

Transcript for Video of Pesticide-Treated Seed Workshop, November 15, 2021

[Jennifer Teerlink]

Alright. Looks like we're at 10 o'clock here.

We have 93 attendees online so far.

So, we really appreciate you taking the time to join us today.

We'll go ahead and get started.

First, I'll start with some logistics.

First and foremost, my name is Jennifer Teerlink and I am the Program Manager for the Surface Water Protection Program.

And you're going to be hearing from 4 of us today.

My other co-presenters are Bryan George from the Evaluation Branch and Anson Main who is also a part of the Surface Water Protection Program, which is housed in Environmental Monitoring.

Before I pass it off to our Assistant Director Nan Singhasemanon I wanted to just go over some of the logistics for the day.

So we will be using the chat function for any technical issues you might encounter.

[Resolving technical issues]

I think we have a little bit of delay when we share the power to control the presentation here.

Alright so we'll also have opportunity for questions in public comment and we'll be fielding those through the Q&A box, as well as the raise hand function.

[Resolving technical issues]

Thanks for bearing with us here.

[Silence]

So I'll keep talking a little bit here as we wait for the presentation to come online.

So during the course of the presentation if you have any clarifying questions on the presentations as they're going you can enter those through the Q&A box.

Near the end we'll have both Q&A and raise hand, if you utilize that raise hand function the technical host will allow you and elevate you to speak but you'll still need to unmute your microphone and so we can remind you at that time as well.

So what are we going to be hearing today?

First I'll start off with an introduction and overview and then we'll be hearing about the regulatory framework from Bryan George and then moving into some of the more technical details about environmental fate and transport of pesticide treated seeds.

Before we wrap up the meeting and identify some key questions that we're looking for input on.

But before we get into that I wanted to pass it over to our Assistant Director Nan Singhasemanon for some opening remarks.

[Nan Singhasemanon] Good morning everybody, like Jennifer said my name is Nan Singhasemanon and I am an Assistant Director with the Department of Pesticide Regulation.

And you know I like to welcome you all to DPR's Pesticide Treated Seed Public Workshop.

We are here today really with three main objectives, 1 is to articulate the current regulatory framework associated with pesticide treated seeds, and 2 to characterize the potential for seed coatings to move off-site from where the seeds are applied.

And 3 to gather additional information on the current use and potential environmental impacts of the treated seeds.

And for this workshop we're particularly interested in learning from you especially on the third objective I just described, recognizing that there are likely valuable information and knowledge on the use of treated seeds in California and also potential related impacts out there that you can help us with.

So for the next hour or so our team is going to be providing with some background on the first two items I mentioned, including some information that we'll share with you on some research that's been done, also including some of the ones that we've done ourselves on the field level.

I think at the end we're going to be going through a series of questions relating to certain topics of interest that we'd like to get input from you.

So ultimately this is the first step in determining what, if any, additional actions would be necessary or appropriate for DPR to take on treated seeds, and so we're looking forward to taking that step.

We'll be posting the PowerPoints you're going to be seeing here today online, and some of the questions that we'll be going over.

And we intend to keep the comment period open for a while into next year (early next year) to get as much information that we can.

So at this point you know I'd like to just turn it back to Dr. Jennifer Teerlink of our Surface Water Protection Program to lead the presentation and also the subsequent discussions.

And again we really appreciate that you're able to make time today to be with us.

Thank you.

[Jennifer] Great, thank you Nan.

So as we mentioned we will be posing some formal questions that we're looking for feedback on.

Those will be posted on our California notice webpage along with a slide deck from today, and we'll be accepting comments through February 15th of 2022.

You can submit those either to the email that we've created for this topic TreatedSeeds@cdpr.ca.gov or via hardcopy.

And once I'm done chatting through these next 10 slides or so I'll drop the email into the chat so that you can copy that.

So just a little bit on time keeping, our oral presentations will go for about an hour and then we'll have a full hour for additional questions from all of you and any public comment you'd like to share today.

So a little bit more on objectives: share information on pesticide treated seeds, and then also share the current regulatory framework surrounding seed treatment products.

And for a little bit of additional context here, this is a topic we've been thinking about for quite some time but in the past year we've been thinking about a little bit more formally, and talking to colleagues that focus on different aspects of how we look at pesticide products throughout the state.

And so that would really focus on those seed treatment products.

We'll also characterize the potential for off-site movement of seed coatings.

And then finally as we've mentioned several times now, gather additional information on current use and the potential impacts of pesticide treated seeds.

I'd like to start off just by reminding everyone of DPR's mission, which is to protect human health and the environment by regulating pesticide sales and use, and by fostering reduced risk pest management.

One of the ways the Department fulfills this mission is through the registration of pesticide products.

Registration of pesticide products involves evaluation of their potential to cause a significant adverse impact on human health, plants, animals, water, and air.

Another way that we support this mission is through the continuous evaluation process which is supported by our environmental monitoring.

Both of which you'll hear more about today.

So I'm going to walk through some basic concepts and nomenclature to make sure that we're all talking about the same thing.

So first off what are pesticide treated seeds?

Seed treatment products are applied to seeds to introduce pest protection at the time of planting.

And these seed treatment products can contain many different active ingredients and different classes such as: fungicides, insecticides, bactericides.

Why are pesticide treated seeds used?

They can provide localized plant protection and protect against both soil and above-ground pests.

Some active ingredients that are described as "systemic pesticides" are able to absorb into the plant and distribute throughout its tissues.

This is shown through an image taken here from Lee et al. from Chemosphere (2018).

You can see neonicotinoids (which are a class of systemic pesticides) are taken up by the roots and translocated into the plant tissues where they can provide additional protection to the plant.

And it's worth noting that the majority of pesticide treated seed environmental fate research really has been conducted on neonicotinoids.

This is likely a result of a high proportion of cereals, oilseeds, and cotton that utilize seed treatment products for plant protection in the Midwest.

They do so often replacing other application methods.

Nomenclature, you've heard me say seed treatment product versus pesticide treated seeds.

The seed treatment product is the pesticide product that is registered both at the federal level and at the state level to coat treated seeds.

Once that seed is coated we refer to it as a pesticide treated seed and that's what ultimately is introduced into the environment.

So why are we interested in pesticide treated seeds?

Well from an environmental monitoring perspective, we're interested in understanding where the fate of that coating ends up in the environment.

This figure from Dave Goulson's 2014 Nature paper shows estimates of where neonicotinoids can end up in the environment after planting.

So some small proportion around 1% can be introduced as dust where it might move off the site of application.

About 5% is taken up in the crop, because as I mentioned neonicotinoids are systemic pesticides.

And so that leaves about 95% of the coating that is in the soil or soil water where it might move into other compartments, such as surface water or groundwater.

Alright, so when we think about where these pesticides end up, where seed coatings can end up in the environment, one of the ways that we can look at that is through environmental monitoring.

The Surface Water Protection Program, we've been conducting monitoring and surface waters impacted by agricultural since about 1990.

And characterizing the pesticide residues we find there supports our continuous evaluation process.

We have many tools to understand the relative contribution from different sources including different commodities and application methods.

However, those tools are not available for the mass of pesticide introduced through the planting of pesticide treated seeds.

As Nan mentioned previously we have conducted some field trials to get a better understanding of the relative contribution that might come from pesticide treated seeds, and you'll be hearing more about that from my colleague Anson later on.

So one of the questions that we've really been thinking a lot about over the past year are:

Are pesticide treated seeds planted in California coated with seed treatment products registered in California?

And while we understood at the beginning of the year that this was likely the case, we have been able to obtain some data from our partners at CDFA [California Department of Food and Agriculture] that really help shed additional light.

And the short answer is that the seeds planted in California are not necessarily treated with products that are registered in the state of California, and Bryan George will really help frame that regulatory process so that you can understand why that is.

And so finally I just want to close off thinking about what commodities use pesticide treated seeds.

Here are some images of wheat, corn, cotton, and these are largely planted throughout the Midwest, and there's some significant research on mostly neonicotinoid pesticide treated seeds.

However we really know in California that it's a much different agricultural landscape.

We have numerous commodities that are planted throughout the calendar year.

And so really what we're trying to get a better understanding of which of these commodities utilize pesticide treated seeds, and what active ingredients are used in those pesticide treated seeds.

And so, with that I'll go ahead and pass off to Bryan George, thank you.

[Bryan] Hello and welcome everybody, I'm Bryan George I'm a supervisor here at the Pesticide Evaluation Branch at DPR.

