

Irrigated Lands Waiver

Yolo County Farm Bureau Education Corporation

Subwatershed Program

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Volume 2, Issue 2

Exceedance Notices To Be Mailed To Growers

We observed significant toxicity to *Ceriodaphnia* (water flea) during the first irrigation season (April) water sampling event at the following Yolo County site:

- Willow Slough in Yolo-Solano (50% mortality at 48 hours, 100% on 96 hours).

A Toxic Identification Evaluation (TIE) and a dilution series were initiated for Willow Slough.

Willow Slough Bypass at SP (WLSBP): In a toxicity test conducted with *Ceriodaphnia*, the Coalition observed a reduction in survival of 100% compared to the control (complete mortality). In a toxicity test conducted with *Selenastrum*, the Coalition observed a reduction in cell growth of 24% compared to the control. These results were statistically significant and in exceedance of the Basin Plan narrative objective for toxicity.

In the WLSBP sample, chlorpyrifos was 0.083 ug/L. This concentration exceeds the proposed Basin Plan chronic and acute objectives for chlorpyrifos (0.015 ug/L and 0.025 ug/L), and appears to explain the *Ceriodaphnia* toxicity observed in the April 17, 2007 Willow Slough sample. Low levels of simazine and trifluralin herbicides were also detected, but these concentrations were not high enough to explain even the low algae toxicity. Detected concentrations of diuron in the

WLSBP sample (3.7 ug/L) were higher than the reported benchmark of 2.4 ug/L for non-vascular plants in USEPA's Ecological Risk Assessment Aquatic Life Benchmark Table. Concentrations of diuron above this level indicate that this pesticide may be sufficient to explain the observed toxicity to *Selenastrum*.

In summary, the Toxic Identification Evaluation and chemical analyses indicated that chlorpyrifos was the primary cause of the *Ceriodaphnia* toxicity observed in the April 17, 2007 sample. Chemical analyses indicated that diuron was the most likely cause of the *Selenastrum* toxicity in this sample.

As you heard from Rick Landon, there was no *Ceriodaphnia* toxicity in any of the three follow-up samples collected in Willow Slough on April 24, 2007 (the original sample site at WLSBP, and at the North fork and South fork of Willow Slough at County Road 99). There was a small (12%), but statistically significant reduction in the *Selenastrum* test for the sample collected from the North Fork, but it was less than a 20% effect and did not trigger any additional actions.

The *Ceriodaphnia* and *Selenastrum* toxicity observed in the April 17 sample was not persistent in ambient follow-up samples collected in this drainage on April 24, 2007.

Growers with applications in the 4 weeks prior to April 17 will be notified directly of the exceedances.



Water Quality Monitoring Winter 2007

Under the Irrigated Lands Program (ILP), the Coalition is required to monitor 2 storm season and 6 irrigation season events, weather and flow permitting. However, due to the low rain fall this past winter, the Coalition was only able to collect one storm season event for most of the area (2 events were gathered in the Pit River). Collection of storm event samples is typically based on receiving at least 1/2 inch of rain (although this amount may vary depending on soil saturation), the estimated amount needed to generate runoff.

When an exceedance occurs, the Coalition and its subwatersheds, with the Coalition for Urban/Rural Environmental Stewardship (CURES), stand committed to working with the Water Boards and their staff to implement the Coalition's management practices plan to help improve water quality in the Sacramento Valley.

Concern / Exceedances¹ / Monitoring Locations



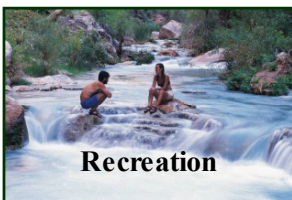
Drinking Water

- **Total Dissolved Solids:** Lurline Creek at 99w (Colusa), Walker Creek (Glenn), and Willow Slough Bypass (Yolo)



Aquatic Life

- **pH:** Willow Slough Bypass (Yolo), Cache Creek at Capay Diversion Dam (Yolo), Pope Creek (Napa), Pope Creek (Napa)
- **Dissolved Oxygen:** Coyote Creek at Tyler Road (Tehama)
- **Ceriodaphnia Toxicity:** Stony Creek (Glenn)
- **Selenastrum Toxicity:** Ulatis Creek at Brown Road (Solano)
- **DDD:** Lurline Creek at 99w (Colusa)
- **DDE:** Lurline Creek at 99w (Colusa), North Canyon Creek (El Dorado)
- **DDT:** Middle Creek US Highway 20 (Lake)
- **Diazinon:** Gilsizer Slough (Sutter)



