciate your making the time and as well as sharing the various aspects of your presentation. Ms. Crivello, any questions you may have for Dr. Pang?

COUNCILMEMBER CRIVELLO: I'm not sure but, yeah, I do, or maybe some comments in respond to some of your comments. You mentioned that you did not approve banning of the GMO crops in regards --

MR. PANG: Yes.

COUNCILMEMBER CRIVELLO: --to this initiative --

MR. PANG: Yes.

COUNCILMEMBER CRIVELLO: --but rather used the word moratorium.

MR. PANG: Yes.

COUNCILMEMBER CRIVELLO: I know moratorium is kinda defined like temporary prohibition --

MR. PANG: Yes.

COUNCILMEMBER CRIVELLO: --but there's also, it's synonym to ban or embargo.

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MR. PANG: It's, to me it always meant provisional until certain conditions are met. And that's why they put the five of us on to lift the moratorium, to judge when it should be lifted.

COUNCILMEMBER CRIVELLO: Okay, so, I guess I'll come back to this in regards to your comment now. But I'm...may I continue, Chair? You mentioned the, about the proteins occurring naturally --

MR. PANG: Yes.

COUNCILMEMBER CRIVELLO: --with the Rainbow papaya or the Big Island --

MR. PANG: Yes.

COUNCILMEMBER CRIVELLO: --papaya. It's, maybe does not, in your opinion anyway, make it safe. You know, I have noted through my own reactions to some plants that I cannot ingest it because I have reaction to it because then I find further that it has nicotine.

MR. PANG: Okay.

COUNCILMEMBER CRIVELLO: I mean like, something like, tomatoes may have that or, and some other vegetables that we normally eat sometimes, just combine it. Would you say then it's unsafe for individuals like me to maybe consume a combination of the kind of vegetables that are naturally grown with such things, natural chemical as nicotine?

MR. PANG: Okay. I've learned enough to know I cannot predict what these things are. I have a degree in chemistry from Princeton University. But that's why we resort to animal studies or good animal models and if it's going to be a food, if you say, I'm gonna eat this stuff, and it was just me and you, I would say, let's you try it for a week. I'll see you in three days. I like the empirical observation. These things are so complex, I can only resort to giving the thing onto the person at the dose and watching and standing back. We repeatedly see weird stuff when we give what we thought would've been safe to animals or humans.

COUNCILMEMBER CRIVELLO: But, you know, basically, in the norm, in my opinion --

MR. PANG: Uh-huh.

COUNCILMEMBER CRIVELLO: --it may not necessarily --

MR. PANG: Uh-huh.

COUNCILMEMBER CRIVELLO: --be right, these type of vegetables or common foods that --

MR. PANG: Yes.

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COUNCILMEMBER CRIVELLO: --we consume --

MR. PANG: Yeah.

COUNCILMEMBER CRIVELLO: --have the natural base of the --

MR. PANG: Yes.

COUNCILMEMBER CRIVELLO: --chemicals and for most of us I don't think we have reactions.

MR. PANG: Yes.

COUNCILMEMBER CRIVELLO: So, likewise, I think with the papaya --

MR. PANG: Papaya.

COUNCILMEMBER CRIVELLO: --so --

MR. PANG: Correct.

COUNCILMEMBER CRIVELLO: --I, and I think the fact that the proteins are in there naturally --

MR. PANG: Okay. Alright.

COUNCILMEMBER CRIVELLO: --and as, I compare that with the common foods, with the nicotine.

MR. PANG: Okay, let me go with two aspects of this 'cause I just wrote a position paper for China, which is about the ban, GM food, remember I'm cautionary. There are acute effects, like you ate the bell pepper and you got sick within three days and there's chronic effects. My biggest worry of the GM papaya is there's a marker called glucuronidase. It makes the papaya leaf turn blue. Glucuronidase breaks down glucuronic acid. Glucuronic acid is a very important component in many foods and it's sold as a supplement in health food stores. It is an anti-carcinogen. It binds out I think there were seven carcinogens in seven animal models. So it's good to have glucuronic acid, guys are selling in it health food store, which I don't agree with 'cause that's a little too much, but I don't want glucuronidase breaking down glucuronic acid in my food, in every papaya. Where's the effect? You may see it long term in cancer.