So for this portion of the presentation I'll be covering how the US EPA and the California Department of Pesticide Regulation handle the regulation of pesticide treated seeds and seed treatment products.

I will also touch on the evaluation criteria for seed treatment products and take a look at the landscape of registered seed treatment products.

Okay so pesticide treated seeds, and the seed treatment products applied to seed, are governed by different regulations in California than they are federally.

Seed treatment products require registration at both the state and federal level.

Pesticide treated seeds are not registered by either the US EPA or CDPR, so let's take a take a look at why.

So within the code of federal regulations treated articles are exempt from the requirements of registration with the US EPA.

A treated article is defined as an article or substance treated with, or containing, a pesticide to protect the article or substance itself if the pesticide is rather registered for such use.

So one example of a treated article is paint that has an antimicrobial pesticide to protect the paint.

If the paint label makes pesticidal claims beyond protecting the paint itself such as killing organisms on painted surfaces, then the paint must be registered as a pesticide.

So another example for wood products treated with pesticide to protect the wood from pests, and then pesticide treated seeds also fall under the treated article exemption and do not require registration at the federal level.

So in California a pesticide is defined as: any spray adjuvant, or any substance, or mixture of substances, which is intended to be used for defoliating plants, regulating plant growth, or for preventing, destroying repelling, or mitigating any pests which may infest or be detrimental to vegetation, man, animals, or households or be present in any agricultural, or non-agricultural environment whatsoever.

But to the extent that pesticide treated seeds are treated with a pesticide to protect the seeds themselves, they are not considered pesticides, as the pesticide treated seed is not intended to be used to control any pests.

Because these products are not pesticides, DPR does not register the products that are applied to the seeds to protect them from pests.

Okay so I'll now move on to some of what we know about registered seed treatment products.

According to the US EPA pesticide product information system, as of December 2020 there were about 629 federally registered products with seed treatment in the site description.

So moving on to California registered seed treatment products, we took a closer look at our internal product label database and using the criteria of active products in an application type of coding we identified 210 seed treatment products registered in California as of October of this year.

This is about a third of the 600 plus federally registered products.

So there are 68 different active ingredients registered for use in seed treatment products.

And many seed treatment products contain more than 1 and as many as 5 active ingredients.

Also the average number of active ingredients per seed treatment product was 1.3.

And only a small number of active ingredients (5) are unique to pesticide seed treatment products and have no other active registered uses.

So why do people treat seeds with pesticide products?

The simple answer is that lots of things eat seeds, and seeds are highly susceptible to fungus and bacteria.

All of which can be managed by the application of pesticides to the seeds.

California registers a variety of different seed treatment product types.

Many seed treatment products are registered with multiple use types such as combination fungicide insecticide products.

This chart shows a breakdown of the different seed treatment product types.

The total number of products registered in each type is listed in parentheses and the bars represent the percentage of each type relative to the total number of registered seed treatment products.

Fungicides are by far the most common type of seed treatment product, with nearly 80% of seed treatment products having fungicidal claims.

The next two most common are bactericides and insecticides, but at much lower percentages.

One thing I want to point out is that this is just a survey of registered products from our database.

It does not represent popularity, how well products work, or how much they're used.

So along with the variety of registered seed treatment products there are also many different active ingredients in registered products.

As mentioned previously there are 68 active ingredients registered for use in seed treatment products in California

Not surprisingly fungicides show up with the most frequency.

There are also a fair number of insecticide seed treatment products as well as products with algacide, bactericide, slimicide, and plant growth regulator claims.

Although hydrogen peroxide and peroxyacetic acid are distinct active ingredients I've grouped them together in this chart, because all 12 of registered products contain both active ingredients.

In addition to being registered for use as a seed treatment all of these active ingredients also have other uses such as plant or soil applied fungicides and insecticides, and antimicrobial products in the case of hydrogen peroxide and peroxyacetic acid.

In some cases the different uses might be on separate product labels while others might have all the uses on the same label.

Okay, before being registered for use in California, pesticide products are scientifically evaluated by DPR for potential adverse effects to people, animals, plants, air, and water that may result from labeled uses.

Products are evaluated on a case-by-case basis depending on their directions for use.

In general, an outdoor agricultural use product applied directly to soil or plants would be evaluated for everything in the table.

We evaluate such things as acute and chronic toxicity data in the area of human health, protecting the public including pesticide applicators by evaluating exposure, general product chemistry to characterize products, environmental fate to evaluate what happens to pesticides after they are applied, product efficacy to determine if products do what they say, and also non-target effects to plants and animals from product usage.

Seed treatment products may have fewer data requirements depending on the label directions for use.

For example, a seed treatment only product whose only labeled use is application to seeds in a commercial facility might be evaluated as any other industrial indoor process and not an outdoor agricultural use.

Because the use pattern does not involve direct outdoor applications to soil or plants, data on environmental fate, drift, and ecotoxicology may not be required.

If the product had those additional outdoor uses on the label it would be evaluated for everything.

However we have also identified inconsistencies in the evaluation of some products and are looking at how to better identify potential impacts from the downstream use of seeds treated with seed treatment products before they are registered for use in California.

So I'd like to end this portion of the presentation by summarizing some key points.

Pesticide treated seeds are considered treated articles and exempt from registration by the US EPA.

To the extent that a seed is treated to protect the seed, the pesticide treated seed does not fall under the definition of a pesticide and is excluded from review by DPR.

DPR requires registration for seed treatment products when the product is sold into California or application to the seed takes place here.

These products must also be registered by the US EPA.

Seed treatment products are evaluated according to their use directions.

Seed treatment products with additional uses may have more data requirements than a seed treatment only product.

However, as shown on a previous slide, there are only 5 active ingredients with no other use beyond seed treatment.

The vast majority of seed treatment product active ingredients have been evaluated for other uses such as plant or soil application to crops.

This means that most seed treatment product active ingredients have actually been evaluated for things like environmental fate and non-target effects to plants and animals.

Lastly, over the course of the past year the Pesticide Evaluation Branch has looked more closely at our evaluation process for seed treatment products.

We are looking to streamline the process of evaluating those products that are registered in California, seeking not only general improvements but also to increase consistency across all of our programs.

Thank you very much.

[Silence]

I don't know if we needed any clarification on that portion or ready to move on to Anson.

[Jennifer] I think we go ahead and move on.

I answered some of the questions that came up in the Q&A.

[Anson Main] Okay, perfect.

Good morning everyone.

Again, thank you for joining us.

My name is Anson Main, and what I'll be speaking with you about today is two different areas.

One, what we know about pesticide treated seeds in California, and then also providing a more broad overview of the fate, transport, and movement of pesticide treated seeds in the environment.

So to jump right in, one of the big questions that often comes up is what do we know about the use of pesticide treated seeds, and this is more specifically at the general level of the United States.

So pesticide treated seed use really has increased since about the early 1990s through the 2000s.

And a lot of what we know about pesticide treated seeds is based in the Midwest of the United States and we know for instance that insecticides when they're used on a pesticide treated seed are also typically used in conjunction with one or more seed applied fungicides.

On the left here is a figure from a recent paper in Bioscience and the y-axis here is looking at the share of acres planted with treated seeds as a percentage.

And the x-axis here from 2006 to 2014 is looking at a three-year moving average, and this is based on proprietary survey data of growers, and it's looking at all pesticides regardless of the active ingredient or who applied that treatment.

For example was it purchased as a seed treatment or was it applied by the grower themselves.

You can see here since the early 2000s corn as a pesticide seed treatment has really grown in use from 30% to about 90% to the acreage treated.

A similar situation with soybeans up to about 75% and also a similar situation with cotton and other row crops such as winter and spring wheat.

So another large question really is what mass of active ingredients are introduced to the environment through planting pesticide treated seeds.

This is looking at various active ingredients that are fairly popular in terms of different row crops, especially in the Midwest.

The majority of the data is from the USGS [United States Geological Survey] pesticide synthesis project.

This is national data so it was important to note here that seed treatment use was no longer included with the dataset after 2014 and just to provide you with some examples.

For instance clothianidin (which is a neonicotinoid active ingredient) when reported use in 2014 was up to 1.5 million kilograms per year, and this was reduced when no seed treatments were included to about 100 thousand kilograms per year in 2015.

Another example would be thiamethoxam.

Similar, with about 600 thousand kilograms of active ingredient applied, but when seed treatment was excluded (which is the black bars here) then you can see that it really drops down to about 100 thousand kilograms as well.

