NEWSLETTER
Central Coast Water Quality Preservation, Inc.
March, 2008

Outreach and Monitoring in Key Watersheds

The Ag Committee has reviewed and approved a comprehensive program to learn more about water quality patterns, usage and consequences in six key watersheds in the Central Coast. These watersheds, Orcutt-Solomon Creek in Santa Barbara County, Oso Flaco Creek in San Luis Obispo County, Quail and Chualar Creeks in Monterey County, San Juan Creek in San Benito County and Llagas Creek in Santa Clara County, already the location of an existing CMP monitoring site, will now have a suite of additional monitoring and practical training for area farmers.

Upstream Monitoring: At each of the six watersheds CCWQP will establish 3 or 4 upstream sites, a total of 20 locations, to monitor water on a temporary basis for one year. We will also sample at 12 other sites to improve our knowledge of water quality, or to sample water in areas not previously part of the CMP, for 32 total sites. Each location will be sampled monthly using the same procedures as the existing 50 permanent CMP sites. We will also conduct four tests for toxicity, based on known downstream results from prior years. This will meet the Ag Waiver obligations for follow-up and provide local farmers with better information on the sources of pollution.

Continuous Flow Monitoring: This is an innovative project to measure water flows, discharge, every 15 minutes for 6 months at, or near, the CMP site in the six watersheds. We presently sample flows one time each month, giving us a snapshot of water in each creek. No one knows if this is representative of water flows through the course of the day. Most likely it is not. After all how much irrigation is going on at 2 a.m.? On the other hand it is bad math to take a monthly sample at 2 p.m. and assume it is like that 24 hours a day, every day.

Outreach and Practical Training: CCWQP is organizing watershed specific outreach and practical education in the six watersheds. Each session will use the new upstream and flow monitoring to give a clear view to farmers of the water quality and quantity issues in their drainage. This will be combined with discussions by our outreach partners, who will have specific knowledge of the area and crops. These partners from UC Davis, NRCS, UCCE, RCD, etc., will be able to make farm specific suggestions on how you can improve the quality of the irrigation water running off of your fields. This is no milk and cookies classroom stuff, it is real world information you can take home and use.

Budget and Finance: The Ag Waiver (MRP) mandates that the CMP include follow-up with a cap of 25% of the cost of the permanent ambient monitoring program (50 sites). CCWQP has approached this obligation by applying the total accrued for follow-up based on the cost of the CMP sites for 2006, 2007 and 2008, to a follow-up project during 2008 and the first half of 2009, giving us greater resources for broader follow-up. The first year, 2005, was fully funded by two Region 3 grants, which also paid for the follow-up program conducted in 2006-07, organophosphate monitoring at the 25 initial sites (see next page).

CCWQP desired clarification of few uncertainties in the MRP requirement for the 25% follow-up which were resolved with a letter from Roger Briggs, Executive Officer, CCRWQCB. He wrote:

> "Monitoring and Reporting Program (MRP) No. R3-2004-0117 specifies that an amount not to exceed 25% of the annual monitoring budget (excluding staff and administrative costs) shall be set aside for follow-up monitoring, to further characterize problem areas and to better understand sources of impairment. Although the MRP does not specifically mandate that the 25% be spent the following year, we believe it is important to conduct follow-up annually, in order for the data collected to be most relevant. Because the program was new, and protocols for follow-up were still being developed, we allowed latitude in this respect for 2006-2009; as a result, the Cooperative Monitoring Program will have combined the 25% budget amounts for several years, resulting in three large follow-up projects. For the future, we expect that follow-up will occur annually. If Preservation Inc. provides strong technical arguments indicating a different time length is beneficial for specific follow-up monitoring projects, Water Board staff will consider modifications of annual follow-up monitoring on a case-by-case basis."

The contracts with the research labs, Larry Walker Associates and UCSC, for the CMP over the three years, 2006, 07 and 08, average $812,00 per year. If this is used as the basis for projecting the 25% annual follow-up budget CCWQP should spend about $203,000 per year commencing in 2010.

As Mr. Briggs points out, the follow-up for the years 2006-2009 is consolidated, and has been funded by the Prop 40 grant. The state is providing $499,500 through this grant, with a match of $505,000. This amount will exceed the 25% requirement of the MRP and the grant requirements increase the scope of work required. On the other hand, the grant reduces the amount of money growers need to pay to operate the CMP, allowing CCWQP to keep participation fees stable, even with the additional grant obligations.

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Region 3 Toxicity Workshop: The CCRWQCB Board has scheduled a two part workshop on toxicity on Thursday, May 8, 2008, at their San Luis Obispo offices. This workshop will be the first time that there will be a detailed presentation on toxicity, urban or ag, before the CCRWQCB board.. It will also be the first time all this information will be presented together to the public. Obviously environmental groups will be attending this workshop as well farmers and city officials. As it is a workshop, and not a regular board meeting, there will be no opportunity for public participation.

