IRRIGATED LANDS REGULATORY PROGRAM
Pesticide Evaluation Advisory Workgroup Meeting #2

DRAFT MEETING SUMMARY

MEETING DATE: Tuesday 5 August 2014

LOCATION: Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670

ATTENDEES: See Attachment 1

Action Items

- Staff will draft meeting notes.
- Dr. Kelly Moran and Dr. Tessa Fojut will draft a list of Mineral Salts that should not be excluded from consideration in evaluation of pesticides to be monitored
- Mr. Claus Suverkropp will draft a list of chemical groupings of active ingredients for the pesticide evaluations using the full list of chemicals from CDPR.
- Kelly Moran, with assistance from Debra Denton, will identify the pesticides that are known to have a more toxic degradate than the parent chemical. A list will be created for workgroup review.
- Staff will send out Doodle Polls and schedule the next two meetings, one in September and one in October.

Welcome, Introductions and Operating Rules

- Staff welcomed Workgroup members and all attendees.
- Workgroup members, staff and interested persons in presence introduced themselves.
- Staff reviewed the operating procedures for the Workgroup and for the public input: there will be no alternates for meeting attendance, Workgroup members should notify staff ahead of time if unable to attend, public comments should be communicated to staff outside the Workgroup meetings and staff will convey questions and ideas to the Workgroup. Staff will circulate brief meeting notes to Workgroup members for review and input before releasing final notes to the public.

Agenda Review

- Item added: Overview of DPR Phase II Prioritization by Dr. Xin Deng
- Item added: Review of Aquatic Life Reference Values figure by Dr. Tessa Fojut

Overview of DPR Phase II Prioritization by Dr. Xin Deng

- Dr. Xin Deng provided an overview of DPR's Phase II Methodology for Prioritizing Pesticides for Surface Water Monitoring. Dr. Deng referred the workgroup to Figure 1 in the Phase II methodology, discussing the factors used and answering questions. A question about degradates was raised – DPR is working on how to incorporate them.

Factors and Steps for Pesticide Evaluation

- See Attachment 2. Mr. Mike Johnson provided an overview of the handout titled: *Straw man proposal for factors to include in an analysis of pesticides to monitor*, which

includes a compilation of *Potential factors for use in decision making* and *Methods used in the decision process*. Additional handouts include: *Recommendations for Use of Drinking Water Standards and Health Levels in Pesticides Prioritization for Monitoring*, provided by Elissa Callman; *Straw Man Process to Catalyze Discussion*, provided by Kelly Moran; and a draft process decision tree, provided by Dr. Debra Denton.

- See Attachment 3. The Workgroup reviewed and discussed the major steps and sub-steps in the Straw Man Process. All agreed with the major steps and a detailed discussion of sub-steps 1A-2C followed. This resulted in the previously identified action items, as well as some edits to the sub-steps.
- Questions and topics for further consideration included:
    - When/what exclusions should be made to the list of pesticides to evaluate?
    - Some pesticides could be excluded right up front, while others will need to be evaluated on a more regional or watershed basis.
    - Is there a minimum number of pounds or acres that should be used as a cutoff for consideration? The Workgroup felt there should not be.
    - At what scale is the evaluation occurring?
    - Where does the use data come from? Agricultural Commissioner? PUR?
    - There will also be an element of best professional judgment during the evaluation process.
    - Data cleanup: process will need to include documentation of problems encountered and how they were addressed
    - The Workgroup is to address current use pesticides, not legacy products
    - The Workgroup reviewed the list of excluded products in Table 1 of DPR's Phase I methodology.
    - Detailed discussion of what can be excluded led to an action item to create a list of the specific mineral salts that should not be excluded – Kelly Moran and Tessa Fojut.
    - Chemical groupings – a draft grouping will be provided by Claus Suverkropp.
    - Tessa Fojut volunteered to supply a table of toxicity values and benchmarks for those pesticides that have criteria.
- Review of Aquatic Life Reference Values
    - See Attachment 4
    - The Workgroup discussed the available criteria and benchmarks. Concerns were expressed about the exclusion or inclusion of chronic values. Further discussion and a decision can wait until after some examples have been compared and evaluated.
- Drinking Water Standards
    - Elissa Callman provided a brief overview of how human health standards could be included as reference values utilized in the pesticide monitoring prioritization process. Additional information will be provided to the Workgroup.
    - Dr. Moran noted that she has conducted a comparison between aquatic toxicity and human health criteria for pesticides. She found that 24% of the time, the human health criterion was lower than the aquatic life criterion.