So what about the mass of active ingredient that's introduced to the environment through planting pesticide treated seeds?

This is looking at various farm resource regions throughout the United States.

And with respect to seed treatment products or pesticides treated seeds, there's been numerous studies that evaluated crops such as corn, soybean, or cereals in the Heartland or the Midwest.

Similar situation with numerous studies that have evaluated cotton in the Texas high plains.

But in contrast to California where we have numerous commodities, approximately 400 different commodities are grown in the state.

There's really few data or a few studies that have been conducted to give us a better idea of the mass of active ingredient being introduced through pesticide treated seeds.

So this is an excerpt from Christian Krupke and John Tooker's recent paper in 2020, which is basically giving you an infographic of the fate of pesticide treated seeds in the environment.

In particular here this is looking at corn where it would be coated in either clothianidin or thiamethoxam

In this case they're suggesting that about 2% to 3% is taken up by the actual target plant, the corn crop itself.

2% to 3% being lost is dust at planting.

Then 90% or more that can then move into adjacent waterways, soil, or even other non-target areas such as non-crop plants.

That could then lead to aquatic invertebrate exposure, exposure to non-target biota in terms of aerial or insectivorous birds, or even in terms of pollinators.

So what about the potential routes of exposure for non-target biota?

Well this is something where at DPR we review these routes of exposure in general, however as pesticide treated seeds have that treated article exemption it's not specific to pesticide treated seeds.

So looking at managed pollinators and wild pollinators, there's various routes of exposure potential through agricultural soil, for nesting for wild pollinators, dust as mentioned during the time of planting, the crop flowers as the plant grows, and even wildflowers in the adjacent field margins (if there are any) for potential exposures.

Looking at avian species, if it's a granivorous bird there is the chance that it could ingest the treated seeds.

And then some literature is also evaluated the potential for indirect losses of prey through water.

Lastly with aquatic invertebrates the major routes of exposure being run off from adjacent target fields into non-target ecosystems, the potential for dust deposition, and even if seeds were to make their way into water bodies themselves.

Seed coatings are transported into surface waters.

This is a study, one of the most comprehensive studies from the Midwest from Michelle Hladik's group, looking at Iowa corn and soybean fields.

In particular they were looking at neonicotinoid active ingredients, and these were frequently detected in Iowa streams associated with early planting of pesticide treated seed.

It's important to know here that greater than 80% of corn planted in the United States is grown using pesticide treated seeds.

Here one of the highest frequencies of detection was in the planting period in May and June, and this also coincided (or was associated with) seasonal rainfall.

One of the points to deliver here is that a lot of the crops grown in the Midwest rely heavily on seasonal precipitation for watering plants.

Whereas in areas such as California we're using a lot more irrigation, so there are differences there.

So what California commodities currently use seed treatment products and with which active ingredients?

To dig into this a little bit more we were fortunate to partner with the California Department of Food and Agriculture and through their seed services program they provide this with seed inspection data.

This really is the enforcement branch of CDFA and it is to protect seed consumers, to make sure that seed isn't making claims that they shouldn't be.

On the bag if there's information listed that doesn't coincide, or potentially even having some types of plants that are sneaking in, for example weeds or invasive species in the seeds themselves.

So they test for seed purity and germination through sampling.

They verify the accuracy of seed label statements and contents as mentioned, and this is required by the state of California.

However it's important to note that this is not specifically a pesticide monitoring program.

So what about which data are actually recorded?

Well the enforcement data that was provided to us extended from 2010 to 2021.

Approximately 25% of all of the records listed included a seed treatment product.

It's important also to note that this data is not comprehensive for all pesticide treated seeds available, but it does indicate the seed type, the county, the use, the label, and treatment or even the product name.

This is through visual inspection only so it is qualitative since no chemical testing is performed.

But also we should note that data are not specifically focused on pesticide treated seeds in this case.

For instance there's no info on EPA registration number, the percentage of the active ingredient, or even seeding rate to convert to mass of pesticide per acre.

So looking at the registration status specifically of seed treatment products, again through the CDFA seed inspection data, some of these numbers are not going to match exactly what Bryan has talked about because this is not exhaustive for all products.

But it does give you a sense of some of the registered products and then we'll do some comparison with California and US EPA registered products.

So the majority of seed treatment products here were not registered in the state of California.

However some seed treatment products were also registered to be used in the United States but outside of California.

To give you an example here: 21 products out of the 48 were California registered, 16 were registered by the US EPA but not for registration in California.

There were 7 where the registration was not found, specifically there was no associated seed treatment label that seemingly we could find registered with the US EPA.

There were 4 products that were currently cancelled by EPA as well.

As a reminder from Bryan's talk there's 210 that were registered in California and 629 products registered by the US EPA.

This just gives you a snapshot of some of that information.

So what about the concerns raised through the CDFA data?

Well the first one being that the non-California registered seed treatment products are being planted in the state.

The second is that seed treatment registration in some cases is not found this is an example of Tsunami which is the active ingredient of diquat dibromide which is a herbicide.

To the extent of our research we could find that it was sold online as a liquid formulation for the eradication of pond weed.

However, we could not actually find a seed treatment label that was registered for this product so there are some data issues there.

But there's also something of note here with the US EPA registered product of Storcide II, and it contains the insecticide deltamethrin and chlorpyrifos methyl.

The reason that we're highlighting this is these active ingredients are not actually registered for seed treatment use in California.

So looking at what pesticides are used on pesticide treated seeds planted in California, the CDFA seed inspection data would indicate that there was 58 different active ingredients that were represented.

Seventeen of these active ingredients are not registered for seed treatment products in California.

The pie chart here gives you a breakdown of the number of records by category with 341 there's likely to be some duplicative records here.

The orange (70%) that matches fairly closely with Bryan's talk is looking at 70% as fungicides and 18% (in yellow) being insecticides.

With seed treatment products not registered, some examples are pyrethroids such as cypermethrin, herbicides such as glyphosate, but there are some examples of noteworthy registered products such as organophosphates with chlorpyrifos, and the neonicotinoids as we've mentioned with clothianidin and thiamethoxam.

What about the pesticide mixtures that are on pesticide treated seeds?

Well the majority of products have multiple active ingredients.

The number of active ingredients in the CDFA data range from a low a single active ingredient up to 8 with most products containing 3 active ingredients as shown here in the orange bar, and that's typically multiple fungicides.

In terms of the commodities that utilize pesticide treated seeds, the seed inspection data indicated that pesticide treated seeds are used for at least 13 of 26 different US EPA crop groups.

The greatest number of products were for cereal grains, oilseeds, legumes, and cucurbits.

It's also important to note to the best of our knowledge only about eight crop groups are not actually represented by pesticide treated seeds.

Some of those examples would be citrus fruits, grapes, and berries, and even tree nuts.

So this would be something where it's more likely that certain active ingredients might be applied as a foliar, or even a soil application, but not specifically a seed treatment.

Also we want to highlight here that the focus of many studies as mentioned earlier really focus on oilseeds and cereal grains, so when there is literature available it seems like it's coming out of the Midwest on the more standardized row crops grown in those regions.

We also will highlight that some of our knowledge at DPR has been increased but also there's still gaps that remain.

We had some original questions on seed treatment products that were listed here and some of those have been answered.

For example, other than neonicotinoids whether pesticides are used in pesticide treated seeds, and this really is many, that there are a range of active ingredients and pesticide types.

As far as the crops that might utilize a pesticide treated seed, there's cereals, oilseeds, root vegetables, leafy greens, it's quite a huge list.

Another question is, are non-California registered pesticide treated seeds coming into California?

Based on the CDFA inspection data this would be “yes” that this actually is occurring.

However we also know there still remains some knowledge gaps.

For instance are there estimates of seed treatment mass that are applied or even the acres treated?

This seems to be remaining unknown as well as the proportion of the California market that uses pesticide treated seeds, again that's unknown.

So I want to present a little bit of information here on a California specific case study and this is going to be looking at a project that DPR, USGS, and California extension were collaborating on.

And so really what this is, it's looking at the transport from seed coatings used to grow vegetables.

These were lettuce trials where the experimental goal was to investigate the potential runoff of imidacloprid and clothianidin under irrigation conditions.

It was a two-year study looking at romaine lettuce grown from pesticide treated seeds and it was conducted at the USDA Spence Research Farm in Salinas from 2019 (being a pilot year) to 2020 (which is the full study).

