

Central Valley Regional Water Quality Control Board

**MEETING SUMMARY
FOOD SAFETY
EXPERT PANEL – PUBLIC MEETING
24 January 2019
9:00 a.m. to 11:30 a.m.**

Attendees

Panel Member	Title & Affiliation
Dr. Gabriele Ludwig (remotely)	Director of Sustainability and Environmental Affairs - Almond Board of California
Dr. Barbara Petersen	Principal Scientist, Chemical Regulation and Food Safety- Exponent Incorporated
Dr. Andrew Gordus	Staff Toxicologist- California Department of Fish and Wildlife (CDFW)
Dr. Seth Shonkoff	Executive Director- PSE Healthy Energy, Lawrence Berkeley National Laboratories (LNBL)
Dr. Kenneth Kloc (remotely)	Staff Toxicologist- Office of Environmental Health Hazard Assessment

Note: Food Safety Expert Panel members Mr. Mark Jones, Dr. Bruce Macler, Dr. Stephen Beam, and Dr. Dave Mazzer were unable to attend.

Affiliated Parties	Title & Affiliation
Dr. Karl Longley	Chair of the Board- Central Valley Regional Water Quality Control Board (Central Valley Water Board or Central Valley Water Board)
Mr. Clay Rodgers	Assistant Executive Officer- Central Valley Water Board
Mr. W. Dale Harvey	Supervising Engineer- Central Valley Water Board
Ms. Rebecca Asami	Engineering-Geologist- Central Valley Water Board
Mr. Josh Mahoney	Water Resource Control Engineer- Central Valley Water Board
Mr. Ralph Saucedo	Associate Government Program Analyst- Central Valley Water Board
Dr. William Stringfellow	Science/Technical Advisor- University of the Pacific, LBNL
Dr. Robert Scofield	Principal Toxicologist- GSI Environmental, Inc. (GSI)
Dr. Bernard Beckerman	Senior ESG- GSI

On 24 January 2019, the Central Valley Regional Water Quality Control Board (Central Valley water Board) held a public meeting of the Food Safety Expert Panel. A summary

of the meeting follows. This summary is not a dictation of the meeting. A full video of the meeting can be found on the Central Valley Water Board's web page.

Introductions and Agenda Review

Clay Rodgers conducted introductions and reviewed the meeting agenda. He stated that this is a working meeting of the Food Safety Expert Panel (also referred to as the "Panel") that is open to the public. He stated that comments and questions could be submitted by email and will be taken at the end of each agenda item.

Materials List

The following items will be posted on the Central Valley Water Board's web page. Hard-copies were made available to Panel members and affiliated parties.

- [Meeting Agenda](#)
- [July 2018 - Meeting Summary](#)

Action Items

- Post meeting materials.
- Comments from Panel Members incorporated into meeting summaries.
- Meeting summaries posted to the web page.
- GSI Report to Panel for review and posted to the web page.
- Schedule next Public Food Safety Meeting.

Review of 25 July 2018 Panel Meeting

The Food Safety Expert Panel held a public working meeting on 25 July 2018. A summary of the July meeting will be made available on the Central Valley Water Board's web page. Two round table meetings were held in September and November 2018. Panel members were asked if there were any additional comments or revisions that need to be made on the summaries. A two-week deadline for comments was given to the Panel.

Fruit Sampling

Discussion by Clay Rodgers of the following:

- All planned fruit sampling for 2018 is complete.
 - Results are coming in and staff are looking at the data.
- The main goal is to determine if there are differences, between sample types.
 - Treated samples are fruit irrigated with produced water.
 - Controlled samples are fruit irrigated with non-produced water.
- Samples for 2019 will not be as extensive as 2018 sampling.
- Now looking at crops that were not sampled last year (e.g., cherries, blueberries, and citrus).
- To date there have been no results that suggest that there are significant health concerns associated with the crops.
- Potatoes may also be sampled.
- Tasks 1 and 2:

- GSI to conduct the literature review
- Assessment of the chemicals
- Assessment of toxicity of the individual chemicals
- White Paper
 - Document results and summaries
 - Recommendations from the Panel
 - Work performed and results

This concludes the discussion.

