



# Department of Pesticide Regulation



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Environmental  
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Director

## MEMORANDUM

TO: Thomas R. Pinkos, Executive Officer  
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FROM: Paul Helliker *Paul Helliker*  
Director  
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DATE: January 28, 2003

SUBJECT: RICE PESTICIDES PROGRAM REVIEW

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Pursuant to the Rice Pesticides Program being conducted for 2002, the Department of Pesticide Regulation (DPR) staff has prepared the following summary of rice pesticide applications, water monitoring of surface waters, and laboratory analyses results.

DPR's Rice Pesticides Program is an effort to protect water quality in receiving waters adjacent to rice fields, including agricultural drains and the Sacramento River. DPR and county agricultural commissioners (CACs) enforce specific management practices designed to meet water quality performance goals aimed at protecting receiving waters from aquatic toxicity and protecting raw drinking water from rice pesticides. These water quality performance goals were established by the Central Valley Regional Water Quality Control Board (CVRWQCB) and are contained in the Water Quality Control Plan of the Central Valley Region for the Sacramento River Basin.

Pesticide use data for 2002 are based on preliminary data reported to DPR at the end of the rice pesticide application period, prior to inclusion in DPR's pesticide use report database. Therefore, 2002 rice pesticide data in this report are subject to revision after error checking procedures are carried out on the data submitted.

The most significant features of the 2002 rice pesticide application season were:

- There were 544,061 acres of rice planted in the Sacramento Valley in 2002, an increase of 49,931 acres compared to 494,130 acres planted in 2001.
- There were 33 emergency releases granted in 2002 in the Sacramento Valley due to a mid-May storm event, resulting in some areas of flooding.



- There were 213,453 acres reported treated with molinate (Ordram<sup>®</sup>) in 2002, a decrease from 217,250 acres treated in 2001.
- Thiobencarb (Abolish<sup>®</sup> and Bolero<sup>®</sup>) use increased from 181,037 acres treated Sacramento Valley-wide in 2001 to 203,752 acres reported treated in 2002.
- There were 331,804 acres reported treated with propanil (Stam<sup>®</sup>, SuperWham<sup>®</sup>, WhamEZ<sup>®</sup>), an increase from 300,595 acres treated in 2001.
- There were 247,262 acres reported treated with triclopyr (Grandstand<sup>®</sup>), an increase from 197,202 reported treated in 2001.
- There were 77,499 acres treated with lambda cyhalothrin (Warrior<sup>®</sup>) and 9,371 acres reported treated with diflubenzuron (Dimilin<sup>®</sup>).
- There were 34,952 acres reported treated with cyhalofop-butyl (Clincher<sup>®</sup>). Section 3 registration is expected in 2003.
- There were no acres reported treated and no detections of methyl parathion in water samples analyzed.
- There were 147 acres treated with malathion in 2002, a reduction of 1,000 acres compared to 2001, and no detections were observed.
- The Colusa Basin Drain (CBD5), Butte Slough (BS1), and the Sacramento River at the Village Marina (SR1) were monitored for the rice pesticides molinate (May 7-July 18), thiobencarb (May 7-July 18), and methyl parathion and malathion. Toxicity tests using *Ceriodaphnia dubia* were performed once per week at CBD5 for ten weeks (April 30-July 2). Toxicity analysis resulted in no significant mortality of *Ceriodaphnia dubia* in 2002.

The following is a summary of rice pesticides detected in Sacramento Valley waterways in 2002.

### **CBD5**

- Molinate was detected above the performance goal (10.0 parts per billion [ppb]) six times. The detections were on May 14 (12.0 ppb), May 16 (12.2 ppb), May 21 (12.9 ppb), May 23 (18.8 ppb), May 28 (18.8 ppb), and May 30 (12.3 ppb). A total of 22 detections of molinate occurred from May 7-July 18.