Recreation

- **E. coli:** Gilsizer Slough (Sutter), Lurline Creek at 99w (Colusa), North Canyon Creek (El Dorado), Coon Creek at Brewer Road (Sutter), Coon Creek at Striplin Road (Sutter), Dry Creek at Alta Mesa Road (Sacramento), Laguna Creek at Alta Mesa (Sacramento), Lower Snake at Nuestro Road (Sutter), Mc Gaugh Slough (Lake), Ulatis Creek at Brown Road (Solano), Wadsworth Canal (Sutter), Capell Creek (Napa)



Agriculture

- **Boron:** Cache Creek at Capay Diversion Dam (Yolo), Willow Slough Bypass (Yolo)
- **Selenium:** Willow Slough Bypass (Yolo)
- **Electrical Conductivity:** Cache Creek at Capay Diversion Dam (Yolo), Walker Creek (Glenn), Willow Slough Bypass (Yolo)

2007 Irrigation Season

Due to a drier than usual winter, the 2007 irrigation season started a little early this year. Crews collected the Coalition's first irrigation samples in April. Initial information has shown 1 dissolved oxygen exceedance at Walker Creek and 5 water column toxicity exceedances (Walker Creek, Coon Creek, Coon Hollow, Laguna Creek and Willow Slough). The sources are currently unknown, however the Coalition is looking into potential sources including pesticides used by agriculture.

At time of publication, the Coalition had not received pesticide information from the lab.

2007 Irrigation Schedule:

- Event 19: April 17-20 (includes sediment collection)
- Event 20: May 15-17
- Event 21: June 19-21
- Event 22: July 17-19
- Event 23: Aug 21-23
- Event 24: Sept 18-20

Ten Subwatersheds:

- Butte-Yuba-Sutter
- El Dorado
- Colusa-Glenn
- Lake-Napa
- Pit River
- Placer-Nevada-South Sutter- North Sacramento
- Sacramento-Amador
- Shasta-Tehama
- Yolo-Solano
- Upper Feather River

¹ Reported "exceedances" are either numeric objectives formally adopted by the Water Board or based on the numeric interpretation of the narrative objectives.

² Diazinon exceeded the Regional Board's water quality objective of .05 ug/L, only one sample exceeded the National Criterion objective of .17 ug/L.



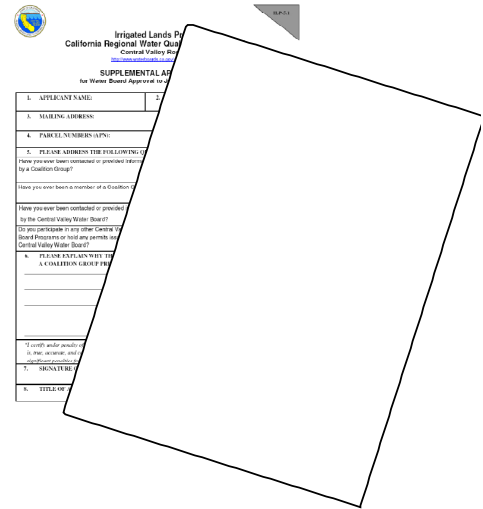
The Deadline To Join A Coalition Group Directly Has Passed; How Do Irrigators Sign-up for the Irrigated Lands Program Now?

Answer Provided By Kelly Briggs, Regional Water Quality Control Board

The process and application forms for irrigated landowners and operators seeking to join Coalition Groups after the 31 December 2006 deadline have been established and posted on our website. Please go to http://www.waterboards.ca.gov/centralvalley/programs/irrigated_lands/index.html to access the link that will take you to the section that describes process and includes links to the application forms.

We tried to set up a process and application forms that would cover the variety of circumstances that have or will come up. If people meet one of the four conditions listed on ILP-5.0, they just need to submit that form and supporting documentation. If they don't meet one of the four conditions listed on ILP-5.0, they need to complete both ILP-5.0 (the application) and ILP-5.1 (the supplemental application) and submit both forms with their supporting documentation. As people call, we are encouraging them to download the forms from our website, but are happy to mail these forms to people upon request.

If growers have questions or would like information and forms mailed to them, please have them call the Irrigated Lands Program telephone line at (916) 464-4611 or send an email to IrrLands@waterboards.ca.gov.