Wrap-up/ next Steps

- A Doodle Poll will be sent to Workgroup Members to schedule the next 2 meetings.

IRRIGATED LANDS REGULATORY PROGRAM
Pesticide Evaluation Advisory Workgroup Meeting #2

ATTACHMENT 1 – LIST OF ATTENDEES

Workgroup members present

Callman, Elissa	Clark, Stephen	Deng, Xin	Firoved, Roberta
Fojut, Tessa	Huntsinger, Josh	Johnson, Michael	Markle, Jim
Moran, Kelly	Orlando, James	Suverkropp, Claus	Tadesse, Dawit

Workgroup members absent

Denton, Debra			

Staff present

Barnes, Patrick	Fregien, Susan	Karkoski, Joe	

Others present

Veenstra, Danielle			

Complete list of attendees with affiliations (alphabetical, by last name)

- Patrick Barnes, Central Valley Water Board – Fresno
- Elissa Callman, City of Sacramento
- Xin Deng, California Department of Pesticide Regulation
- Roberta Firoved, California Rice Commission
- Tessa Fojut, Central Valley Water Board – Sacramento
- Susan Fregien, Central Valley Water Board – Sacramento
- Josh Huntsinger, Placer County Agricultural Commissioner
- Michael Johnson, MLJ-LLC / East San Joaquin Water Quality Coalition – San Joaquin County & Delta Water Quality Coalition
- Joe Karkoski, Central Valley Water Board – Sacramento
- Jim Markle, Coalition For Urban/RUral Environmental Stewardship (CURES)
- Kelly D. Moran, TDC Environmental
- James Orlando, US Geological Survey
- Claus Suverkropp, Larry Walker Associates
- Dawit Tadesse, State Water Resources Control Board
- Danielle Veenstra, Almond Board of California

Straw man proposal for factors to include in an analysis of pesticides to monitor

Background

At Meeting #1 of the Pesticide Evaluation Advisory Workgroup (PEAW), four presentations were made describing processes used by various entities to select the pesticides to include in their monitoring and reporting program. The four programs are the California Rice Commission, Sacramento Valley Water Quality Coalition, Department of Pesticide Regulation Surface Water Monitoring Program, and the Sacramento River Source Water Protection Program. After the presentations it was concluded by the Workgroup that all four programs shared several common elements. Further discussion suggested that any methodology/process developed by the PEAW would likely contain these same elements.

The method by which these elements were incorporated into each decision instrument varied across the four entities. The decision was made to pull together these factors into an initial proposal of the elements to include in the decision process. Michael Johnson volunteered to pull together the initial list of factors. Volunteering to assist were Claus Suverkropp, Jim Markle, Debra Denton, Roberta Firoved, Elissa Callman, and Kelly Moran.

The main factors listed below are used by some or all of the entities in their assessments of pesticides to monitor. They are candidates for the process to be used by the ILRP agricultural coalitions when they develop their list of pesticides to monitor. The list below is not meant to exclude any other potential factors. The list below for the most part, does not include any criteria about when to include the parameter, the scale that is appropriate, or the method by which the parameter should be included in the decision process (e.g., develop a relative toxicity risk metric as is done as part of the process used to guide the selection of pesticides to monitor by the Sac Valley Coalition, or develop a binning process as is done by CDPR to establish toxicity categories used to determine the pesticides to monitor in their Surface Water Protection Program). There is no judgment made with respect to how the combine metrics or work through the decision process. Again, how the factors are used/combined to develop the list of pesticides to monitor is not the issue here. Some potential methods for combining measurements are provided below. However, although these issues are topics for later discussion, they may be critical to the decision about what to include. If the workgroup selects a parameter for which data are not available or there is significant uncertainty associated with the measurement, it may be difficult to adequately incorporate the parameter into the analysis.