COUNCILMEMBER CRIVELLO: Okay, thank you. Thank you for your opinion.

CHAIR HOKAMA: Okay. Thank you very much. Mr. Carroll, do you have a question for Dr. Pang?

COUNCILMEMBER CARROLL: No, I have nothing further. Thank you.

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CHAIR HOKAMA: Thank you. Ms. Cochran.

COUNCILMEMBER COCHRAN: Thank you, Chair. And thank you, Dr. Pang, for sharing with us. So you're one of the, I guess as Chair put it, authors of this initiative? You're one. How many, five --

MR. PANG: Yes.

COUNCILMEMBER COCHRAN: --four of you?

MR. PANG: Well there's five citizens who are assigned to kind of watch this. Alika was one and you heard her spoken.

COUNCILMEMBER COCHRAN: Is it, can I get the names of the others?

MR. PANG: Yeah, well, okay, there's Alika, there's Mark, Leohu Ryder, and Shannon, right? I just go by first names. And principally we don't have much responsibility except to speak to support it and if it does pass, we kind of have the responsibility of deciding when to lift the moratorium. If you got a cure for cancer and you've brought it through some kind of safety, or at least we can control it, I'm not against GMO, I published, vaccine, GM vaccines work in Hepatitis B. I want it contained, I want it tested, I want it labeled, I want it recalled if necessary and I want it monitored. I am not a Luddite.

COUNCILMEMBER COCHRAN: Okay, so you want to see, you folks, I guess, collectively, want to see this go to the ballot, I guess, to the vote of the community?

MR. PANG: Or if the Council so chooses to bring it --

COUNCILMEMBER COCHRAN: Oh, yeah, Council, well, it's here now but if does not --

MR. PANG: --I would like to see this passed.

COUNCILMEMBER COCHRAN: --then it will go because you had garnered enough signatures to get it on the ballot as a Charter Amendment. And so from there, though, what is your folks' intent? Like, what did you foresee as the whole rolling out of this? You just said that you, you five people would like to have final say but is that how --

MR. PANG: Well...

COUNCILMEMBER COCHRAN: --under your understanding is going to happen?

MR. PANG: What I hoped for is that you heard some of the testimony yesterday and I've given you a document ...(*inaudible*)... selection. This was published in science by Monsanto about organic vegetables and fruits, we heard about this yesterday. I hope we can hold the jobs by switching to

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this or if Monsanto's not going to do it, another GE company said, well we'll do it. They hold the patents on it so it could be very lucrative. If they want to bring in a GE crop, show us what you got. Show us the risks and benefits. Show us that you can contain it. Now, I base this on, because humans, we have done, medical people have done our version of GMOs, well, haven't we. It's call gene therapy. People are missing a gene, I gave it, the gene to you but what happened? The person inadvertently died of leukemia. I turned on the wrong genes. I turned on the uncle genes. So the medical community has strict, strict moratoriums on this kind of thing. It's not willy nilly.

COUNCILMEMBER COCHRAN: Thank you. And...follow up, Chair? In regards to, I know, I understand you like moratorium versus banning.

MR. PANG: Yeah.

COUNCILMEMBER COCHRAN: And so if I understand, there's 32 some odd countries, I think, that have actually banned --

MR. PANG: Yes.

COUNCILMEMBER COCHRAN: --GE. And do you know the collective reasoning? Do they all have different reasons or they all very similar in the reasons for banning?

MR. PANG: Okay, when we talked about moratorium versus banning, I really don't like the word banning but some people told me, and I don't know which country said what, oh, don't worry, we can ban 'em, we can change the law again. Well as long as things can be changed so it's not permanent, someday you're gonna have to cure the cancer in a whatever and it's gonna be, we're gonna have to weigh one against the other. But to me, really, none of these products wouldn't even go to human trial, let alone marketing. And I have the support of the American Academy of Medicine behind that. These, certain products, rice, one is rice, one is soy, and it's not rice in general, which mutation, which soy mutation, it's quite specific.