Comments from the Food Safety Expert Panel

Andrew Gordus: Last year potatoes were sampled. Are there other root crops (e.g. potatoes, carrots, and garlic)?

Clay Rodgers: The plan is to sample anything that hasn't been sampled before. The root crops are crops staff would like to have sampled. This has been discussed with Dr. Stringfellow and GSI to assess with the Food Safety Expert Panel. There were some issues with the potato sampling, so this year we may sample potatoes. Blueberries and cherries were harvested before we could sample them in 2018. There are very limited acreages of cherries in Kern county.

No other comments from the Food Safety Expert Panel.

Questions and Comments from the Public

Robert Gore (Gualco Group, Inc.): The Gualco Group, Inc. represents several irrigation district clients. As a matter of background, there are 400 commodities grown in California verses 10 to 20 in other states. California has two hundred orders of soil and farming practices vary drastically.

No other comments from the public.

MOU Tasks Update

Clay Rodgers: There is a Memorandum of Understanding (MOU) between the Central Valley Water Board, producers, and users of the produced water. The MOU states that the fruit sampling falls under Task 3 of the MOU.

Dr. Bernard Beckerman of GSI gave a presentation to the Panel and discussed the following:

MOU Tasks:

- Task 1: The selection of chemicals of interest based on known additives and naturally occurring chemicals in produced water.
- Task 2: Conduct a literature review on chemicals identified as being of particular interest.
- Task 3: Sampling of the crops.

Task 1 - Identify the Chemicals of Interest:

- GSI received a list of additives from the Central Valley Water Board

- Approximately 49 organic constituents, 46 inorganic constituents
- Some additives overlap with natural compounds
- Identified 4 factors: Oral toxicity, carcinogenicity, teratogenicity, and environmental persistence

Evaluating the list of chemicals using published data sets:

- Looked through state and federal published values and identified 128 with published toxicity values
 - 21 were generally regarded as safe (GRAS);
 - 46 found to be virtually non-toxic;
 - 65 not chronically toxic;
 - 62 that require further evaluation;
 - 11 unable to make any definitive conclusions;
 - 5 radionuclides, 3 naturally occurring, 2 are used as tracers; and
 - 43 GSI had derived toxicity values based on the available animal literature.

Chemicals with Inconclusive Toxicity Data:

- 11 of the chemicals had no conclusive toxicity data;
- Insufficient studies;
- Ambiguous chemical definition;
- Conflicting or incomplete scientific data; and
- Requires further evaluation.

Chemicals that Require Further Evaluation:

- 62 chemicals with chronic oral toxicity that couldn't be assessed;
- Only assessed for acute exposure studies, missing oral studies, and route-to-route extrapolation not possible;
- No toxicological data; and
- Mostly surfactants and polymers

Deriving Toxicity Values for Chemicals without Agency Values:

- 43 chemicals were identified with known toxicity data;
- There were no toxicologically relevant cancer outcomes found during the review of animal studies; and
- Only non-cancer outcomes were assessed.

How Toxicity was Evaluated:

- Developed a reference dose
 - This approach used by government agencies;
 - No observed adverse effect levels identified;
 - Some uncertainty factors; and
 - Able to derive toxicity values for chemicals without agency values.

Toxicity Values:

- Developed toxicity values for chemicals without agency values;
- Developed screening levels based on consumption estimates;

- Looked at max concentrations in treated produced water; and
- Developed hazard index.

Fate and Transport:

- GSI is compiling data on biodegradability in water and soils;
- Some uncertainty because they are unnaturally enriched; and
- GSI will continue to look at additional fate and transport issues.

Next Steps:

- GSI will focus on most toxic chemicals; and
- The literature review for Task 2 will include: sources of chemicals, fate and transport issues, produced water literature, and address chemicals requiring further evaluation.

This concludes the presentation.

Questions from the Food Safety Expert Panel

Barbara Petersen: I believe the list of chemicals you're talking about are really either being used or coming with the water as it leaves the well. When we toured the plant there were two treatment processes, maybe three if you count walnut shells. Are those somehow helpful in the analysis?

