

Central Coast Regional Water Quality Control Board
May 9, 2008 Meeting
Board Member Questions and Staff Answers
Q&A Doc

Item # 22 on Toxicity:

Staff response to Questions Part #1 from Board Member

1. **How is staff coordinating with DPR?** Staff is coordinating with DPR by sharing data, providing comments on pesticide reevaluations, meeting with DPR and pesticide registrants, and by participating in specific pesticide working groups.
2. **What is DPR doing in their current review?** Based on the presence of pesticides in waterways, DPR is reevaluating three pesticides that are of concern in Region 3: chlorpyrifos, diazinon and pyrethroids. During reevaluation, DPR requires registrants to provide data on the extent of hazard and to identify suitable mitigation measures. Currently, DPR is looking at granular chlorpyrifos in the Central Coast, dormant sprays of diazinon, and several categories of pyrethroid pesticides.
3. **Is Region 3 the only region submitting this type of data to DPR?** No, Region 5 has submitted data on several of these pesticides
4. **Which other Regions are doing the same, if they are? I believe that DPR receives data from the central valley region and State Board.** Data from State Board and the Central Valley Region (5) was used by DPR to require reevaluation of pesticides. Staff is unsure the extent that other regions submit data to DPR.
5. **Is DPR surprised by Region 3's monitoring data?** No, the chemicals of concern in intensive agricultural areas of the central coast are of concern in other areas as well. However, Region 3's data will be helpful during the reevaluations.
6. **What came from the staff's meeting in April with DPR?** The purpose of the April 28, 2008 meeting was to learn about our respective programs and begin working together. Staff met with the Chiefs of DPR's Environmental Monitoring and Pesticide Registration branches, along with lead DPR staff in these branches. DPR's Environmental Monitoring Branch requested surface water toxicity and pesticide concentration data from the Water Board. Prior to the meeting staff reviewed the chlorpyrifos reevaluation proposal and report submitted by the registrants to DPR and provided comments. On April 29, 2008, staff participated in the Pyrethroid Working Group for the reevaluation of pyrethoid pesticides. On May 2, DPR facilitated a field visit in coastal Monterey County watersheds with staff and DOW AgroSciences, the lead registrant for chlorpyrifos reevaluation, to review water quality monitoring data, agricultural practices, and application methods. DPR staff is coming to Region 3 May 22 to participate in a State and Regional Water Board Irrigated Lands Regulatory Program (ILRP) round table meeting. One of the goals of the meeting is to establish a joint ILRP/DPR focus group to address specific pesticide/water quality issues.
7. **Does DPR have an explanation for how this situation has developed assuming that farmers have followed the labeling guidelines for pesticide application?** Staff did not address this question to DPR, but the chlorpyrifos study suggested that application of

granules at the ends of rows could be contributing to off-site movement. Since these products vary in their water solubility and adherence to soil particles, it is likely that more than one mode of transport is involved.

8. **Has DPR considered in their review that pesticides can adhere to sediment and be transported off site?** Yes, pyrethroids were put into reevaluation based surveys and studies indicating pyrethroid residues in the sediment of waterways at toxic levels. DPR is investigating the off site transport of pyrethroids bound to sediment. Chlorpyrifos also has some ability to adhere to sediments.
9. **Do we have "modeling" to thank for this outcome? Please describe and discuss.** Staff has not reviewed the studies that were used in the original registration of any of these products, and therefore we are not able to discuss the validity of the methods used in the registration of these products. Since we are discussing several classes of pesticides, all of which are turning out to be difficult to control in the environment, it does raise questions about the registration process.
10. **Also, if possible I would like someone from DPR to be available by phone during item #22 to answer board questions. Thank you.** The initial staff contact at DPR is Denise Webster, Program Specialist in the Pesticide Registration Branch. Her contact information is, by e-mail at dwebster@cdpr.ca.gov or by telephone at (916) 324-3522.

In summary, staff recently initiated dialogue (December 2007) with DPR's reevaluation coordinators, after reviewing the results of the Cooperative Monitoring Program's study of organophosphate pesticides at the Salinas and Santa Maria monitoring sites. The State Board and DPR have a Management Agency Agreement in place that is intended to improve coordination between DPR and the State and Regional Water Boards, but until recently, much of the focus has been on the Central Valley. We will ensure that our concerns are addressed through the existing processes, and work to improve coordination. Staff is still learning about the reevaluation program and how the two programs can work together. Some preliminary ideas to coordinate include:

- Regularly submit toxicity data and reports to DPR so that they are aware of pesticide water toxicity problems in the Central Coast Region.
- Work with DPR and registrants to identify how pesticides migrate off-site and to identify mitigation measures that protect water quality. Monitor mitigation efforts and share information on their effectiveness.
- Coordinate stakeholder outreach between local coordinators, County Ag. Commissioners, DPR and the registrants.
- Develop a coordinated approach to regulating pesticide use and protecting water quality between DPR and Regional and State Water Boards. The agencies have similar goals but have different enforcement mechanisms. The agencies need to have a mutual understanding of pollution problems and the mechanisms that contribute to pollution. We also need to share common objectives to prevent and reduce pollution.
- The initial discussions with DPR and the registrants were positive and staff is optimistic that we can work together to achieve our goals.