Potential factors for use in decision making

- Pesticide applications/use
  - Pounds AI applied
    - Average pounds applied per year (3 year average)
    - Average pounds applied per month (3 year average)
    - Pounds AI applied per acre
    - Acres of application per AI
  - Incorporate environmentally relevant degradation products
  - Lump chemicals with different trade name but same AI
- Pesticide toxicity
  - US EPA OPP Aquatic Life Benchmark OPP Benchmark Equivalents using US EPA Registration Eligibility Decisions, Registration Review from Pesticide Re-evaluation Division, or FOOTPRINT Pesticide Properties Database
  - ECOTOX toxicity
    - Endpoint (chronic or acute)
    - Average of endpoint values for select species
    - Minimum of endpoint values for select species
  - Human health
    - US EPA and CA primary and secondary drinking water standards
    - CA Notification Levels (NLs) or Archived Advisory Levels (AALs)
    - CA Public Health Goals (PHGs) or US EPA Health Advisories (HAs)
    - US EPA Human Health Benchmarks
- Pesticide chemical properties – used to evaluate chemical fate and transport
  - VP – volatility from soil and plants
  - K_{oc} – organic carbon partitioning to determine likelihood of sediment vs. dissolved phase
  - SOL – solubility in water
  - FD – field dissipation half life
  - Henry's constant – volatility from water
  - HLW, HYDRO – water-phase dissipation and hydrolysis
  - HLWD – aquatic system dissipation
  - Log[K_{ow}] – bioaccumulative potential
- Historical sampling results
  - Concentrations
  - Detections
    - Detections at concentrations above WQOs or trigger limits
    - All detections
  - Minimum number of samples (e.g. > 100 samples) for decision making

    - Potential for toxicity (e.g. 99.9th percentile of monitoring data > lowest benchmark)
- Availability of analytical methods
- Other factors
    - Application method (air blast, ground broadcast, aerial, etc.)
    - Irrigation method used on primary crop(s)
    - Pesticide mode of exposure (systemic vs. contact)

Methods used in the decision process

- Pesticide screening to reduce potential list
    - E.g. solvents, fumigants, adjuvants, pheromones
- Create indices to convert raw data to simple numbers
    - Pesticide use
        - Probability
    - Toxicity
        - DPR 8-class system
- Scaling/standardization
    - Acres treated
    - Pesticide use – pounds AI/acre using DPR's PUR system
    - Joint toxicity – pesticide use
        - Average AI applied/(minimum EC50*total watershed size)
- Weight of Evidence
    - Current and historical monitoring data (may have to use agencies like DPR for newer compounds)

7/24/14

Recommendation for Use of Drinking Water Standards and Health Levels in Pesticides Prioritization for Monitoring[1]

Use lowest applicable standard, health advisory, or health level in order of priority shown below:

1. First priority: use federal or state primary and secondary drinking water standard: maximum contaminant levels (MCL)

   See the following for Federal and California Drinking Water Standards:
   http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/MCLsEPAvsDWP-2014-07-01.pdf

2. If drinking water standard is not available, use CA Notification Levels (NL) or Archived Advisory Levels (AAL)

   See the following for CA NLs:
   http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Notificationlevels/NotificationLevels.pdf

   See the following for CA AALs:
   http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Notificationlevels/archivedadvisoryLevels.pdf

   See the following for more information on NLs and AALs:
   http://www.cdph.ca.gov/certlic/drinkingwater/Pages/NotificationLevels.aspx

3. If NL or AAL is not available, use CA Public Health Goal (if PHG is available and MCL is not yet available) or EPA Health Advisory (HA). (Note: If there isn't an MCL, NL, or AAL, then there will likely not be a PHG available)

   See the following for CA PHGs:
   http://www.oehha.org/water/phg/allphgs.html

   See the following for the 2012 Edition of the Drinking Water Standards and Health Advisories:
   http://water.epa.gov/action/advisories/drinking/upload/dwstandards2012.pdf