COUNCILMEMBER COCHRAN: Okay, I guess, what I was asking in regards to their final call on banning --

MR. PANG: Yes.

COUNCILMEMBER COCHRAN: --is it because of health issues, is it --

MR. PANG: Oh, yeah, yeah, yeah.

COUNCILMEMBER COCHRAN: --because ethical issues, I mean --

MR. PANG: It's both.

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COUNCILMEMBER COCHRAN: --that's my question.

MR. PANG: Well, what I understand, it's the environmental issue associated with planting it, all its use, pesticides. It was, like somebody said, a loss of control of the product. These companies come in, we have no control. It was about the health effects. It was about everything.

COUNCILMEMBER COCHRAN: Okay.

MR. PANG: Now some are just national security. We will not be dependent on these companies that might turn off our seed supply or food supply anytime. This, at one time, was a national security issue, food, terrorism, monocropping, et cetera, et cetera.

COUNCILMEMBER COCHRAN: Okay. Thank you.

CHAIR HOKAMA: Thank you.

COUNCILMEMBER COCHRAN: I'll relinquish the floor. Thank you, Chair.

CHAIR HOKAMA: Mr. Couch?

VICE-CHAIR COUCH: Thank you, Mr. Chair, and thank you, Dr. Pang, for being here.

MR. PANG: Sure.

VICE-CHAIR COUCH: You know, I'm trying to read what you gave us and it's very full of very big words, but having read through this it's talking about assessing the risk to endangered and threatened species from pesticides --

MR. PANG: Yes.

VICE-CHAIR COUCH: --and it talks about, a little bit of your mixtures --

MR. PANG: Yes.

VICE-CHAIR COUCH: --but then at the end it says something, that it, basically is no big deal, the last paragraph. But I can talk with you --

MR. PANG: Okay.

VICE-CHAIR COUCH: --later about that. My question is, what brought this whole thing on? Where's the smoking gun? What happened? I mean, this has been around, like you said, between 50 to 20 years, 20 to 50 years, where's the smoking, what happened?

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MR. PANG: To me the smoking gun were the animal studies. There are animal studies cited by American Academy of Environmental Medicine. You have it. It's in the references. The animal studies are very damning and worrisome and the animal studies, in my way of doing science, would not allow the U.S. Congress to take them to human trials. Then there are more studies, especially on the toxicities of pesticides. I had no idea these guys were using 80 plus chemicals. You remember, it's not just the restricted use pesticides, it's the chemicals. One guy showed...I had no idea that we're using that much, okay. And other guys are looking at these things now. Furthermore, I was a little bit appalled by the EPA, they said, well, you heard them today, we're not really worried about glyphosate because it's not a cumulative thing. But yet, cumulated or not, some people seem to have levels of it. Maybe you took it every day. It's on the food residue. That has yet to be shown. They did a cross section of the women, 30 percent have it. I want repeated samples on them to show they hold it or don't. If it's not accumulated, then they get it every day. It's like a daily dose of Lipitor. Now if you deny that, that that occurs, on a daily basis in 30 percent of the women, then tell me about the fetal effects and the congenital effects. And these animal studies coming out of the international groups, Dr. Seralini, this one wasn't recalled. This is straight study, the birth defects seen in Argentina, an epidemiologic population base, it had me very worried. Now, it's debatable. Were it enough to cause a moratorium, yeah. Were it enough to call it a moratorium? Especially because what, look, I feel bad about the jobs. I feel bad about the jobs if they were growing food. They're growing animal seed, or seed for animal feed. If you say, no they're not, they're growing seed for food overseas. Well they're not a little bit worried about that. But you know my position. I drafted it for the American Academy of Environmental Medicine. Somewhere, if this demand for these products, with this method of farming, growing our seed, comes back to bite you, the demand will shut down and I hope that the jobs will convert to organic and at least feed ourselves because Monsanto holds the patents on many organic fruits and vegetables. I'm not against Monsanto.