- At CBD5, molinate concentrations were more frequent and longer in duration in 2002 than in 2001. Peak concentrations were slightly higher in 2002--on May 17 (18.8 ppb) and on May 22 (18.8 ppb), than in 2001 (12.1 ppb).
- Thiobencarb was detected above the performance goal (1.5 ppb) during ten consecutive sampling events from May 7-June 20. A total of 14 detections of thiobencarb occurred from May 7-July 18.
- At CBD5, thiobencarb concentrations were higher in 2002 than in 2001. Peak concentrations of thiobencarb at CBD5 in 2002 were detected on May 23 (8.2 ppb) and May 28 (7.3 ppb), slightly higher than the peak concentration in 2001 (5.9 ppb).
- There were no detections of malathion or methyl parathion.
- Peak molinate and thiobencarb concentrations at CBD5 were associated with the application period and during the week following a storm occurrence on May 20. Adequate water holding times had not been met during these circumstances.

## **BS1**

- Molinate was detected 20 times from May 7-July 11 and exceeded the performance goal five times from May 14-May 30. The highest concentration was 23.7 ppb on May 30. Since 1999, molinate detections have increased in peak concentrations and frequency at BS1.
- Thiobencarb was detected seven times from May 16-June 6. The performance goal (1.5 ppb) was exceeded four times from May 21-May 30. The peak concentration was 3.4 on May 23.
- At BS1, thiobencarb concentrations were similar in 2002 and 2001. The peak detection in 2002 (3.4 ppb) was higher than the peak detection in 2001 (1.6 ppb).
- There were no detections of methyl parathion or malathion at BS1.
- Peak molinate detections at BS1 were associated with the application period and the week following a storm event on May 20. Thiobencarb detections are mostly associated with the mid-May storm event in 2002.

## **SR1**

- Molinate was detected 12 times from May 14-July 18 at SR1. The performance goal (10.0 ppb) was not exceeded and the peak detection was 3.21 ppb on May 23.
- Thiobencarb was detected on May 21 (0.60 ppb), May 23 (0.90 ppb), and May 28 (0.60 ppb).
- There were no detections of methyl parathion or malathion.
- In 2002, molinate was detected twice. Detections occurred on May 22 (2.03 ppb) and May 29 (2.21 ppb). Thiobencarb was detected once on May 22 (0.50 ppb).
- In 2002, thiobencarb was detected one time on May 22 (0.50 ppb).

## **CBD1 Monitoring Results**

Due to thiobencarb concentrations observed at the City of Sacramento (SRR) and West Sacramento (WSR) drinking water intakes, Valent (the primary registrant for thiobencarb products) decided to collect additional water samples at CBD1, a historical monitoring site located on CBD5 at Roads 109 and 99E near Knight's Landing in Yolo County. This location is south of CBD5 near Highway 20 in Colusa County, and nearer to the CBD5 outfall on the Sacramento River. Thiobencarb was found on May 30 (6.2 ppb), June 4 (4.7 ppb), June 6 (2.8 ppb), June 11 (2.0 ppb), and June 13 (1.4 ppb). These detections were expectedly higher on the same dates as water samples collected at CBD5 since there were additional inputs downstream of CBD5. No comparison data are available in 2001 at this monitoring location.

## **City of Sacramento**

- Molinate was detected on nine sampling days. The highest concentration of molinate detected was 1.7 ppb on May 24 (Table 10).
- Thiobencarb was detected on eight sampling days, and the peak concentration reached 0.91 ppb on May 24 (Table 10). This level exceeded the CVRWQCB's concentration of 0.59 ppb as described in *Resolution No. 5-01-074, Approval of the Management Practices Required by the Department of Pesticide Regulation's Rice Pesticide Program for the 2001-2003 Seasons* (appendix 5).

- DPR understands that the Natomas Mutual Water District released water during the mid-May storm event due to flooding of roadways north of the city. The fields that contained the released water had been recently treated with thiobencarb and had not adequately degraded to lower concentrations, since it had not undergone the normal water holding period. This water flows into the Sacramento River after it enters the American River.
- At SRR, the concentrations of molinate and thiobencarb were higher in 2002 than in 2001.