The experimental setup was based on 16 different plots that had 4 treatments assigned to them.

Imidacloprid as a seed treatment, an imidacloprid drench, where it should be noted with the drench the seed itself was also treated with this azoxystrobin (which is a fungicide widely used in the area), clothianidin as a seed treatment, and then the control where there was no pesticides applied.

It's important to note here that the reason imidacloprid was chosen was that there's extensive monitoring conducted by DPR in the Central Coast region, and there are frequent detections of imidacloprid in California surface waters.

So that was part of the logic behind selecting imidacloprid in particular.

I also want to draw your attention to the fact that the imidacloprid drench is greater than 4x the rate of application than the seed treatment itself.

This can be an advantage of seed treatment due to the lower amount of active ingredient as the initial treatment.

You can see here that the concentrations increased after planting.

The control, to orient you in these following figures, will always be in yellow so no pesticides.

The dark gray bar being the imidacloprid seed treatment, light gray being clothianidin seed treatment, and the blue being the imidacloprid drench.

So in year two, the full study in 2020, soil concentrations were really low in pre-planting but in post-planting on the figure in the right you can see that there was noticeable increases in the active ingredients in soil themselves, this is the parts per billion level.

Neonicotinoids we also know can move off the site of application into surface water.

So here again, the control being in yellow, imidacloprid drench in light blue, and dark blue for the seed treatment.

And this figure in the y-axis here is looking at mean imidacloprid concentrations in runoff, and the x-axis on the bottom are days post-planting from 7 days up to 29 days.

And the highest concentrations of imidacloprid were in the drench, you can see here in the light blue.

Whereas sea treatments resulted in lower concentrations of imidacloprid compared to the drench at the time of planting.

So what about the potential mass contributions from pesticide treated seeds?

To dig into this a little bit more we used Monterey County as a case study.

I want to just orient people that may be less familiar, that part of what I'm going to be talking about is Pesticide Use Reporting (PUR) data.

DPR requires reporting of all agricultural pesticide use, and reporting here for PUR includes the pesticide applied, the amount applied, the area treated, and the application method.

Pesticide treated seeds however do not fall under the state definition of a pesticide and therefore are exempt from PUR reporting.

And seed treatment products in this case are really considered industrial use and do not have the same reporting requirements, so I just want to note that.

So in order for us to calculate the potential mass from pesticide treated seeds as mentioned we selected Monterey County which is the largest leafy green producer with approximately 75% of US lettuce and leafy greens grown in California.

So this became a good crop to use as a focal case study.

PUR data indicate that neonicotinoids in particular are applied to lettuce as either ground or aerial applications.

So this could include, for example, foliar spray or even a shank application to the soil itself.

We also know from our previous study of the seed treatment trials that lettuce growers do not use imidacloprid as a pesticide seed treatment in this region, and so our calculations here are focused on clothianidin and thiamethoxam.

So then the question becomes, how does the relative mass contribution from pesticide treated seeds compare to other application types?

This is looking at the max potential mass applied via pesticide treated seeds.

It's important to note that we calculated the individual mass for clothianidin and thiamethoxam separately.

And I'm going to go over several assumptions that were used for our estimates.

The first being that all lettuce hectares grown in the county were treated with clothianidin or thiamethoxam seed treatment.

The second being that the maximum seeding rate per hectare followed either label recommendations, or published planting rates, specifically through the University of California Extension.

The recommended maximum application rates were described on the seed treatment labels themselves.

And then the estimates were based on the following equation, where the mass equaled the maximum kilograms of active ingredient per hectare multiplied by the total lettuce hectares planted per year.

So it's important to note that this is overall, because we know that in many of the regions in California the crops are likely to be planted multiple times (up to 2 to 4 rotations per year) and it's important to also know that these are conservative assumptions.

Looking at the reported use versus the potential mass from the pesticide treated seeds, this is looking at the mean annual total mass from 2016 to 2019 on head and leaf lettuce hectares combined.

So the dark blue here to orient you is the thiamethoxam active ingredient, and clothianidin being more in the red.

When you compare that to the potential mass applied through seed treatment the light blue bar would indicate that it's getting closer to 12 thousand kilograms of active ingredient compared to about 2 thousand for application through foliar and soil.

As well as for clothianidin much less at about 500 kilograms of active ingredient is the mean mass applied, versus the potential mass applied through clothianidin treated seed we calculated at over 9 thousand kilograms of active ingredient.

So our estimates really demonstrate the pesticide treated seeds may introduce a significant contribution of pesticide mass that remains unreported in PUR.

So what about the relative contribution of pesticide treated seeds?

What is that contribution?

Well, Environmental Monitoring uses PUR data to understand the relative contribution from different application types.

The one unknown really is we do not know the contribution from pesticide treated seeds.

This gives you a map of various hydrologic regions (on the left) in California, and then the standard sampling bottle when we're collecting out in the field in various surface water regions throughout the state.

We know that reported use is through foliar and soil applications.

So there are certain assumptions where we can tie it back to the amount that might be used from one of those types of applications.

However when it comes to treated seeds, because they are unreported, that becomes much more of an unknown in terms of the relative contribution that might be occurring.

So finally there are some major questions that remain.

For example, how do we accurately consider the relative contribution introduced through pesticide treated seeds that are measured in California's surface water?

What about what is the runoff potential for pesticide treated seeds associated with different commodities, and are there regional differences throughout the state of California?

How do other active ingredients associated with pesticide treated seeds, and this is particularly for non-systemics, move in the environment?

And with that I'll finish up, and I'd like to hand it back to my colleague Dr. Jennifer Teerlink.

Thank you.

[Jennifer] Thank you Anson.

So we have quite a few questions that have popped up in the Q&A.

But before we kind of get to those just a reminder that all of the slides will be posted to our website, as well as a list of the questions that we'll walk through here in a moment.

I've had several questions about whether or not the actual present a video of the presentation will be posted.

We don't typically do that, but we have been getting a lot of requests, so if we do end up posting it we'll make sure to make it clear that it's available.

Let's see, before we move into the questions there was a question from Stephanie asking about the time after the lettuce was planted, the time points in which we collected water samples.

It's a little challenging to go back in slides with kind of our shared format here, so I'll just state that it's on slide 47 which will ultimately be posted, and we collected samples at 7 days, 8 days, 10 days, 14 days, 28 days, and 29 days after planting.

So before we move into the other questions I just wanted to highlight the questions that we are we are posing for stakeholders.

I have these on the next three slides here.

First, what California crops are typically grown from pesticide treated seeds?

Is there any industry tracking of what portion of these crops rely on pesticide treated seeds?

Second, is there any tracking of how much (for example, acres treated, pounds applied) total pesticide treated seed is planted in California?

What kind of insect or other pest pressures do seeds face?

Next up, for crops that use pesticide treated seeds, are these primarily imported, treated in California at a treatment facility or seed retailer, or treated on site?

Is there any industry tracking or documentation that details how much pesticide treated seed is imported into California for use in California?

What information is available on the mass of pesticide on the seed at the time of planting and how does that compare to rates stated on the seed treatment product label?

Our last slide here, the peer review literature heavily focuses on environmental impacts from neonicotinoid treated seeds.

Is there any information focused on other active ingredients utilized in pesticide treated seeds?

Is there any information on the relative environmental impact of pesticide treated seeds versus other application methods?

So those are the questions that we're posing, and as I'll go back up to our reminder here.

Comments are due February 15th and they can be submitted to this email or via hard copy.

So that's all of our presentation, and then just as a reminder we'll be using both the Q&A and the raise hand.

If through both Q&A and raised hand, if you could please identify who you're associated with that can help us there as well.

Alright.

Let's see.

So I'll start off.

We've had several questions from Susan Hume, and I'll do my best to answer these.

They'll show up in the Q&A after I've responded to them.

I don't quite have time to go over all of the programs in place with DPR, to help protect human health in the environment, so I'll just kind of emphasize some of the big ones and hopefully that will shed some light on some of your questions.

So let's see.

One of your questions is does DPR do their own testing?

This is a little bit complicated, so there's both registration of pesticide products as well as what we do after a pesticide is registered.

Again, I'm going to have to kind of paint some broad brush strokes here because that covers a lot of our programs.

During the registration process we do look at all of the registrant submitted studies in order to inform our registration decisions.

Then in terms of testing we do measure pesticides directly in the environment in surface water, and air, and groundwater, and we also have a pesticide residue testing program that looks at pesticide residues in the end products that are consumed.