VICE-CHAIR COUCH: Okay. Well, thank you for that. The other, and I know, you told me when I was back there, you said, you know, you should question people's credentials. And I'm not questioning yours, I'm just, want to know a little bit more about this Congressional...

MR. PANG: Okay. It's called CDMRP, Congress Directed Medical Research Program and I sat on different panels. It's not GMOs but there's lots of GMO stuff involved because they make vaccines like that.

VICE-CHAIR COUCH: Uh-huh.

MR. PANG: And I can tell you some of, you know, collaborators, Dana-Farber Institute, Yale University, Columbia, Head of Microbiology Department. It's a high-powered group and I'm honored to be there. I take, I was supposed to take, comes out to like \$10 an hour but I refused that. So I do it free. There's no conflict of interest.

VICE-CHAIR COUCH: Okay. No, that's good. And sounding, you know, with all the papers and everything like that, I'm just curious of how often do you get a chance to work for the State?

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MR. PANG: These things overlap. We talked about a vaccine prepared in a transgenic cow, so we know transgenics.

VICE-CHAIR COUCH: Okay. Alright, thank you. Thank you, Dr. Pang.

MR. PANG: Welcome.

CHAIR HOKAMA: Thank you. Ms. Baisa, any questions for Dr. Pang?

COUNCILMEMBER BAISA: Thank you very much, Chair, and thank you very much, Dr. Pang --

MR. PANG: Sure.

COUNCILMEMBER BAISA: --for being here. And thank you for your involvement.

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: I know these things are not easy. They're not easy for us either because, you know, we're not scientists and, for me, I'm not a lawyer either. So I'm all ears, certainly trying to sort this out in my head with, keeping one thing in mind and that is to do no harm.

MR. PANG: Hm, yes.

COUNCILMEMBER BAISA: One of the things that I bring to the table is my experience, my history.

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: You know, I've been involved for a very long time in trying to keep the economy going in Maui County.

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: And one of the experiences that is weighing real heavily on my heart --

MR. PANG: Hm...

COUNCILMEMBER BAISA: --last night as I listened to all the folks on Molokai, and I listened to them the other day too, you know, I went through, when I was at MEO, the shutdown of Del Monte --

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: --went down through the shutdown of Molokai Ranch and was part of the people that, you know, tried to figure out what do we do for them.

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MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: --and I remember those heartbreaking days of trying the figure out how to bring them over to Maui on the ferry.

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: I was very much a part of the social impacts on families --

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: --when this happened. It wasn't only economic, it was social.

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: It tore families apart, literally --

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: --because of the loss of their income. So when I think about that, I get kinda scared --

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: --because, you know, I don't see the alternatives. You know, if you're on Maui, your opportunities are so much better --

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: --than they are over there.

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: And, you know, we pull hundreds of jobs on Molokai, Doctor, we're going to have a major --

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: --major economic social crisis to deal with.

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: And I don't know if we're prepared.

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MR. PANG: Okay.

COUNCILMEMBER BAISA: So, for me, I would like us to think this a little more carefully, plan a little better, before we say, okay, pau --

MR. PANG: Okay.

COUNCILMEMBER BAISA: --if we're going to say pau. I want to have an alternative. And, you know, I also bring the familiarity with farming attempts.

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: I was involved with Larry Jefts and the, you know, the things he went through.

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: He was doing great farming on Molokai and he had a terrible time with logistics and that's why he moved it to Kunia.

MR. PANG: Uh-huh.

COUNCILMEMBER BAISA: And, you know, Molokai is not the ideal place to transport goods out of there, even though it is wonderful, wonderful land and it grows beautiful, beautiful stuff. It's the logistics and that kind of stuff. So that's the number one thing that is just, like I said, tearing me apart because I just don't know how to deal with that.