Bernard Beckerman: I think that's part of where our knowledge gap is. We don't totally understand that at this point. Some of those chemicals that are used are included on those additive lists. Without a complete understanding of the process it is going to be difficult to assess.

Robert Scofield: That is part of the next steps. There is no specific value of those fate and transport factors that we can use. We can't use KOC cutoff or hydrolysis. We've looked at the list and what we are finding in the produce and now we're going back to reevaluate. We're going to look at the water to see if some of these hydrolyze.

Barbara Petersen: Before you get into the fate and transport maybe something can be eliminated earlier, particularly ones where you have no toxicity data.

Robert Scofield: We're talking about going to do a tour water treatment.

Seth Shonkoff: Some chemicals may still be in the water by the time it gets sent down the canal for irrigation. There's been a change of thinking about how it would be most scientifically rigorous to identify which compounds of interest might be in produced water, and it's probably not testing fruit. While it's important to look at individual chemicals, it's also important to look at chemicals that are present. You must look at synergistic byproducts and daughter products. We are never going to be able to understand chemical by chemical, produced water matrices.

Robert Scofield: We have been giving that a lot of thought. At first, I was very skeptical of the value of testing the produce. As it gets distributed, do chemicals just attach to soil and never get taken up by the plant? What's the distribution

within the plant parts? Is it in the fruit, but not in the water? We just don't know each of those processes with enough detail. There're also the variances of how people farm. It's going to be a non-systemic approach to all those factors, with an effort to understanding fate and transport.

Seth Shonkoff: This is a question for Central Valley Water Board staff. There has been some thinking about produced water sampling. There is interest in splitting samples with researchers. Perhaps the Food Safety Expert Panel and GSI can do a more extensive analysis. See if there are problems observed in the produced water and get a look at fate and transport. It might be a quick way to look at the water coming from these fields. Although, not necessarily with external validity to other fields and other times.

Clay Rodgers: Maybe Dr. Stringfellow would like to respond. I think those are all potential issues that are under consideration as we go through the process. The task in front of us right now is to complete Tasks 1-3 and put the White Paper together. The White Paper would include conclusions and recommendations of the Panel, and if any additional studies need to be done.

Karl Longley: I concur, a decent job has been done outlining the White Paper. We need to get it out and move on to the next step. The White Paper will be an important vehicle as we move forward and point out what we must do next. The White Paper is the first step as we go through the multiple steps that are necessary.

Kenneth Kloc: I had a comment on the closure calculation in the GSI presentation. You're using the 90th percentile of population fruit and vegetable consumption quantity. I was a little concerned that you might be missing people who have vegetarian diets. I'd recommend a higher percentile or maybe even doing a separate calculation for high level consumers. Vegetarians might eat a higher level of fruits and vegetables.

Barbara Petersen: Those were just kind place holders to give us an idea. I have gone back to NHANES and a little bit later we'll talk about that data. We can talk about what numbers and values we might want to use.

Robert Scofield: It gives us a reference point. Here is what would be safe versus what we're finding for the 90th percentile person. Most of those values show that even if somebody ate ten times or a hundred times more, they would still be ok. This gives us a point of reference, then we can go back and ask about those people who eat more.

William Stringfellow: To add to the conversation before we completely move on from the treatment and the water sampling, there is more data available. For example, the treatment systems and water quality monitoring that's done by Chevron, and probably other companies as well. It might be useful to ask them to consider sharing that data, I know they do continuous monitoring and I think this data would be potentially useful to answer a few questions regarding Task 2. It gives us some indication on mass flow.

Seth Shonkoff: There is a series of papers out there, some of which are co-authored by Dr. Stringfellow. They use basic assumptions about molecular structure, and other attributes of individual compounds and compare them against the specifications of various treatment technologies.

William Stringfellow: I may add that I'm not in a 100% agreement with some of the statements in the papers. I think there is a lot we can add in terms of predictive biodegradation. Also, the papers have some information on fate and transport.