   See the following for additional information on Health Advisories:
   http://water.epa.gov/drink/standards/hascience.cfm

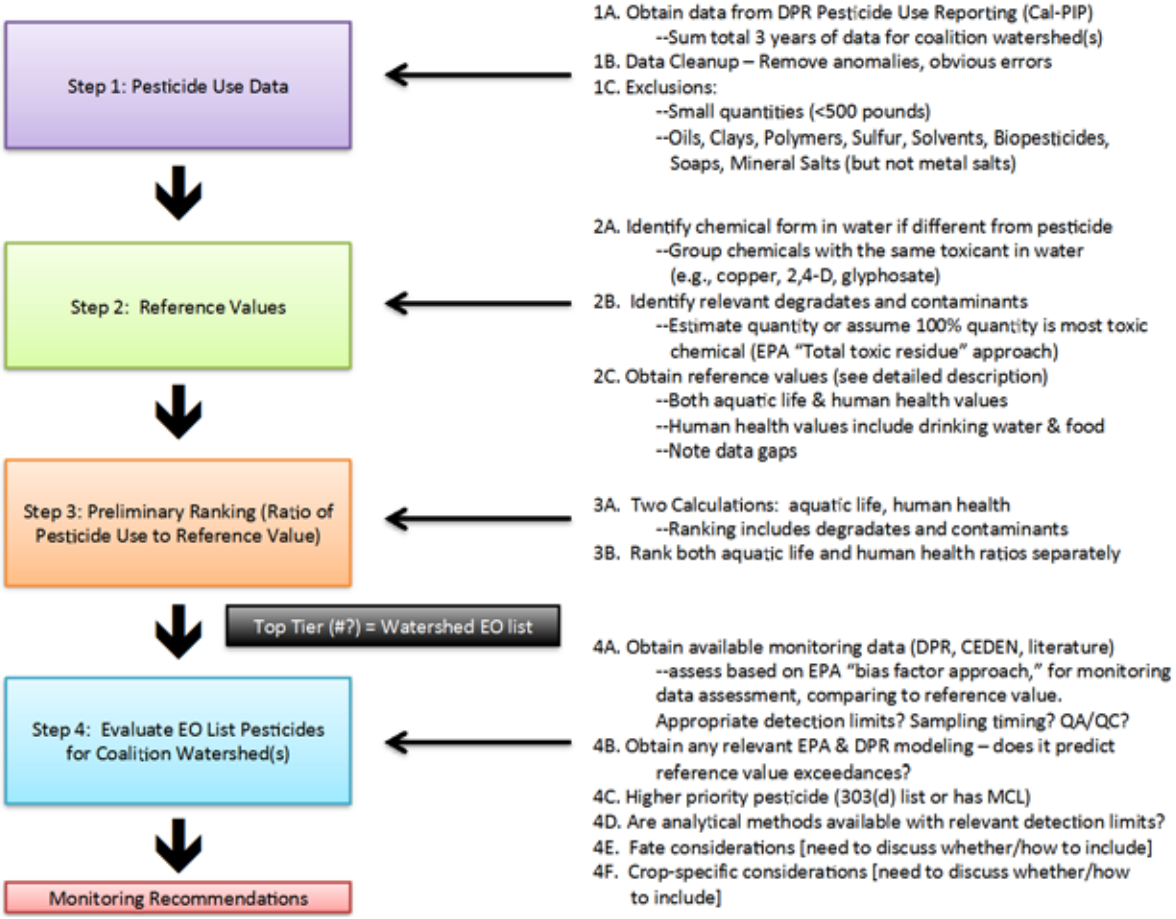
4. If HA is used, consider both non-cancer risk and cancer risk, and select more protective (lower) number. For the purpose of the monitoring prioritization, use the following HAs: Lifetime (non-cancer) and Cancer Risk (Use 10^{-4} Cancer Risk column divided by 100 to arrive at 10^{-6} cancer risk. This level is recommended for comparability with OEHHA methodology for PHGs).