MR. PANG: Okay. I have three things to say. I'll say it real quickly. I was giving testimony for Na Wai Eha, letting the streams flow and the company said that we don't have one drop to spare. We're going to shut down and take out all the jobs if you take one drop. Well, lo and behold they got 35 percent flowing and people said, eh, I thought you was going shut down. Oh, no, no, this is win-win, we're all happy, we found a better way to do it. First of all, when the company says we're going to lose these jobs, in a normal hearing of science, the officer would say, these guys have a conflict of interest, maybe you speak clearly but you have at least the appearance of conflict of interest so we take what you say with a little grain of salt, okay. Like I said, I handed out other alternatives but I worry like you. When Molokai shuts down and you're just like _____. Next, the thing I wanted to say is that we hear many people say, I'm happy with my job, I never got hurt, I never . . . *(inaudible)* . . . my kids are healthy. That's called a healthy worker effect. We had that same statement with the uranium workers. The guys who were there, the guys who were hurt and injured are dead, they're not there to tell us these things. The congenital defects, the ones who weren't even born, they're not there to tell us these things. So, you know, you kinda have to take, it's called, well you're healthy enough to report, so what about all the other guys who are broken? Are there broken people, yes. They've come to me for

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the last seven years, the Filipino workers and they shout all over the parking lot because they can't be seen with me. And I called the Department of Labor and I'm waiting for their response. You're a nurse, shall we see them together. They come to me in Kauai. They're the workers. You tell me who to send them to and I will. They got all kinds of problems and they say, we know you, we can't prove this, Dr. Pang, but I got this kinda parenchymal salivary tumor. Can you just check it out. I know it's just a case study of one. I'll never claim it's the community. And I said, well, what can I do? They said, help us, the bag says not for human consumption. They're putting the stuff in the bag. I won't even tell you what company. Says not for human consumption and we're breathing the dust and we're making homemade bandanas which don't work. And they're shuttling back and forth between a paralegal because they can't be seen with me in the parking lots. So I called the Department of Labor and I said, the bags says not for human consumption, when loading it the dust is inhaled, inhaled. And they said, yeah, but they're not eating it. And I said, they're breathing it. They said, are you a doctor? I said, yes. They said, we'd get back to you. It's been five years now. I've called them twice. They haven't gotten back to me, Department of Labor. So where is that regulatory agency who oversees that? There's stuff going on, Gladys. The mother, I can't pin what's what but it weighs against this too.

COUNCILMEMBER BAISA: Doctor, I understand what you're saying, okay, and I'm not going to try to dispute it because, like I said, I'm not a doctor. However, there is a reality here of a family that all of sudden is faced with its income withdrawn.

MR. PANG: Yes.

COUNCILMEMBER BAISA: How do they survive? You know, it's not funny when the wolf is at the door and you can't pay the house payment and you can't buy food. It's very scary. I'm, just wanna make sure that we are aware of what we might be doing and it's not an easy answer. So please understand how difficult this is for us too. Thank you.

MR. PANG: That's fine. Thank you. But if you have a suggestion, you know, put it in, we can modify the bill. I mean, there must be a way around this.

COUNCILMEMBER BAISA: There always is, reasonable people can sit down, I believe, and come up with solutions. Thank you.

CHAIR HOKAMA: Thank you. Mr. Guzman?

COUNCILMEMBER GUZMAN: Thank you, Chair. Thank you, Dr. Pang, for being here and thank you for your information as well. It's very informative. I have a few questions, well, let me start off, Chair, as I do, I have the same sentiments in terms of Chair Baisa. I mean, I do really feel for the people on Molokai and if there's a way that we can work together and solve this then that is the best approach. But at the time, at this time we're faced with dealing this ordinance and I would like to ask Dr. Pang a few questions in regards to the ordinance itself. On Page 8, when

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we're talking about the first phase, in, okay, basically, there's going to be a temporary moratorium and in order for a company to, I guess, be approved or released from the --

MR. PANG: Yeah.

COUNCILMEMBER GUZMAN: --moratorium, they have to go through this first phase. Now you mentioned here as a joint fact-finding group --

MR. PANG: Uh-huh.

COUNCILMEMBER GUZMAN: --is chosen and convened by the Maui County Council of scientists and health experts --

MR. PANG: Uh-huh.

COUNCILMEMBER GUZMAN: --free of GE industry ties.

MR. PANG: Uh-huh.

COUNCILMEMBER GUZMAN: I don't know the mechanism of how that's going to be conducted and if you can explain what your methodology is here --

MR. PANG: Uh-huh.