Seth Shonkoff: One more point on the analysis of water. Many of these chemicals are not going to stay those chemicals after being put under certain situations (e.g. high heat and pressure, mix with hydrocarbons, put through oil-water separator, etc.). There's a growing body of literature that's focused on tracking individual chemical additives, like glutaraldehyde, in oil and gas systems. A number of these studies have shown that they readily degrade to daughter products. Some of these have increased toxicity or have unknown toxicity. It's very complicated but that's also one of the reasons why gaining access to produce water and running it through GC mass spectrometry may be helpful.

Robert Scofield: We are working with an analytical chemist who is very familiar with the chemicals in the oil industry. I've asked her to look at some of the lab reports on the produce. I've asked if she sees any non-target peaks, or any patterns. We are going to look and see if there is anything jumping out at us in the chromatograms.

No other comments from the Food Safety Expert Panel.

Comments from the Public:

Bill Allayaud (Environmental Working Group): Who is funding the work of GSI?

Clay Rodgers: GSI said that they were under contract by the Waterboards and that's not exactly true. The MOU states GSI is under contract from the coalition of users and producers of the water. I am the project manager for the Waterboards, so all technical issues associated with this work runs through me and our science advisor Dr. Stringfellow, from Lawrence Berkeley National Labs. We serve as the technical folks that oversee the work. We wanted to have that separation from the producers, so that they cannot control the technical work. As far as funding, they pay the bills, but they don't control the technical aspect. The vast majority of their contact is directly with us and as a matter of fact, they can't discuss technical issues with Cawelo Water District and the other groups.

Bill Allayaud: A tip of the hat to the producers and the users to fund this great work. The evaluation should consider doses. BPA has estrogenic effects on rodents, and they have shown some on humans too. Given high doses, you don't see anything but given low doses, you start to see things like diabetes and obesity.

Bernard Beckerman: Those were the kinds of studies that were evaluated when we derived our toxicity values.

Bill Allayaud: Those studies did not show chronic effect.

Bernard Beckerman: Some of the studies went up to hundreds or thousands of milligrams per kilo. So, you would see doses in ten milligrams or lower all the way up to a thousand or five thousand milligrams. We are not looking at just a high dose regime but also a very low dose regime.

Bill Allayaud: A footnote on chemicals generally recognized as safe (GRAS). Generally, GRAS is what the industry or the manufacturer shows the FDA to show that a product is safe. Sometimes it's not backed up by independent studies, so I always add a little asterisk with GRAS studies. Sometimes 20 years later they find it wasn't safe, but I know you are gathering data from a lot of sources.

Clay Rodgers: Are there any questions via email?

Rebecca Asami: One email from Deb Wirkman. She wrote, "I would like to receive a copy of today's toxicity presentation. I would also like any associated reports provided to the Central Valley Water Board by GSI."

Clay Rodgers: That information will be public and on our web page. The reports that are produced from this study will all become public information. We are open and transparent about the process.

Karl Longley: How long before this meeting is posted?

Clay Rodgers: A video of the meeting should be posted in the next couple of days. The presentations will be posted to the web page. The GSI Report is currently being reviewed by Central Valley Water Board staff and then will be sent out to the Food Safety Expert Panel for review. Then the report will be posted on the webpage and available for public review. My hope is for it to be posted prior to our next public meeting.

No other comments from the public.

Crop Information

Clay Rodgers opened this item with the following:

We don't have a lot to add here, although Dr. Petersen had asked us to compare crop results with water quality data. Staff is in the process of doing that. We need to do a little more analysis of the data. We have put together some general ranges, but I think we're going to have to look at a little more detail and provide some statistical analysis of the results to see whether the water quality is significantly different.

This concludes the discussion by Clay Rodgers. Barbara Petersen was introduced and gave a presentation that discussed the following items.

Consumption Estimates (Estimated Daily Intake of Select Commodities)

Since crop data has been collected, it was possible for Exponent to put together consumption data. This presentation on consumption estimates is final in that it answers the question we asked of the database. But we may be a little early in the process to decide what we want to ask. What one chooses for the right end

point can depend on the toxicity. This is the kind of analysis that is conducted by the FDA.