Sarah Greene will make the CMP research presentation for CCWQP. As we have completed three years of CMP and turned in the results from last year's OP studies, all this information will be presented. During the second half CCWQP will talk about our follow-up projects, and other actions that farmers have undertaken. Other presentations, besides Region 3 staff, will include John Hunt and Don Westin. Don Westin, is a professor at UC Berkeley. He has conducted extensive research on pyrethroid toxicity in ag areas, including Salinas,. He has also made presentations with UCCE at the USDA test field on PAM as a possible solution. John Hunt is with Granite Creek Labs in Big Sur, part of UC Davis. He, and Brian Anderson, have completed many studies on agricultural water toxicity in the Salinas Valley and Santa Maria,. The research of both Westin and Hunt are highly respected by Region 3 staff. Other presenters will address urban sources of toxicity.

This workshop will give the ag community an indication of the concerns the CCRWQCB Board may focus on during the reconsideration of the Ag Waiver in July, 2009. CCWQP will send another email after the meeting to keep you, the agricultural community informed on this important matter.

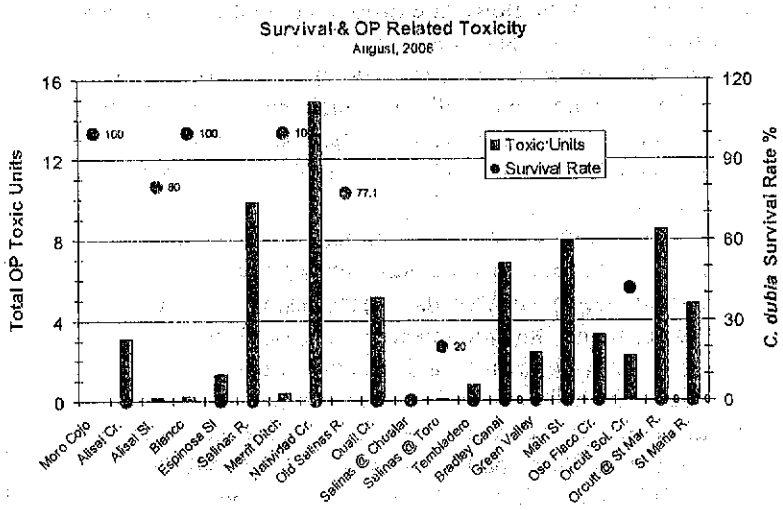
Toxicity and Organophosphate pesticides: CCWQP measured Organophosphate pesticides at 23 Cooperative Monitoring Program (CMP) sites in the Lower Salinas and Santa Maria watersheds four times between August, 2006, and March, 2007 by CCWQP as part of the CMP "Follow-up" monitoring to explore the link between organophosphate (OP) pesticides and toxicity.

Water samples from each site were collected for laboratory analysis of 19 OP compounds via gas chromatography/ mass spectrometry and parallel tests of toxicity to aquatic invertebrates (Ceriodaphnia dubia), fish (Pimephales, or fathead minnow), and algae (Selenastrum, or green algae). This summary focuses on toxicity to invertebrates, C. dubia, measuring survival and reproduction rates in sample water relative to rates in laboratory controls compared to OP concentrations.

Organophosphates were detected at every site during at least 1 of the 4 sampling events. Detections occurred at 16 of the 23 sites on all four sampling dates, and at 20 of the 23 sites on at least two of the sampling dates. Significant toxicity was observed at least once at 19 of the 23 sites. Of the 19 OPs tested, 7 were detected at least once: chlorpyrifos, diazinon, dichlorvos, dimethoate, ethoprop, fenchlorphos, and malathion. Only chlorpyrifos and diazinon were detected at concentrations likely to cause acute toxicity. Survival rates for C. dubia were significantly lower than the control in 50 of the 94 samples, or 53% of samples.

It is common to evaluate toxicity, and especially additive toxicity, in terms of toxic units (TUs) such that for each compound, 1 TU = median lethal concentration (LC50). Samples containing at least 1 TU of chlorpyrifos, diazinon, or both comprised 40% (38 samples) of the total OP samples collected for this study. The only other OP detected at a concentration > 0.2 TUs was malathion, which was detected in 1 sample at 0.26 TUs (the sample also contained chlorpyrifos and diazinon). The number of OP-related TUs detected in samples from this study ranged from 0 to 19, excluding one outlier.

A large subset of the samples with ≥ 1 OP-related TU exhibited 100% mortality in corresponding invertebrate toxicity tests. Another large subset of samples with ≤ 1 OP-related TU showed 100% or near 100% survival in corresponding toxicity tests. Only 3 samples showed high survival rates despite ≥ 1 calculated TU, however a subset of 15 samples showed significantly lowered survival rates despite ≤ 1 OP-related TU, suggesting possible additional sources of toxicity.



This data should only be considered with other information regarding pesticides, farm practices, soil types and the broader water quality data collected as part of the CMP. However, if it is viewed from the perspective of Region 3 staff, or the environmental community, there is a pressing need for farmers in areas with high aquatic toxicity to adopt practices to keep these OP pesticides out of their irrigation and stormwater runoff. This type of data is one of the important factors which will be considered during the process to renew the Ag Waiver.