COUNCILMEMBER GUZMAN: --and who is the ultimate authority that says that they're released from the moratorium and if that, in combination with some of the testimony that I've heard, is that will one study be enough or are we going to be asking for more and more proof and more and more evidence? Where is the ultimate authority to finally say this company is released from the temporary moratorium? I'm just trying to understand the language here --

MR. PANG: Okay.

COUNCILMEMBER GUZMAN: --in that first phase.

MR. PANG: First of all, it would be as far as I understand and which I'd influence, it would be released on a product by product basis. It won't be a company. They got product X, we'll release it or not. To call the committee together is not that hard. I can tap onto friends and volunteers who review for the Congressional Delegation, they owe me, I owe them. We have many international people. We would try to keep it fair so they're not either for or against it and they certainly won't have financial conflict of interest one way or the other. The five people, as I understand it, can vote to release it or not. It is essentially a de facto EIS.

COUNCILMEMBER GUZMAN: Oh, I see.

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MR. PANG: Environmental Impact Statement, show me what you got. And in the EIS they allow for economic statements. So generally I don't like to weigh economics until I know the risks and benefits of the product but in the EIS is also the cultural, traditional, economic thing. So if you wanna say that oh, this could be, you know, this could hurt lot of jobs or, you know, whatever. But we have gone to court four or five times and we've always won in court before legislations was even thought about based on EIS and the judge would say, you come back with the EIS, we hear about it, maybe we let you go forward. And they said, we'll be back and they never came back.

COUNCILMEMBER GUZMAN: Okay. Thank you.

MR. PANG: This is a de facto EIS.

COUNCILMEMBER GUZMAN: Yeah, thank you for that clarification. Also, Dr. Pang, it also indicates that the funding for a such a joint fact finding group --

MR. PANG: Yes.

COUNCILMEMBER GUZMAN: --would be the company that's requesting the release.

MR. PANG: Yes.

COUNCILMEMBER GUZMAN: They would fund that?

MR. PANG: Yes, that is quite standard. Even today, you heard from the EPA. When there are studies to be done, it was quite alarming that they are allowed to do their own studies. But if they're not doing it, they should pay for it. There's money researchers overseas who more than willing to do and pitch in and do such studies. The question is who will fund it? Generally the companies fund it but they're hands off, they do not mess with the data analysis, they do not mess with the design and they certainly don't review it before published.

COUNCILMEMBER GUZMAN: Okay.

MR. PANG: This is old school.

COUNCILMEMBER GUZMAN: Okay. Thank you, Chair, and thank you for that clarification, Dr. Pang.

CHAIR HOKAMA: Okay. Thank you very much. Mr. Victorino?

COUNCILMEMBER VICTORINO: Thank you. And, Dr. Pang, thank you very, very much for everything you do. You know, I, too, have read through this and I'm not a scientist so many of the terminologies used in here are beyond me so I'll be the first to admit that. My concern, like

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my other colleagues is, you know, when and if this is passed, the economic impact and the immediate impact on families. I don't care what you say, they're the real people.

MR. PANG: Right.

COUNCILMEMBER VICTORINO: And right now these are people that every day I see on the street that are barely making what we call a survival mode and now we gonna do this, okay. I don't mind reasonable testing. I would be in support of some kind of reasonable period of testing, disclosures, if you want to put something like that, I'd consider that.

MR. PANG: Okay.

COUNCILMEMBER VICTORINO: I'd consider that. Something that we can all work together on, okay. Something that says that you now, you the companies, are going to start giving us all this information. I don't know what we can and cannot do. I don't know what the laws allows us to do, but we can create home rule and we can do a lot of things on our own.

MR. PANG: Yeah.

COUNCILMEMBER VICTORINO: Yeah. But, and outside, a moratorium is not where I want to go.

MR. PANG: Okay.