NHANES Food Selection

Consumption estimate survey - What We Eat in America. The dietary component of National Health and Nutrition Examination Survey (NHANES) conducted in 2011-2014. NHANES provides nationally representative nutrition and health data and prevalence estimates for nutrition and health status measures of the civilian US population. 15,179 individuals provided 2 days of dietary recalls.

NHANES Food Selection

Over 6,000 food codes were reported consumed in NHANES from 2011-2014. Food forms include cooked, canned, frozen, whole, and juice. Food codes that contain the following commodities were identified by Exponent: blueberries, cherries, citrus, grapefruit, lemon juice, oranges, grapes, almonds, carrots, date palms, garlic, oats, pistachios, potatoes, tomatoes, and wheat. Consumption estimates do not include baby food and NHANES food codes with <1% commodity of interest for most crops. Single ingredients and ingredients representing mixtures that contain any of the commodities of interest were included in the calculation.

Analysis Parameters

NHANES is meant to represent the total US population. Considered mean and 90th percentile of intake per capita, per user. The estimates are in units of grams per day and grams/ kilograms – bodyweight per day. Dr. Petersen stated that you want at least 30 individuals to make the consumption estimates. The number of reported individuals is a good representation.

Results: Two-day Average Estimated Daily Intake

Barbara Petersen presented a table of the results. Exponent was able to complete a consumption estimate for all commodities. The table of the results, and the presentation in its entirety, are available on the Central Valley Water Board's web page.

The concludes the presentation by Barbara Petersen.

Comments by the Panel

Clay Rodgers: For clarification, how are citrus groups defined? Note that the sum of lemons, limes, and oranges is greater than the citrus.

Barbara Petersen: There are people that ate both. The citrus is the total for all the crops that are a citrus category and that category is defined ultimately by the office of pesticides program at the EPA. I believe it's done for them by the Department of Agriculture. The crop group is citrus. But if a person ate a grapefruit and an orange, they would be counted in both categories here. You get into that problem when you get into the 90th percentiles because you can't add those up. It's not the same individual who's in the 90th percentile for the per capita or the per user.

Barbara Petersen: The Panel can have a discussion on the right end points. That should wait until the toxicology review has been more defined.

Dale Harvey: What is the red number 1 on the 48 for the citrus?

Barbara Petersen: There was a piece there to do a QA and I think it just got left red.

Bill Allayaud (Environmental Working Group): Why no Carrots on that list?

Barbara Petersen: The next slide shows carrots and the rest of the crops. Also, in the presentation is a list of references, which are publicly available.

William Stringfellow: I wanted to discuss a little bit about how are we going to pick these numbers. I have a comment about using the 90th percentile. In these large data sets, there are some erroneous data. For example, did somebody eat 70 kilograms of beef? That would be quite a portion of beef.

Barbara Petersen: It was 7 kilograms of beef.

William Stringfellow: That is still a lot of beef. With these data sets a lot of times we do use 90% data just to give us a clean out. I think somebody mentioned about vegetarian diets. Looking at those numbers what would be a reasonable diet for somebody who ate nothing but carrots and kale? I would welcome thoughts. What is the best approach such as a mean and 90%?

Kenneth Kloc: I believe in the literature there's probably a small database on vegetarian eating practices. So, you probably estimate that separately and a separate portion of the high-end analyses.

Barbara Petersen: We know who vegetarians in this database are. But if we wanted to look into that we could. I'm certainly happy to lay out a couple of tests. My impressions are that this 90th percentile will capture those people.

Kenneth Kloc: If you could demonstrate that, it would be useful.

Barbara Petersen: The Panel has not talked to the GSI team about what subgroups to consider. The problem with getting the subgroups and 90th percentiles of users is that you quickly get to small numbers of individuals.

Kenneth Kloc: I think it would be useful information.

Barbara Petersen: I'm also struck by the first numbers they have in their tables. Even if the consumers in the survey ate ten times as much, they were way below reference doses.