Calendar of Events

Sacramento Valley Water Quality Coalition Meeting

May 21
1:30 pm

Yolo County Farm Bureau,
Woodland

Hot Topic: E. coli

Regional Water Quality Control Board Workshop

June 21 or 22

Topic: Presentation on water quality data in the Central Valley

Treatment Shows Insecticide Breakdown In Water

Article provided by Parry Klassen,
Coalition for Urban/Rural Environmental Stewardship (CURES)

An enzyme-based product from Australia is showing promise for degrading OP pesticides in irrigation drainage water. Two studies in Stanislaus County on a commercial alfalfa field showed complete breakdown of Lorsban (chlorpyrifos) in drain water flowing from a field treated two days earlier with the insecticide. The product, LandGuard OP-A, is the same enzyme used in Australia and Europe to break down chlorpyrifos and diazinon insecticides in sheep dips. Disposal problems for the high concentrate solutions prompted development of the product by Orica Pty, a company specializing in chemicals for municipal drinking water treatment. The company is the largest manufacturer of chlorine in Australia.

In the alfalfa tests performed by the Coalition for Urban Rural Environmental Stewardship, the enzyme was dribbled into drain water flowing from a 75 acre field over three, four hour periods. Samples taken 8 minutes after the application showed no detectable levels of chlorpyrifos, a decrease from 9.8 parts per billion in the water prior to the enzyme application. Toxicity tests performed on water samples taken after the treatment showed no toxicity to water flea or fat head minnow. The company is also sponsoring studies with U.C. Davis researcher Frank Zalom, who is examining the product use in conjunction with diazinon dormant sprays in orchards.

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EXCEEDANCE REPORT

FROM: Sacramento Valley Water Quality Coalition (Coalition)
SUBJECT: Water Quality Exceedances – Event 19
EVENT DATE(s): April 17 & 24, 2007
Irrigation Season Aquatic Toxicity

SAMPLE DATES AND SITES

The Coalition conducted irrigation season water sampling on April 17, 2007 and follow-up sampling on April 25, 2007 as required by the Irrigated Lands Conditional Waiver and the Coalition’s Monitoring and Reporting Program Plan. This exceedance report includes results for the Willow Slough Bypass at SP and the North Fork of Willow Slough.

TEST TYPE AND RESULTS

Results evaluated for this Exceedance Report include aquatic toxicity tests with *Selenastrum capricornutum* (algae) and *Ceriodaphnia dubia* (water flea). The following exceedances were observed:

Willow Slough Bypass at SP (WLSBP): In a toxicity test conducted with *Ceriodaphnia*, the Coalition observed a reduction in survival of 100% compared to the control (complete mortality). In a toxicity test conducted with *Selenastrum*, the Coalition observed a reduction in cell growth of 24% compared to the control. These results were statistically significant and in exceedance of the Basin Plan narrative objective for toxicity.

Chlorpyrifos was detected in Willow Slough at 0.083 ug/L, which exceeds the proposed Basin Plan chronic and acute objectives for chlorpyrifos (0.015 ug/L and 0.025 ug/L), and appears to explain all of the *Ceriodaphnia* toxicity that was observed in the April 17 Willow Slough sample. Carbofuran (0.72 ug/L) and diuron (3.7 ug/L) were also detected at the Willow Slough site in April. Carbofuran is chronically toxic to *Ceriodaphnia* at concentrations near that level (>0.75 ug/L), so it may have contributed, but it wasn’t high enough to cause all of the observed toxicity in the sample. The diuron concentration (3.7 ug/L) was high enough to explain the algae toxicity. *Selenastrum* may be affected by concentrations as low as 2.4 ug/L, so diuron is high enough to be responsible for the algae growth reduction that was observed in Willow Slough.

Follow-up sampling was conducted at the initial site and additional samples were collected upstream on April 25. The North Fork of Willow Slough was the only site to have toxicity.

Willow Slough North Fork (WLSNO): In a toxicity test conducted with *Selenastrum*, the Coalition observed a reduction in cell growth of 12% compared to the control. Although it was less than a 20% reduction in cell growth, this result was statistically significant and is considered in exceedance of the Basin Plan narrative objective for toxicity.

There was no *Ceriodaphnia* toxicity in any of the three follow-up samples collected in Willow Slough on April 24 (the original sample site at WLSBP, and at the North fork and South fork of Willow Slough at County Road 99).

ADDITIONAL FOLLOW-UP ACTIONS

- Growers in the Willow Slough drainage with applications for chlorpyrifos, diuron and/or carbofuran within the 4 weeks prior to April 17 will be informed of the toxicity.