COUNCILMEMBER VICTORINO: It's not where I want to go and I'll tell you that straight. Ban, moratorium, I don't care what word you use, you hurt people, you hurt people. And so there's gotta be another methodology, there's got to be another methodology and I have committed to the other guys and I'm willing to sit down so long as everybody leaves their ego at the door and they're willing to come in with facts. Facts, bring me facts, okay, everybody bring me facts. No innuendos, no accusations, not I heard from my aunty, my uncle, or somebody else. Bring me facts and let's work it out. Do that and I can support this. Beyond that, I'm sorry.

MR. PANG: Okay.

COUNCILMEMBER VICTORINO: You know how I am.

MR. PANG: Yeah, yeah.

COUNCILMEMBER VICTORINO: You know how I am. And I respect you and that much, you know, I like what you have, you know, we've sat down and talked, not about this --

MR. PANG: Right.

COUNCILMEMBER VICTORINO: --but a lot of other things, while we were in jail for MDA we talked. That's a different jail.

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MR. PANG: That's public.

COUNCILMEMBER VICTORINO: That's public. Yeah, it was a public place and we had good fun. So, but I would, you know, Dr. Pang, I want facts and then let's see what we can work out with everybody so that nobody is adversely impacted on this, from those who are not born to those who have died and all the workers in between.

MR. PANG: That's fine.

COUNCILMEMBER VICTORINO: The public needs that. Thank you. Thank you, Chair.

MR. PANG: Let me just say that you, the last three comments or so seem to be hinging on jobs and this kind of measure passed in Big Island because no jobs were at stake. This kind of measure to block GM kalo passed because they weren't growing GM kalo, they were growing kalo.

COUNCILMEMBER VICTORINO: Right.

MR. PANG: So jobs weren't at stake. The other thing, some of you remember when C9 was added to our water Upcountry, C9. Who did we deal with? Did we deal with the EPA? Yeah. Did we deal with the company? Well, I can barely remember. They're Calgon. Did we hear from the citizens? So the question is, as Calgon played such a minor role in the decision to pull C9 from the water, why is Monsanto playing such a major role? Now, agree, there's jobs, we pull C9, jobs weren't really at stake, you know, people weren't depending on it. But in the past, having seen litigation, I've been in the litigation, you know, I don't want people drag their feet and say, oh, yeah, yeah, yeah, and then we sued and they were, we won 'em all, we won 'em all. And what they said yesterday, you know, trying to put biopharmaceuticals in our food without an EIS. I mean, I trust you guys, you guys clean, you didn't take the money and we can talk but just remember Calgon did not enter the picture when we pulled that product C9 from the County water. Now if they want to enter and they say, yes we're Monsanto, like you said, Mike, we need the facts. But what I see, not even the EPA could do that clearly. They cite the National Academy of Science and that's not what they say. That's not what they say about testing the mixtures.

COUNCILMEMBER VICTORINO: Thank you, Dr. Pang. Thank you, Chair.

MR. PANG: Thank you.

CHAIR HOKAMA: Thank you, Mr. Victorino. Is there any last question for Dr. Pang before we move on, Members? Okay, having none, Dr. Pang, we thank you for your --

MR. PANG: Thank you.

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CHAIR HOKAMA: --participation and presence this evening. I'm gonna bring up the Department of Corporation Counsel at this time. I have asked Corporation Counsel, Mr. Wong, to be prepared to advise the Council on its duties, privileges, immunities and liabilities. And so I'm gonna ask him if he has comments he can share with the Committee that is appropriate for open session and, if not, the Chair will consider taking this Committee into executive session as allowed by Hawaii Revised Statutes. Mr. Wong.

MR. WONG: Thank you, Chair, Council members. I think just about the only comment I can make in open session as it relates to this document, the proposed ordinance and its language, we all understand that it's information gathered from the Kauai ordinance. We also know that on Kauai, there's litigation pending in Federal District Court and the, I wanted to apprise this body that the current status of the litigation is, from my understanding, is on July 23rd, there's motions pending before Magistrate Kurren on the issue of Federal preemption. So in terms of the litigation, which is slightly different on the Big Island, I don't have the current status of that litigation but as far as the Kauai matter, it is pending before the Federal District Court, dispositive motions have been filed and they're set to be heard on July 23rd. As it relates to this ordinance, you know, I think I've said before that we should take a look at how the litigation plays out in other jurisdictions before we act on this. Without going any further, I'd like to ask that, you know, we, this body moves into executive session to discuss the rights and liabilities that may be confronted by this body.