William Stringfellow: That sounds like a reasonable approach to me. We know this analysis and the 90% percentile. You are looking at daily consumption. From that you could do a common-sense check. Then looking at whatever other data is available that shows the maximum amount a pure vegetarian person might eat.

Robert Scofield: I think the level of detail will depend on the size of those ratios. If we see somebody that's in the 90% of what would be considered maybe a dangerous level of carrots, we'd want to dig into that. For the crops where you've got ratios of a hundred or a thousand times below, you don't need to look deeper.

We need to consider that people are going to be eating multiple times a day, and not live on just carrots or garlic.

Barbara Petersen: They're not going to eat all products from the same water source. When you start to add things up, you probably must go back to the average. I've used a 2-day average, so I treated each person's data and considered how much they eat over that two-day period. The other way to treat it is each day as an individual person. You would only count pistachio users (for example) on the days they ate them. That's the standard way it is done for a lot of analyses. But it does not mean we have to do it this way.

No other comments from the Food Safety Expert Panel.

Comments from the Public

Barb Sattler (University of San Francisco): You said you did not include baby food in these calculations. I'm wondering if there's another database which covers baby foods. Babies eat a lot of vegetables. Babies are a concern from a dose-response perspective. They're going to be more sensitive at a lower dose. I'm just wondering how you have considered calculating that.

Barbara Petersen: NHANES does include baby foods, so we could have included it. But it skews the serving size. While babies can be more sensitive toxicologically, they don't eat as much. The idea here is we're trying to get a worst-case estimate of intake. But we could include babies if people want us to.

No other comments from the public.

Draft White Paper Outline

Clay Rodgers started the discussion of this item by stating the following:

There has only been one change in the Draft White Paper Outline since the Food Safety Expert Panel last reviewed it. Staff included in the introduction, a purpose. I've been reviewing the White Paper. The introduction portions of this will be done within the next few weeks and will be sent out to the Food Safety Expert Panel. We can talk about that in more detail at the next meeting. Waterboard staff has started to draft other portions. Particularly as GSI gets a little further along. If we get Task One done, we get along to Task 2 and get the last group of sampling results we have from 2018. We will be laying out the background as part of the introduction that goes beyond just the discussion of the results. I would expect we will have a more robust discussion on this item at the next meeting.

There were no additional comments from the Panel or public. Mr. Rodgers moved the meeting to the next item.

This concludes Clay Rodger's summary of the Draft White Paper Outline.

Comments by the Panel

No comments by the Panel.

Comments by the Public

No comments by the public.

General Public Comments and Discussion

Bill Allayaud: I have been involved since the beginning of the Food Safety Expert Panel, and we are making progress. We said if it's proven to be a safe practice, we had no problem with this use of recycled water, but we said initially the soil should be tested. There seems like there might be a buildup, and the food should be tested. Currently it hasn't been completed yet. The first project that myself and Clean Water Action discussed at a meeting, was approved despite our objections. The members of the Regional Water Quality Control Board gushed over the project. But we were saying, "Not so fast." This led to the creation of the Food Safety Expert Panel.

As we're in the second year or third year we haven't got the soil samples done, and we're in progress for the rest. There was a new application for yet another project: The Sherwood Hills Project. This was on the agenda for December, and then pulled off. We just think it's inappropriate to have these applications come in and then routinely approved. We haven't got good answers from the Food Safety Expert Panel. If everything was done and said it looks safe, we'd say, "Go for it." We are not there yet. We would like to see the Sherwood Hills project stay off the agenda until the work of the Panel is done and they concede that the practice is safe. The Sherwood Hills project will be used for orchards, groundwater recharge, etc. It never mentions root crops, but they could switch it years from now. We should assume it could be used for root crops.