We also have human health risk assessments that are conducted on specific active ingredients.

Let's see, answered that one.

Let's see, webinar, thank you for your comments.

Alright.

Then next I'll move to Kelly Moran.

Kelly Moran asked to follow up on the prior question, are you saying that DPR does not have data on the quantity of pesticide active ingredients introduced into California's environment in association with treated seeds each year?

So, the answer to that is "no".

We do not have Pesticide Use Reporting or specific information on the pesticide active ingredients that are introduced into the environment.

The second part of Kelly's question is without such data how could DPR compare environmental releases from treated seeds to releases associated with other uses of the same pesticide?

That's a really great question, and hopefully some of the response from our lettuce field studies shows some of the ways that we're trying to think about that.

But it is indeed a challenge, we don't have the relative mass from pesticide treated seeds.

Alright so I think just for my co-hosts here let's kind of shift we have Scott Wagner and Jason Eiserich are going to help with the Q&A, and then we have Brigitte Tafarella who is going to help with the raised hand.

So I'll kind of shift to you guys to help direct us from here.

[Jason] Great, thank you Jennifer.

So I want to remind everyone that during this public comment period, as Jennifer has said, you can either raise your hand and you'll be addressed and you can give verbal comments.

Please also feel free to use the Q&A (question and answer) chat box, and we will go through these and read the questions aloud and have individual parties that it's most relevant to answer those questions.

Let's see, this question is from Christina Duvas: seed piece treatment is another type of seed treatment commonly used for potatoes, treating tuber prior to planting.

Would this type of treatment be considered a seed treatment product or pesticide treated seed?

[Bryan] I guess I could take that, and I've ran across some of those products.

I guess it would be “both”, that would be considered a seed treatment and the product used would be a seed treatment product.

But of the products that I’ve seen that in, it generally would have other uses besides just treating potatoes.

But the treated potato pieces I believe would be classified as a treated seed, after they were treated.

[Scott] I’ll take the next question in the Q&A, this question is from Suzanne Hume.

She asks, any route of pesticide exposure must be monitored and regulated.

How will DPR address this gap?

[Jennifer] So I’ll go ahead and take that.

So we're really (as Nan mentioned in introductory comments) we're gathering information on pesticide treated seeds and so specific to that we we're really looking for stakeholder engagement and responses to our questions.

But there's been no determination of what if any action DPR is taking at this time.

[Jason] Right, and I think what we'll do is that I do see that there's a few hands raised.

I’ll send it over to my colleague Brigitte Tafarella.

Brigitte?

[Brigitte] Thank you.

Hello everyone, I have two raised hands.

I will call on individuals in the order they have raised their hands.

As a reminder I will grant you access to our ability to speak to the group, but you will still need to unmute your device.

We're going to allow 2 minutes per verbal remark.

At 1 minute 30 seconds I’ll give you a verbal 30 second warning and at 2 minutes I will mute your line.

So if you prepared a comment that you know will go over 2 minutes, please just request that additional needed time at the beginning of your remarks.

With that the first person, I will call on for verbal remarks is Michelle Hladik from USGS.

I have now given you the ability to talk, please unmute your line and the floor is yours.

[Michelle] Alright, thank you.

Hopefully you can hear me.

I just wanted to really thank DPR for giving this presentation.

I work at the US Geological Survey and the main focus of my research group is to determine the environmental fate, transport, potential effects of pesticides, and working in California we have this great pesticide use database but without this key piece of seed treatment information it makes us hard for us to design studies.

We really look at current newer use pesticides, and changing use, and also when we do measure some of these compounds, having the ability to go back and as has been discussed determine was this a potential seed treatment application, was this a foliar spray application, could be really helpful in sort of our piece of work, and helping you know this whole environmental fate and transport.

I just wanted to put my comment in about that.

I know there are some other questions.

I know much of the focus of seed treatments has been neonics (neonicotinoids).

There is some other work that looks at some of the fungicides, but because their application levels are lower and they haven't been in such the spotlight, they haven't been as studied as those neonicotinoid insecticides.

But once again California provides a unique kind of area, most of the work's been done on Midwest corn and soybean, to a lesser extent cotton.

And those are, you know, much more homogenous crop areas.

So once again I think if California had more information about seed coatings we could really kind of study some of these application techniques in depth further.

So that's all I had.

[Brigitte] Thank you Michelle, and we hope you provide written comments to our questions that we post after this webinar as well.

Thank you.

Okay I'm going to take another raised hand, so Jane Sellen I'm allowing you to talk.

Please unmute your line, and you have two minutes.

[Jane] Great, thanks yes.

Jane Sellen, I'm co-director of the Statewide Coalition Californians for Pesticide Reform.

Thanks for the opportunity to comment and, thank you to DPR for the frank and actually very alarming presentation.

As a constituent department of the California Environmental Protection Agency, DPR has a mission and an obligation to protect human and environmental health within the scope of their jurisdiction.

That jurisdiction of course is pesticides.

The decision to exclude seeds that are pre-treated with pesticides abdicates a large share of their jurisdictional domain, and we urge you to close this gaping loophole immediately.

We've been previously told by DPR that adding pesticide treated seeds would be a major, even unprecedented expansion of their regulatory scope.

But we would argue that this is an acknowledgement of the sheer scale of the omission, as confirmed by today's presentation, and is a reason for action not inaction.

We're especially concerned that this loophole provides a gateway for pesticides banned or not registered for use in California thereby sidestepping DPR's authority to evaluate and restrict harmful chemicals.

And is a particularly frustrating abdication of authority that has the result of failing the community's environment, an environment DPR is sworn to protect.

So as I said we're a statewide coalition.

Our focus is on reducing the harmful impacts of pesticides on the health of communities most impacted by their use.

Although it's clear and you've reiterated that there are many pesticides used in seed treatment.

We're particularly concerned about pervasive use of neonics.

They're neurotoxins, increasing evidence of their health harms is emerging, although far more research is needed.

What we do know is that half of the population is routinely and regularly exposed to neonics through food, water, and household products.

And exposure to them is linked to autism, birth damage to the brain and heart, poor sperm quality and quantity, and developmental neurotoxicity.

There's so many troubling aspects of your presentation I could comment on, like the implication that labeling alone could successfully exempt pesticides from regulation.

The massive increase that you've documented in pesticide treated seeds, the well-known impact of neonic pesticides on bees and other pollinators, the extent of environmental contamination resulting from this type of pesticide use.

I think you said 90% transport into water and soil.

The percent of specific pesticides that are introduced into the environment through this means are not reportable to PUR.

[Brigitte] Jane, 30 seconds.

[Jane] Yep.

And my final comment is just I urge DPR to protect Californians from this backdoor and entirely unregulated exposure medium, and thank you again.

[Brigitte] Thank you Jane.

Appreciate your comment.

I'm going to take one more raised hand before I turn it back over to the Q&A so next we have Taryn Obeid.

Let's see, one moment.

I'm having trouble allowing you to talk, I apologize for that.

Can anyone else on the panel see if they can allow Taryn to speak?

[Resolving technical issues]

[Taryn] Thank you, thanks.

Hi I do have a chromebook and I think technologically that's a that's an issue.

I have a few comments I will just read it might take a little over two minutes I will go fast, thank you.

I am with Families Advocating for Chemical and Toxic Safety (that's FACTS for short).

DPR's mission is to protect human health and the environment, so please protect us from the dangerous neonic treated seeds.

DPR must close the loop, it's a dangerous loophole, created by not defining neonics as pesticides when they are applied to seeds.

When seeds are treated with neonics these pesticides are absorbed by the plants making the entire plant: its roots, its leaves, its fruit, its pollen toxic.

Pollinators are important as we all know for our environment and to balance our natural system.

To jeopardize that or to continue to damage that is really problematic for now and increasingly so for the future.

Neonics have been found in agricultural, urban, and suburban surface waters also endangering human health as well as animals and more plants.

Neonics are potent neurotoxins.

We know from our experience with lead exposure that neurotoxic chemicals cause brain damage at even the very lowest levels of exposure.

It reduces children's intelligence, lowers their IQs, shortens their attention span, and disrupts their behavior.

Human infants and children, because of exposure per pound of body weight, have the highest exposures and the greatest risk.

When exposed in the womb the greatest risk of birth defects are the brain and heart.

And in children they are linked to memory loss, tremor, and increased risk of autism spectrum disorder.

Please take action now to protect our children especially those in the farm worker communities.