CHAIR HOKAMA: Okay, thank you for that. Any questions for Mr. Wong regarding his comments in open session? If not, the Chair will entertain a motion to enter executive session as allowed by Hawaii Revised Statutes §92-5(a)(4) to consult with legal counsel on questions and issues pertaining to the powers, duties, privileges, immunities and liabilities of the County, the Council and this Committee. Mr. Couch.

VICE-CHAIR COUCH: Thank you, Mr. Chair. I move that we go into executive session pursuant to Hawaii Revised Statutes §92-5(a)(4).

COUNCILMEMBER BAISA: Mr. Chair, I second the motion.

CHAIR HOKAMA: Thank you. I have a motion made by Mr. Couch, seconded by Ms. Baisa to enter into executive session. Any discussion, Members? All those in favor of the motion, please say "aye".

COUNCIL MEMBERS: Aye.

CHAIR HOKAMA: Opposed say no?

COUNCILMEMBER GUZMAN: No.

CHAIR HOKAMA: Motion pass, seven ayes, one no, Mr. Guzman, and Mr. White is excused.

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VOTE: **AYES:** **Chair Hokama, Vice-Chair Couch, and Councilmembers Baisa, Carroll, Cochran, Crivello, and Victorino.**

NOES: **Councilmember Guzman.**

EXC.: **Councilmember White.**

ABSENT: **None.**

ABSTAIN: **None.**

MOTION CARRIED

ACTION: **APPROVE; RECESS open meeting and CONVENE executive meeting..**

CHAIR HOKAMA: We shall go into recess for executive session. . .(*gavel*). . .

RECESS: 5:37 p.m.

RECONVENE: 6:52 p.m.

CHAIR HOKAMA: . . .(*gavel*). . . The Policy Committee shall return to open session, Members. Again, we have done most of the discovery that the Chair had planned for today's meeting. The Chair, at this time, after consultation with executive session and our attorneys on our duties, privileges, immunities and liabilities, plans to adjourn this meeting. More than likely, we are, the Chair's gonna plan to schedule another meeting at the end, toward the end of this month to take comments that we have received today as well as continue to look at the various options that the Committee has regarding this initiative proposal before us. Ms. Nakata. Recess. . . .(*gavel*). . .

RECESS: 6:54 p.m.

RECONVENE: 6:54 p.m.

CHAIR HOKAMA: . . .(*gavel*). . . We're back to order. So yes, Members, as the Chair was saying, the Chair plans to reschedule this. The Chair's recommendation that we defer this item and that the Chair will repost for another Committee meeting, looking toward the end of this month. Any questions for your Chair?

COUNCILMEMBER VICTORINO: No questions.

CHAIR HOKAMA: Or any comments? Okay, with no objections, Item 78 shall be deferred.

COUNCIL MEMBERS: No objections.

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COUNCIL MEMBERS VOICED NO OBJECTIONS (excused: DSG, MW).

CHAIR HOKAMA: Thank you, Members.

ACTION: DEFER pending further discussion.

CHAIR HOKAMA: Thank you for your participation. It's been a long two days. We've covered a lot of ground and received a lot of information, so do your due diligence and the Chair will definitely give you advanced notice for the next Committee meeting. This meeting is adjourned. . . .(gavel). . .

ADJOURN: 6:55 p.m.

APPROVED:



G. RIKI HOKAMA, Chair
Policy and Intergovernmental Affairs Committee

pia:min:140701r:alp

Transcribed by: Annette L. Perkett

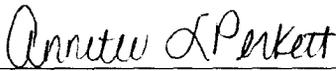
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CERTIFICATE

I, Annette L. Perkett, hereby certify that the foregoing represents to the best of my ability, a true and correct transcript of the proceedings. I further certify that I am not in any way concerned with the cause.

DATED the 29th day of July, 2014, in Haiku, Hawaii.



Annette L. Perkett