Part 2 of Board Member Questions for ITEM #22

1. See above
2. Do we have field observations (surveys) of the presence/absence/abundance/distribution, etc. of test organisms or their locally

residing similar species? If we do, do the observations track the toxicity test results?

A. *Hyalella* is the only toxicity testing species that is also native to our area. Granite Canyon research in both Salinas and Santa Maria watersheds looked at benthic invertebrate data and found that diversity was impacted at toxic sites and that pesticide concentrations were likely the cause of ecological damage. John Hunt from Granite Canyon will be at the meeting and can address this question in more detail. In some of our data, we have seen sites that appear to have unimpaired benthic invertebrate communities that still show a toxic effect. This is why bioassessment provides an important "weight of evidence" related to biological health. Both CCAMP and the Cooperative Monitoring Program for Agriculture have some bioassessment data at sites where toxicity has been collected. However, for the purposes of this presentation we did not do an analysis of benthic invertebrate health at toxic sites. Neither program does bioassessment of algal or fish species.

3. Staff has prioritized work on toxicity issues. I can understand frequency being a factor but what about species showing the toxic effect. Which species have a higher priority, which have a lower priority and why?

A. Invertebrate toxicity has been a higher priority to date because it is more widespread and typically of much higher magnitude than fish or algae toxicity.

4. So there are two classes of pesticides that are the primary focus of toxicity testing today in the Central Coast Region: organophosphates and pyrethroids. Other than the organochlorine pesticides, are there any our groups of pesticides or single pesticides that have been used in the region but have not shown up in testing? I noticed a comment @ p. 12, parag. 4 "This implies another chemical may have been causing the toxicity, or that some unaccounted for synergistic effect was present." Was there a broad chemical screening done of the ag and urban area waterbodies, at some point in time, to try and identify all chemicals known to have been used over say the last 30 years? Are there ag chemicals that have been used that are not showing up in toxicity testing?

A. There are hundreds of chemicals applied in the Region, based on the DPR Pesticide Use Report. Water chemistry testing to date by the Ag Monitoring Program has been specific to OPs (there has been no broad chemical screening, though the Ag Program found that the majority of sites found to be toxic could be explained by OP pesticide concentrations alone). TIE testing helps narrow the groups of concern down, and the Granite Canyon group has done quite a lot of this in our area, usually implicating OPs in water and pyrethroids, OPs or organochlorines in sediment. CCAMP has never conducted broad chemical screening in water for chemical groups. We have conducted sediment testing for suites of chemicals, but this has been limited to traditional chemical groups typically found in sediment (PAHs, PCBs, Organochlorines, OPs). A new study starting this spring by SWAMP will include pyrethroids and PBDEs. The rationale for testing pyrethroids and OP pesticides only in the Salinas watershed by DPR in 2004 was stated to be because of 1) their relatively high use, 2) their high

potential aquatic toxicity, and 3) (for pyrethroids) the relative paucity of current monitoring data.

5. @ p. 5, parag. 2. The Granite Canyon researchers concluded "Toxicity in the estuary was correlated with higher river flow." What is the significance of this conclusion? Higher river flow would be caused by rainfall. Rainfall would cause stormwater runoff. Is that it? Do discharges from ag irrigation tail water and tile drain systems occur when it rains as well as during summer months?
A. The researchers suggested that sediment is moved in higher flow seasons, and the chemicals the researchers detected of concern (organochlorines) are associated with sediment particles. The researchers documented that concentrations of organochlorine pesticides exceeded established toxic levels during higher river flow periods. Because irrigation is minimal during the winter, runoff from fields is likely overland runoff, rather than irrigation runoff. Storm water runoff would likely carry more sediment than irrigation runoff. There is, of course, more urban discharge in the winter as well, though communities in the Pajaro watershed which ultimately drain to the estuary are relatively small.
6. @ p. 6, parag. 5. What were the two types of vegetated treatment systems that were evaluated for reducing toxicity? In the first treatment system was water column toxicity also reduced? What BMPs would be most effective in reducing water column toxicity? Other than education, is there a field installed BMP that would reduce water column toxicity?
A. The two systems were a constructed wetland and vegetated treatment system ponds. Water column concentrations of pesticides were reduced with distance traveled through the wetland system, for some but not all surveys. Pesticide reductions increased with longer residence time in the system. Diazinon concentrations tracked over a three day residence time were decreased by incidental dilution. John Hunt can address the findings of these studies in detail tomorrow if you would like additional information. Runoff management (including tailwater reduction and retention) would prevent soluble toxicants from moving into the water column in the dry season.
7. @ p.10, Estero Bay Hydro Unit - Why no toxicity? Is there no ag or urban areas in this unit?
A. There are many fewer acres of high intensity urban and irrigated ag in the Estero Bay Hydro Unit, compared to Monterey and Santa Barbara counties. Also, there has been less sampling in this area (few ag sites, no storm water monitoring programs). CCAMP will be sampling next year and will conduct toxicity sampling. In the Estero cycle in 2002, CCAMP had a reduced budget and limited toxicity sampling effort.
8. @ p. 11, South Coast Hydro Unit - Does staff have an explanation as to why there are many sites in this unit that have not had any toxic samples?
A. Toxicity sampling frequency for CCAMP has been relatively low (twice per year every five years at a subset of sites). . Lack of toxicity findings do not