Please restrict the neonic pesticide treated seeds, they may be the single largest use of pesticides in California after all.

Please be true DPR to the mission of protecting the humans and environment, and consider how California's agricultural workers are really affected by this the most.

The final comment, please, is that please insist that DPR register and regulation restrict agricultural and non-agricultural neonic uses.

Thank you very much.

[Brigitte] Thank you for your comment, Taryn.

At this point I'm going to turn it back to the Q&A.

We'll come back to raised hands in a bit, so Jason?

[Jason] Great thank you, Brigitte.

We have a question from an anonymous attendee.

Can you please go over 40 CFR 153.155 which has to do with color for pesticide treated seeds?

Perhaps Bryan?

[Bryan] Yeah, yeah I was going to take that one, just unmuting me.

So that requires a seed treatment product, products used in treating seed, to have an EPA approved dye in there (unless there's a clearance) of an unnatural color, as some of the pictures kind of showed.

Unless there's an appropriate tolerance, or other clearance, from the Federal Food Drug and Cosmetic act.

There's a couple of exemptions from the products will, if it's intended to only be used by a commercial treater then they must have a statement on there that requires the user to add an EPA approved die during the treatment process.

And then also there's an exemption for just a hopper box treatment, just right before planting, and then gaseous products with fumigants.

I think that covers it.

[Jason] Thank you Bryan.

I'm going to go with the next question.

This question comes from Margaret Reeves.

I saw nothing about human exposure and evaluation of human health impacts.

Can you speak to that?

[Silence]

[Jennifer] I guess I'll take that one.

Actually Bryan, do you mind just speaking to the portion that's during the registration process?

[Bryan] Yeah, I would say part of the evaluation process is to send it over to the Human Health Assessment Branch and take a look at the impacts to human health.

So yes that that is part of the registration process for all products and seed treatment products.

[Jennifer] So then in addition to that we have continuous evaluation and so that's done by active ingredient basis and so that should be included there.

[Jason] Scott did you want to take the next question?

[Scott] Yeah I see a next question is from Dan Rachel.

This question is, to what extent does the intent of the seed treatment product factor into DPR's analysis?

For example, a treatment on a seed of a systemic insecticide is intended to repel or eradicate leaf feeding insects, would that be sufficient for DPR to deem it a pesticide?

[Jennifer] I'll take that one, thanks Dan.

So at this time DPR considers all pesticide treated seeds, they fall under "not intended to be used as a pesticide".

We've had some discussion with you and other groups about this idea of where the pesticide ends up in the environment and it certainly is something that we continue to discuss as we determine next steps.

[Scott] And I'll do one more question from Julie Morrisot.

Her question is thank you for this webinar can organic produce grow from treated seeds?

[Anson] I can tackle that one.

To my knowledge that it would not be in the same context as with synthetic pesticides that we're speaking of.

So in that sense they would not use a synthetic pesticide, but I am aware that some organic produce is grown from treated seed in the sense that it's a certain amount of water could be added, or for germination processes things like that.

But not in the same type of pesticide coating that we'd be speaking with in this workshop.

[Jason] Thank you Anson.

Brigitte I see there is an individual with their hand up.

[Brigitte] Yes we have one individual, Paul DeCarly.

I'm going to allow you to talk.

Please unmute your line.

[Paul] Good morning everyone and thank you for the opportunity today.

I want to make a few comments on some of the comments I've heard.

Real quick on the organic seed treatment, or the organic question, my understanding if it's an organic process an organic seed treatment that can be applied to seed and be used in organic system.

If the seed is organic while the process is approved as organic can be used.

One statement I wanted to make, aren't seed treatment companies (there's been a lot of discussion here about the PUR) aren't companies in California, I can't speak for companies outside of California, but if you're a seed treater in California aren't you reporting that application to the seed at that time?

Secondly, I've seen seed packaging go out from seed treaters that have labeled on there the seed treatments, the chemicals, that pesticides are applied to that seed.

So it sounds like if that's true, if there's reporting being done, seed treaters they're labeling, it's a matter of when it hits the field of that reporting being done there.

So there is data to show the amount of seed being treated in California.

What we don't know is where it's being planted, correct?

[Jennifer] Hi Paul, so just real quick who are you with if you don't mind sharing?

[Paul] With Incotec.

[Jennifer] Okay great, so let's see.

You've asked a couple of questions there, so first with respect to PUR, because the seed treatment process is considered industrial it falls under a different set of reporting requirements than agriculture.

So there is some reporting in the PUR of the seed treatment process but it isn't comprehensive.

Then second you mentioned that there are on seed treatment labels that they do list, our understanding is that it's either the active ingredient or the product that's used.

So while that does give some information on what is available it doesn't have for example, EPA registration number, it doesn't have the % active ingredient, and so there's some other pieces that that are really needed to get to what that looks like in terms of what's actually introduced in the environment.

Was there a third question?

[Paul] No.

No, I just wanted to make sure that it was known that those treatments that pesticide use is being reported to Ag Commissioners when it's applied at that facility.

The gap seems to be between where the treatment is made at a seed treatment facility and where it's planted, what location is planted in when it gets out into the environment.

[Jennifer] That's correct, and then whether it's treated in California.

So if it was treated outside of California we would not have head of that.

[Paul] Correct, you would only have information on seed that was treated California by companies that have licensed with DPR.

[Jennifer] That's right.

Thank you for your comment Paul.

[Paul] Thank you.

[Brigitte] Thank you Paul.

I am going to take one more raised hand.

We have Dan Gluesenkampcamp with the Institute for Biodiversity.

I'm allowing you to talk please unmute yourself.

There we go

[Dan] Hi, yeah thank you very much.

Really appreciate this workshop and hope we have a lot more discussion.

And I also hope that the recording will be made available, I'm sorry I missed part of it and so my questions may have been answered already, but here they are, a couple questions.

So first, are there examples of other treated products that DPR is aware of that are treated inside or outside of California but are but are not regulated in the same manner as registered pesticides, and are any of those treated products regulated by DPR which could help us inform pathways for regulating treated seeds?

Then the second question is regarding seed treatment products.

They must be registered by US EPA and DPR when the process is done in California but when the coating is done out of California can they use products that are not registered for use in California, and thereby be a backdoor route for applying unregistered pesticides in California?

[Brigitte] Thank you Dan we'll have one of the panelists jump here to try to answer those questions, we might ask you to repeat one of those.

[Dan] No problem.

[Jennifer] Dan, I'll go ahead and take the second one.

You are correct that when the coating is done out of state, it can be it should be done with any product that must still be registered with US EPA but it does not necessarily need to be registered with California.

So, thank you for your comment on that.

Bryan, do you want to take the example of treated products?

[Bryan] I think if Jill's around I might have her try that one.

I think what he's asking about is of completely other categories of products, that we might take some knowledge from and apply to treated seeds.

[Jill] Thanks Bryan, Hi Dan thank you for your question this is Jill Townsend I'm the Branch Chief of the Pesticide Evaluation Branch.

And I think Bryan covered this in part of his talk, two other examples might be a paint where if the paint is treated with a pesticide to protect the paint, then it would not be registered in California.

However if it's treated with a pesticide to say, protect the surface that it's being painted on then it would be considered a pesticide and that paint would need to be registered.

Another example would be a treated wood product might have the same considerations.

[Dan] Thank you, yeah, and I misphrased that question.

My question really was whether there are other treated products that are regulated in the way that we would like to see seeds regulated.

[Jill] It really all depends on how those products are labeled, and what the intent is.

So like with the example of paint, if the paint can has a label on it that says that it's protecting the surface that is being painted, then we do register as that as a pesticide product.

[Dan] I see.

[Jill] So as with other pesticide issues it really depends on the label and the claims that the label is making.

[Dan] Thank you, thank you.

And I appreciate the answers to both of those.

On the first one I would suggest that we take some emergency action to close that back door for broad scale high poundage use of unregulated pesticides in California.

Seems like it warrants an emergency closure while this process continues.

[Jill] And thank you Dan we really appreciate that and that's one of the reasons that we're having this workshop.

So that we can hear those concerns from people.

So thank you for listening in and for voicing your opinions on that.

[Dan] Always, thank you Jill.

[Brigitte] Okay.

[Jason] Alright, let's go back to questions that were submitted with the Q&A button.

I have a question here from Daniel Hasegawa.

From the USDA lettuce trial can you provide more details on how the soil was sampled?

For example where was the soil sampled in relation to the seed line?