### **City of West Sacramento**

- Molinate was detected during ten sampling events from May 6-June 12 (Table 10). The highest detections occurred on May 22 (2.4 ppb), May 24 (4.2 ppb), and June 1 (2.8 ppb). These detections were higher in comparison to the peak detections in 2001 that occurred around the same dates.
- Thiobencarb was detected eight times from May 10-June 5. The highest concentrations were on May 22 (0.65 ppb), May 24 (1.6 ppb), and May 27 (0.73 ppb). These levels exceeded the CVRWQCB's concentration of 0.59 ppb as described in *Resolution No. 5-01-074, Approval of the Management Practices Required by the Department of Pesticide Regulation's Rice Pesticide Program for the 2001-2003 Seasons* (appendix 5). The May 24 concentration (1.6 ppb) also exceeded the secondary maximum contaminant level for taste and odor.
- Concentrations at WSR were higher than SRR probably due to WSR being located north of the confluence of the American River. Concentrations were higher for thiobencarb and molinate in comparison to peak detections in 2001 that occurred around these same dates. The mid-May storm event was determined to be a large contribution to peak detections of thiobencarb and molinate in 2002. Waterways upstream of the City of West Sacramento were impacted by early releases of water from rice fields. Figure 8 shows applications of thiobencarb that were made from May 14 through May 31 close to the storm event and considered to be a time period that affected peak concentrations observed at SRR and WSR.
- It is likely the May 20 storm event caused uncontrolled water releases and that documented emergency releases impacted peak detections observed at WSR in 2002.

## **Aquatic Toxicity**

- Toxicity monitoring was conducted for ten weeks from April 30-July 10. There was no significant mortality (<70 percent survival) of *Ceriodaphnia dubia* observed in 2002.

### Observations and Highlights of 2002 Rice Growing Season

Water management practices remained the same for water holding requirements for rice pesticides in 2002. CACs were required (as in 2001) to inspect and record seepage observed during the season, and required growers to compact levees to prevent seepage from occurring.

The following observations from 2002 are summarized as follows:

- Planted rice acreage increased nearly 50,000 acres from 2001.
- A mid-May 2002 rain event resulted in early water releases and uncontrolled releases that likely contributed to peak detections at SRR and WSR.
- Herbicide resistance contributed to shifts in herbicide selection and increased application rates on resistant weed species.
- Heavy reliance on a few effective pesticides due to the limited number of available products registered for use on rice contributes to higher concentrations.
- The contribution of drift during rice pesticide application.
- Weather and management practices that do not encourage vigorous rice stands early in the season that can out-compete weeds, requiring increased herbicide use due to heavy weed pressure.
- Seepage from field borders that can eventually flow in agricultural drains.
- Concentrations of molinate and thiobencarb in 2002 were higher at SRR than in 2001.
- Concentrations of molinate and thiobencarb were highest in WSR. WSR is located upstream of the American River confluence and does not receive the additional mixing of the American River as does the SRR.
- DPR received reports in 2001 that the Bolero<sup>®</sup> 10G formulation of thiobencarb was resulting in observable dust from the material when applied. Concerns that this dust was drifting

off-site prompted meetings with DPR, the California Rice Commission (CRC), and Valent (registrant for Bolero<sup>®</sup>). Valent will be phasing out Bolero<sup>®</sup> 10G in 2002. Bolero<sup>®</sup> 15G is a new formulation of granular thiobencarb that is replacing Bolero<sup>®</sup> 10G. This new formulation is reported not to have the dust problem associated with the older formulation. In addition, Valent has agreed to distribute and encourage rice growers not to use the Bolero<sup>®</sup> 10G while existing stocks are being used up in fields where adjacent waterways could be impacted by the dust. A final report from Valent for activities they conducted in 2002 regarding distribution of Bolero<sup>®</sup> formulations is contained in this report.