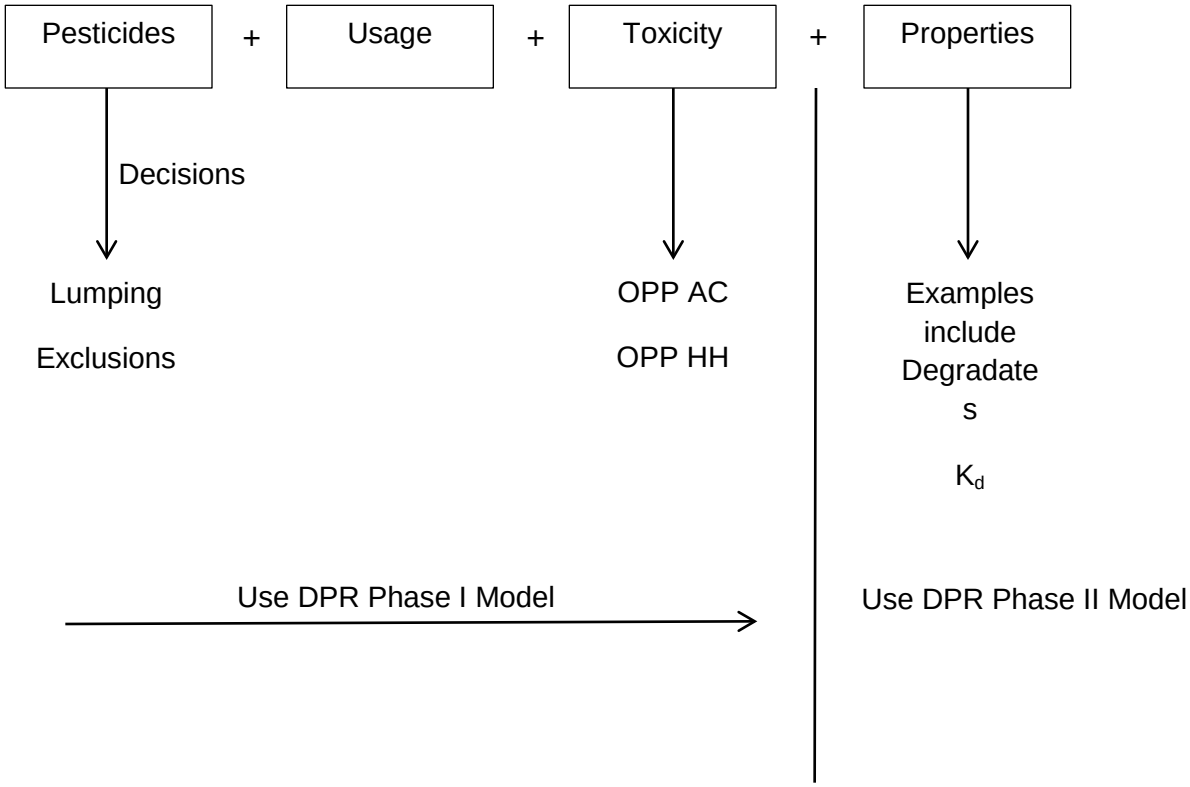
5. If HA is not available, use EPA Human Health Benchmark for Pesticides (HHBP). Consider non-cancer risk and cancer risk, and select more protective (lower) number. For the purpose of the monitoring prioritization, use the following HHBPs: Chronic or Lifetime HHBP (non-cancer) and Carcinogenic HHBP (Use 10^{-6} Cancer Risk).

   See the following for EPA HHBPs:
   http://iaspub.epa.gov/apex/pesticides/f?p=HHBP:home

Note: the links provided in items 1 and 2 will need to be updated in the near future; the State Drinking Water Program has moved to the State Water Resource Control Board as of July 1, 2014, and their website will be transitioning soon.

Straw Man Process to Catalyze Discussion





Limitations/Issues

Analytical use Acute/Chronic Toxicity

Appropriate resolution on timing/spatial

Time gap of using DPR PUR database perhaps use data directly from County Agricultural Commissioners

Field factors