Secondly, were pesticides from the treated seeds detected in other neighboring areas including surface water?

[Anson] I can take that one, Jason.

Hi Daniel thanks for the question.

So in terms of the soil sampled, so it was the soil was sampled before the seeding had actually occurred, and then also at the last irrigation event.

It was collected from the top 30 centimeters of the various plots.

And it was not directly sampled for instance when there was this lettuce cropping it was not sampled directly in the seed line itself, but it would be between.

And as far as were pesticides from the treated seeds detected in other neighboring areas?

So this was not necessarily something that was where we were collecting from outside of the actual field plots themselves.

But I can tell you that because it was field trials collected (or rather that occurred) in an area where there was a lot of different pesticide applications that previously had occurred.

That's why there were some background levels that we were detecting in things such as the control.

[Jason] Great, thank you Anson.

I'll read a comment from Stephanie Pererra.

Stephanie writes, I am also very concerned about the underestimation of the amount of pesticides used in California agriculture due to the exemption of reporting pesticide treated seeds.

Thank you very much for your comment Stephanie.

Scott would you like to handle the next questions?

[Scott] Yeah the next question is from an anonymous attendee.

The question is, are seed treatment companies obligated to provide a report to CDPR annually how many pounds of seed have been treated and what pesticide was applied?

Would this not fill the gap to show how much treated seed went into the environment?

[Jennifer] I'll go ahead and take that one, thanks.

So at this time no, seed treatment companies are not required to provide a report of how many pounds of seed have been treated and what pesticides are applied.

So thank you for, I'm not sure if that's phrased as suggestion, but thanks for aligning that potential route.

[Scott] I have just a comment from another anonymous attendee and the comment is that the US EPA does risk assessment for human health and eco-risk on seed treatments.

[Jason] Great thank you.

Julie Morrisot has wanted to clarify a question that she had asked.

Is it allowed for food/produce to be labeled organic if it had been grown from treated seeds?

Thank you.

[Anson] That one maybe I can tackle it.

So Julie as far as that goes, I think that really falls under the jurisdiction of probably more the CDFA as well as USDA in terms of whether or not it would still be allowed to be considered organic, so I can't answer beyond that.

[Jason] Thank you Anson.

I have a comment from Curtis Vaughan.

The AIs (active ingredients) mentioned here are common foliage applied, fertigation (applied in irrigation water), and soil applied.

Thank you for your comment Curtis.

[Silence]

So we have a question from an anonymous attendee.

If seeds are considered a living thing, how can treated seeds be considered an article and not a living thing or an agricultural commodity?

[Jennifer] Go ahead and take that one.

So what we've framed in this presentation of the current regulatory framework from treated seeds is how they've been interpreted to date.

So the EPA's exemption as a treated article that's actually under EPA, and at the state level we have a slightly different definition, so we wouldn't really be suited to answer that question.

[Jason] Brigitte are there any individuals with hand raised?

[Brigitte] Yes we do have one, thank you.

I will call on Dan Rachel allowing you to talk but please unmute your device.

[Dan] Can you hear me?

[Brigitte] Yes we can.

[Dan] Great.

Well, I just want to echo the thanks from everybody.

Thank you all for putting on this presentation today it's been incredibly helpful.

I would also echo the calls to put this recording online there were a couple of parts where I missed, and I think it would be really helpful for me and others to have that as a resource online.

My question is about the purpose of DPR's inquiry and sort of what it is getting at.

And Jennifer I think if I understand your comment (or answer to my question) DPR as a general rule considers all treated seeds not to be pesticides, or not meet the definition of pesticide under the food and agriculture code.

Is the purpose of this inquiry to understand whether they might meet that definition?

And if so, what factors are you going to be paying close attention to?

[Jennifer] Thanks for the clarifying question there Dan.

So the questions that we've posed don't really get at what you're talking about.

So the questions that we're putting out to stakeholders are really areas where I think that we have a need for additional information.

And the concept that you're getting at of whether or not it falls into that definition, that's you know something that we're thinking about.

We're thinking a lot about a lot of the topics that have come up, but we currently have not made any determination, and so if DPR does take any action on this topic it will be based on what we've been thinking about, and talking about internally for the past year, as well as additional information from the specific questions that we've posed today.

Thanks Dan.

[Brigitte] Thank you Dan.

[Jason] Brigitte are there any other individuals with hands raised?

[Brigitte] No there is not, we could take it back over to Q&A.

[Jason] Okay, sounds good.

Alright so we have a comment and question from Michael Lipset.

CDPR's surface water monitoring program has detected levels of neonicotinoids, especially imidacloprid that are far higher than EPA's chronic toxicity benchmark for aquatic invertebrates, which make up a significant part of the foundation for a variety of ecosystems.

These levels are also far higher than those detected in Lake Shinji in Japan where a previously sustainable fishing industry collapsed shortly after neonicotinoids were introduced in the 1990s.

The questions that follow that statement: one, has CDPR undertaken any analysis of the sources of the surface water contamination and if so, in light of the current regulatory gaps related to treated seeds, how can CDPR even begin to make an intelligent assessment?

I'll leave the first question there first, maybe Anson or Jennifer?

[Jennifer] I'll start and then Anson if you want to add to it feel free.

So first I just want to kind of make everyone aware that all of our surface water monitoring data is available online through our SURF database and that's also uploaded to the State Water Board's CEDEN database.

So we have been conducting monitoring in surface waters impacted by agriculture for a couple of decades now, and so really understanding the concentrations that are in surface water we're doing that actively and that's a really rigorous part of our program.

The question that we've really tried to shed some light on today is having an understanding of the relative contribution from different pesticide active ingredients is challenged by the lack of pesticide use reporting and the lack of requirement for pesticide treated seeds to be reported.

However, as has been mentioned several times today, these active ingredients are applied in many different application methods and so the end result of what's in the water we really are already looking at that.

And then just to highlight the lettuce study that we showed today, that's one of the ways that we've been trying to gain a better understanding of what the relative contribution looks like between pesticide treated seeds and soil application.

[Anson] Yeah, the only thing I would add to that, what Dr. Teerlink just mentioned is just that we have started some analyses.

For example looking at various different crops that utilize, for example used imidacloprid as an example, so looking at cropping practices and just in terms of those that probably rely more on foliar/soil applications of that AI in particular.

But that's something that we continue to work on, as far as looking at sources as well as matching up with our monitoring data.

[Jason] And Michael had a second question related to that, is CDPR conducting or sponsoring research on the effects of neonics or other systemic pesticides on aquatic invertebrates and associated food webs in any watershed in California?

[Jennifer] We don't have any, I mean it looks like he's more asking for kind of ecosystem level impacts, we don't currently sponsor any studies on that.

However we do collect a subset of our water samples, we collect toxicity samples, for which we look for the impacts of neonics.

Anything you want to add there Anson?

[Anson] No, just in terms of like as you mentioned, with a subset of our samples we're constantly collecting toxicity data and that looks at both chronic and acute exposures for various aquatic invertebrates.

[Jason] Thank you, Scott would you like to field the next one?

[Scott] Yeah, I have a comment here from Kelly Moran.

She states, in my scientific work I found the data gap around impregnated products to frustrate the scientific analysis of water quality data and linkages to pesticide use.

A notable example of this is clothianidin for which the primary use appears to be as a paint additive.

The sale is more than one million pounds a year with almost no reported use.

This chemical is ubiquitous in surface waters near urban areas with concentrations approaching aquatic organism effects thresholds.

While I realize today's focus is on seeds, it would be very helpful toward understanding this exposure pathway and potentially actions to avoid reaching significant risks via this pathway if DPR required reporting of the sales of the products containing such large quantities of their pesticide.

Thank you for your comment, Kelly.

We have a question from an anonymous attendee.

Wouldn't the amount of seed treatments sold in California show up on a company's Mill assessment.

If it was sold you could assume that it was applied.

[Jennifer] So I'll go ahead and respond.

So the Mill assessment is based on the first, I'm sorry let me back up for a moment.

So because pesticide treated seeds do not meet the state definition of a pesticide, my understanding is there is not any Mill assessment on pesticide treated seeds.

[Jason] Brigitte I'll send this over to you it looks like you have an individual with a hand raised.

[Brigitte] Yes I will call on John Bottorff.

John, I'm allowing you to talk please unmute your line and if you could also tell us what entity or organization you are with.

[John] Yes absolutely.

My name is John my name is John Bottorff with cleaneearth4kids.org.

Thank you for this workshop I have several questions.