Dr. Banuelos, a soil scientist presented at the last meeting. It was much welcomed to have an expert on the uptake of metals, and other constituents. I asked him about uptake. I said, it sounds like it's difficult to end up with chemicals or heavy metals in an almond. Woody plants don't uptake this stuff as much, except for certain kinds. Then I asked him about root crops, and he said he would not grow tubers or other root crops in this soil. Cawelo is still going. North Kern is still going. It seems kind of unbelievable to me that finally, we have an expert saying, "I wouldn't do it." But nothing has changed. I don't think you're going to pull the permits for Cawelo and North Kern. I'm glad we have the science and the money being spent and acquired from various sources. I applaud the users and suppliers for putting forth funds to get this done. I just hope the Central Valley Water Board in making decisions that allow the Food Safety Expert Panel to continue to some conclusion and doesn't approve any more projects until that happens.

Rebecca Asami: We got a question from the email list. This question comes from a Justin Bass, he has two questions: "Number one: Please ask the woman on the Panel to identify herself again, and how did she and the Panel test toxicity levels in human test subjects? Blood, urine, or stool samples?"

His second question is, "Who on the Panel eats food grown with oilfield wastewater?"

Barbara Petersen: My name is Dr. Barbara Petersen and I did the consumption estimates. I've not done any work on human levels or blood testing, that's

beyond what I understand. The last question was, "Do we eat it?" I suspect we do.

Bill Allayaud asked Dr. Barbara Petersen to let the person on the email know who she was associated with.

Barbara Petersen: I work for Exponent Incorporated. We're a consulting firm. What I'm doing is food consumption modeling and parameters.

Bill Allayaud: Dr. Barbara Petersen is maybe the most qualified person on the Panel to look at this issue. I was going to say I have eaten foods from Grimmway Farms. They are the largest producer of organic carrots in the United States, or at least in California. Sacramento Natural Foods Coop sourced their carrots for years. They produce Cal -Organics brand which is sold at Costco in large bags. They produce Bunny Love Carrots. I think many of us have eaten food grown from there. One of the members of the Food Safety Expert Panel early on said, "No one eats crops in the same field all year." We'll assume that if you eat carrots every day from the natural foods co-op, then you are. It's my understanding that Grimmway Farms has ceased using the produced water from Cawelo and is maybe using groundwater.

Gabriele Ludwig: I would like to comment on the last speaker's comments (Bill Allayaud). Carrots are grown throughout the southern end of the San Joaquin Valley depending on season. In the winter months they are grown in the coast or desert, and some are sourced from Colorado. Currently, the produced water is only applied to a small percentage of the acreage within Kern County. I would say that we've probably eaten some of the foods from Kern County. But not all the food grown in Kern County is using this water.

Clay Rodgers: This is not a large amount of acreage in Kern County. I don't have the numbers on hand. I do know in the southern San Joaquin Valley from the San Joaquin River there's between three and four million acres of irrigated lands.

Dale Harvey: It's about a hundred thousand acres currently permitted.

Clay Rodgers: There are about a hundred thousand acres permitted to receive produced water, but not all that land receives the water. Most of it undergoes significant dilution before it's used. With carrots, we are talking about a couple hundred acres in Kern County. Even with a large carrot producer, a small percentage receives this water.

Dale Harvey: Looking at the 2018 crop surveys, there's about 500 acres of carrots between Cawelo and North Kern Water Storage District.

Clay Rodgers: A little bit more than the two to three hundred. I don't know exactly how many acres are grown in Kern County.

Clay Rodgers: Does Mr. Bass have any more questions?

Rebecca Asami: No other email questions have been submitted.

No other comments by the public.

Next Steps and Action Items

Rebecca Asami: Action items from this meeting are as follows: Posting the materials from the meeting, getting meeting summaries out to the Food Safety Expert Panel, getting the GSI report on MOU tasks to the Panel for review, and preparing the White Paper outline for the next meeting.

Clay Rodgers: Staff and the Food Safety Expert Panel will be reviewing the draft GSI report. When GSI gets that finalized we will get that up on the website. I'm assuming we should have that before the next public meeting. We'll work with the Food Safety Expert Panel to come up with an appropriate date. We will get notices sent out, and we will do our best to get information available before the meeting.

Closing

Clay Rodgers: All the agenda items have been covered and the Central Valley Water Board appreciates the public and Panel members for attending. Mr. Rodgers thanked the Panel and adjourned the meeting.