- DPR is monitoring activities related to drift concerns. DPR continued its propanil monitoring activities on rice, specifically on the amount sold, the amount applied, and application and drift issues that occurred in 2002. DPR staff also assisted CACs in Butte, Colusa, Glenn, Placer, Sutter, Yolo, and Yuba counties with application permits.

The U.S. Environmental Protection Agency's (U.S. EPA's) Office of Pesticide Programs released a draft Pesticide Registration (PR) Notice on improving pesticide product labeling. This PR Notice, *Spray and Dust Drift Label Statements for Pesticide Products*, was developed to inform pesticide applicators of the requirements to control off-target spray and dust drift.

DPR responded to the U.S. EPA Draft PR Notice 2001-X (08/09/01) *Spray and Dust Drift Label Statements for Pesticide Products* (Pesticide Registration [PR] Notice) on February 2, 2002. DPR's comments were addressed to Marcia Mulkey, U.S. EPA, Office of Pesticide Programs.

DPR is awaiting U.S. EPA's response to all of the comments they receive before moving forward on the drift regulations. Depending on U.S. EPA's response, DPR may or may not use all or part of U. S. EPA's language.

- Herbicide resistance is increasing in rice weeds in California. Researchers continue to educate growers through annually held growers' meetings and the Rice Field Day sponsored by the California Cooperative Rice Research Foundation, U.S. Department of Agriculture, and University of California about management practices to avert further development and spread of resistant weeds. New herbicides will be an integral part of weed resistance management, coupled with strategies that avoid alternate use of herbicides with similar modes of action.
- Thiobencarb concentrations at WSR did not exceed the primary maximum contaminant level for thiobencarb of 70.0 ppb established by U.S. EPA, but did exceed the secondary action level due to off-taste of 1.0 ppb for thiobencarb in 2002, established by the California Department of Health Services. Thiobencarb exceeded 0.59 ppb at both SRR and WSR. This level was specified in the

2001 CVRWQCB resolutions as a target level to cause further review of the water management practices for thiobencarb that currently exist.

- Molinate detections did not meet or exceed the maximum contaminant level (20.0 ppb) established by U.S. EPA during 2001, but detections were higher in 2002 than in 2001 at SRR and WSR.
- CRC initiated a Rice Pesticide Stewardship Communications Outreach Plan with the Coalition for Urban/Rural Environmental Stewardship regarding pesticide drift. The plan's goal is to inform rice growers, pest control advisers, crop consultants, applicators, and federal/state regulators about stewardship practices that allow for safe and effective use of rice pesticides.
- DPR has proposed that CRC assume the lead role in the monitoring of rice pesticide activities beginning in 2003. DPR will work with CVRWQCB regarding necessary regulatory changes for rice pesticide issues. DPR will also review and consult with CRC regarding rice pesticide monitoring.

DPR staff will continue to review all matters pertaining to pesticide use in rice production, with particular attention toward adhering to federal and state water quality standards to protect drinking water and prevent toxicity to aquatic organisms from adverse levels of rice pesticides. DPR devotes many resources to rice pesticide issues in California, and regulations have been developed in an effort to address current environmental concerns. Cooperatively, DPR, Department of Fish and Game, CVRWQCB, CRC, Rice Research Board, California Rice Experiment Station, University of California Agriculture Extension, university researchers, CACs, rice growers, and pesticide registrants provide ongoing evaluation and efforts to ensure rice pesticides are used in such a way to minimize environmental hazards. DPR will also continue to closely assess environmental impacts of new pesticide products proposed for use in California rice culture.

DPR is not recommending any changes to the Rice Pesticides Program for 2003. I recommend the Board approve the proposed program for 2003.

If you have any question, please contact me, or KayLynn Newhart, of my staff, at (916) 324-4190.

Attachment

cc: KayLynn Newhart, Associate Environmental Research Scientist (w/o Attachment)

bcc: Newhart Surname File (w/Attachment)