DPR has the duty and responsibility to monitor and regulate any use to pesticides in California.

How it's applied does not matter.

Your presentation shows that treated seeds are a major gap that could allow chemicals that are banned in California to be used in a massive scale throughout the state.

DPR must close this loophole as soon as possible.

So what is the timeline for how DPR will address treated seeds?

Can DPR take emergency action to stop these treated seeds until testing, monitoring, and regulations are in place.

Something else that's really troubled me is that the Intercept has recently published a six part series on the failures of pesticide and chemical regulation by the EPA written by Sharon Lerner.

It particularly covered that a great deal of toxicology testing is waived due to industry pressure, which has a direct impact on the EPA's Human Health Assessment.

So how much does DPR rely on the EPA test data and their human health assessments?

How can we help fill in that gaps?

Lastly a research shows it's not just the active ingredient in the pesticide that has harmful effects.

How does DPR evaluate the product being used, not just the active ingredient.

And how does DPR look at how different pesticides interact with each other?

Anyway, thank you so much for the workshop and look forward to hearing to the answers.

[Brigitte] Thank you John can one of our panelists take a stab at answering some of those questions?

[Silence]

[Jill] I missed part of the questions that you are asking, I apologize.

I think that the answer is that while we do require all of the data that is submitted to EPA as a part of our evaluation process, we have an independent evaluation process and we evaluate each of the pesticides that comes into California for registration on a case-by-case basis.

And so I don't want to answer for human health assessment program which is not online today in how they evaluate the toxicology data for human health.

But I can say that we do evaluate all of the products that come in for registration independently and on a case-by-case basis.

[John] Okay thank you, the first part I think what you missed is what's the timeline for addressing the treated seeds and is there emergency action available to stop the use until regulations and monitoring are in place?

[Jennifer] So John I can go ahead and take that portion.

As we mentioned there's a 90-day comment period on the questions that we have here.

We are not considering an emergency stop use of treated seats but we thank you for your comment and the urgency that you frame around it.

[Brigitte] Okay thank you John, and we have no other attendees with their hand raised currently.

[Jason] Thank you Brigitte.

We do have a comment from Curtis Vaughan.

His comment, is it's evident to me that industry is unrepresented here in this forum.

Thank you Curtis for your comment.

I do want to note also that Jane Sellen has provided a link to CCOF regarding treated seeds not allowed in organic agriculture.

Thank you Jane.

Scott would you like to take the next one?

[Scott] Yeah I have a comment here from an anonymous attendee saying that the EPA did not formally review the treated article designation for treated seeds.

There was a statement made in a report and erroneously included as a treated article.

Thank you for that comment.

I have another question from an anonymous attendee.

Seed treatment product sales are recorded on Mill assessment.

Couldn't you assume that if a seed treatment product was sold that it was used to treat seed in the state?

[Jennifer] So I'll go ahead and respond to that one.

So if a seed was treated in the state with a seed treatment product, that we would have record of that.

But they're seeds that are treated in the state aren't necessarily planted in the state, and there are pesticide treated seeds that are planted in the state that are not necessarily treated in the state.

[Jason] And I will point out that Jane Sellen did clarify that CCOF stands for "California Certified Organic Farmers".

Thank you Jane.

Alright we have a question from Catherine Dodd.

Please clarify again, how can we add treated seeds to the definition of pesticides?

[Jennifer] Hi Catherine, thanks for your question so that is the current definition of pesticide treated seeds in the state.

You're welcome to submit a comment as a part of the comment period if you're interested on changing that designation.

[Jason] So we have another a question from John Bottorff.

Research shows it's not just the active ingredient in a pesticide that has harmful effects.

How does DPR evaluate the product being used, not just the active ingredient?

And secondly how does DPR look at how different pesticides interact with each other?

[Jill] Thanks for the follow-up John I appreciate that.

So we do evaluate each of the products that come in for registration independently, and looking at the entire formulation is a part of our evaluation process in California so that is something that we account for.

At this time looking at how the different pesticides interact with each other is outside of what we do, but that is something that we have had conversations about internally.

But right now that's not a part of the evaluation process that we have.

However, looking at the entire formulated product is, so thank you for those follow-up questions.

[Jason] Thank you Jill.

Scott?

[Scott] Yeah I have a comment here from Catherine Dodd.

She says, DPR's mission is to protect human health and the environment.

DPR must protect our health and the environment from dangerous neonic treated seeds.

DPR must close the dangerous loophole created by not defining neonics as pesticides when they're applied to seeds.

When seeds are treated with neonics these pesticides are absorbed by the plants, making the entire plant, its roots, leaves, fruit, and pollen toxic.

Pollinators are important to our environment and the balance in our ecosystem.

Honey bees and other pollinating species must be protected to protect our food supply.

DPR must register, regulate, and restrict agricultural and non-agricultural neonic uses.

Neonics have been found in agricultural, urban, and suburban surface waters and they endanger human health.

Neonics are potent neurotoxins.

We know from our experience with lead exposure that neurotoxic chemicals cause brain damage at even the very lowest levels of exposure.

Thank you for your comment Catherine.

[Jason] Well as I can see right now there are no further questions or comments in the Q&A box.

Brigitte do you have any individuals with the hand raised?

[Brigitte] No we do not.

Oh, yes we do.

Let's see here I'm gonna call on Sarah Hoyle.

Sarah I've allowed you to talk, please unmute yourself and you have two minutes.

[Sarah] Thank you Brigitte.

I just wanted to point out I'm Sarah Hoyle with the Xerces Society for Invertebrate Conservation, and I just wanted to thank DPR for putting together this presentation, and also just note from a conservation perspective that, the data gaps that you've highlighted here today around the use of treated seed and how those relate to environmental monitoring really make it quite difficult to successfully protect any sensitive species, and relate that environmental monitoring data back to uses that we're seeing on the landscape and then kind of craft policies that can help reduce exposure, especially to protect sensitive species.

So I just wanted to highlight the importance of better understanding seed treatment patterns from that perspective as well, thank you.

[Brigitte] Thank you Sarah we appreciate your comment.

Okay we have no other attendees with their hand raised, I think we do have some in Q&A.

[Jason] Yeah, so I'll go to a comment from Dale Krolikowski.

He informs, we need to clarify the CCOF link.

Seeds treated with approved organic materials can be planted on organic farms and the produce sold as organic.

The national organic program (NOP) lists the substances that are allowed for use for organic seed treatment and organic agriculture production.

Thank you Dale for that comment.

Scott?

[Scott] We have a comment here from Curtis Vaughan.

The comment is DPR please understand conventional agricultural practices, while not perfect, is responsible for feeding hundreds of millions.

It would be criminal for closed-minded activists to have remedy here.

Thank you for your comment Curtis.

We have also a question from John Bottorff.

In California who is responsible for the human health assessment of pesticides, and when will they be presenting on their perspective on pesticide treated seeds?

A combined presentation with DPR on how your work together would be really appreciated.

[Jennifer] I'll just respond, John you had a question on timing there.

So the Human Health Branch here a DPR is responsible for looking at the human health impacts of pesticides, and as I mentioned before when they look at risk assessments they take it on an active ingredient basis.

And so thanks for your comment on that.

[Jason] Jennifer there are no further comments or questions in the Q&A platform.

Brigitte are there any individuals with their hands raised wishing to comment?

[Brigitte] No we do not have any raised hands.

[Jason] Thank you Brigitte.

No further questions Jennifer.

[Jennifer] Great, thanks, just trying to figure out how to get back a few slides here.

I do really want to thank everyone for attending.

We saw a really great turnout and it's really nice to hear so many folks that are really interested in this topic.

Let's see, I'm wanting to go back one more slide just to remind everyone of the email, there we go, and that comments are due to these questions by February 15th of 2022.

And in terms of what to expect at that point, I think we really need to see these responses before we determine the format of how we continue this conversation.

So, we really look forward to those comments and we appreciate your engagement today.

And I think with that we'll go ahead and close off a few minutes.

Oh let's see.

[Jason] It looks like we do have a comment here, Jennifer did you want to take that one?

[Jennifer] Sure, I think it's more mostly just a comment so I'll go ahead and read that.

Pesticides regularly by EPA and CDPR.

If it is imposed to make seed a treated article, the cost to register treated seed within the regulatory environment would raise the price of all the foods you eat.

Thank you for your opinion and perspective.

Okay with that I think we'll go ahead and close off the meeting and we look forward to hearing from you in written form.

Thank you.