necessarily imply that no toxicity is present (toxic effects may be episodic). Lack of toxicity may also be just that – land uses are such that no toxic problems are resulting. CCAMP staff observe dry season runoff in only a few locations in the Sough Coast Hydro Unit (at sites where toxicity is observed: Arroyo Paredon, Atascadero Creek and Franklin Creek).

9. @ p. 13, parag. 2. We are in the 4th year of the current ag waiver permit. Has staff completed any enforcement actions against non-enrollers or other violators of the program? What is the total number of non-enrollees at this juncture?)
A. See p. 7 of the E.O. report under Enforcement Actions.

10. Do we have toxicity results from all “major” urban areas in region 3? Only the City of Salinas has required storm water monitoring for toxicity. CCAMP has toxicity data from water bodies running through urban areas, but these samples can include influence from other upstream land uses. Also, some urban areas, such as the City of Monterey, do not reside on a major waterway, and storm water drains directly to the ocean. CCAMP does not sample storm water. The First Flush program for the Monterey Bay National Marine Sanctuary sampled toxicity in runoff in the Monterey Bay area and found that first flush discharge was toxic to mussels in all samples, and that concentrations of copper were elevated over Basin Plan standards. This sampling represents worst case scenario, as it is undiluted discharge and doesn't necessarily reflect impacts in receiving water. In storm water sampling conducted by the County of Santa Barbara's Project Clean Water several years ago, diazinon, chlorpyrifos and other OPs were found in many areas of the City (typically at low levels). Glyphosate (an herbicide) was also detected. Diazinon and chlorpyrifos are now banned for urban use.

11. @ p. 15, last paragraph. Will there be at some point in time (and when) actions plans or controls for reducing toxicity in urban areas? Reading over the last few pages of the staff report, it appears that education and public outreach are the main methods for targeting residential use of pesticides and chemicals. Municipal operations appear easier to target because you have one entity to direct. Are there structural BMPs being developed to reduce urban toxicity?

A. The municipalities first must become enrolled, they start implementing their Stormwater Management Plans (SWMPs), we continue to monitor toxicity as we have been, and where toxicity appears to be a problem, we require the munis to begin self-monitoring for toxicity and develop specific action plans for problem areas. This might take until late in the first permit term or early in second permit term, so we are still about five years out. Regarding structural Best Management Practices (BMPs), we don't know of structural BMPs being developed specifically for toxicity. However, since the pesticides we are seeing from urban areas are now associated with sediment, it seems that the same structural BMPs that are used for sediment will address toxicity. Maximizing infiltration will be key, which is why LID is important as a significant part of the solution.

12. Lastly, please address the future and the time period required, for reducing toxicity in ag and urban areas. If some type of vegetated buffer is required for ag, does staff believe that that will have a significant enough effect on reducing toxicity to take water bodies off of the 303d list? What about for urban areas?

A. Reduction or elimination of tailwater discharge through better irrigation management could have a significant impact on water column toxicity. Water column toxicity could also be reduced substantially if OP pesticides are replaced by pyrethroids for some uses. However, as pyrethroids replace OP pesticides we can anticipate more sediment toxicity in place of water toxicity. Sediment toxicity associated with pyrethroids will be more difficult to address because it will persist longer. Also, pyrethroids are toxic to fish, so toxicity to fish could potentially become more problematic. BMP testing has shown wetland and pond treatments to be effective at removing toxicity from pyrethroids (because sediment settles out in these systems). For urban areas, proper SWMP implementation will immediately reduce toxicity from urban areas. Controlling the source is critical and public education and outreach gets to the source. Vegetated buffers will have a significant effect of toxicity reduction in urban areas because buffers effectively filter out the sediment associated with pesticides in the urban environment. We don't know yet if buffers will be effective enough to get waterbodies healthy and therefore delisted, but we are pretty confident they will do just that.

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