

Rice Pesticides Program Monitoring Data

August 20, 2002-Final Update

KayLynn Newhart
California Department of Pesticide Regulation
Environmental Monitoring Branch
1001 I Street,
Sacramento, CA 95812

August 19, 2002

The California Rice Commission contracted with Kleinfelder Incorporated to conduct sampling for the 2002 Rice Pesticide Study. Monitoring locations included Colusa Basin Drain at Highway 20 in Colusa County (CBD5), Butte Slough at Lower Pass Road in Sutter County (BS1), and a site on the Sacramento River at the Village Marina (SR1). Background samples were collected on April 9 and sampling began for methyl parathion and malathion on April 24. Thiobencarb and molinate monitoring began on May 7. Sampling is conducted at BS1 and SR1 and CBD5 on Tuesdays and Thursdays throughout the 12 weeks of monitoring. Primary sample analysis was performed by Syngenta Ag Products laboratory for molinate, Valent USA laboratory for thiobencarb, California Department of Food and Agriculture (CDFA) laboratory for methyl parathion and malathion. The CDFA laboratory conducted quality control (QC) analyses for molinate and thiobencarb. The Department of Fish and Game (DFG) laboratory conducted QC analysis for methyl parathion and malathion and performed toxicity tests, using the aquatic invertebrate *Ceriodaphnia dubia*, with samples collected at CBD5 on Tuesdays through week ten of the study.

In addition, the cities of Sacramento and West Sacramento performed water quality testing for molinate and thiobencarb at their drinking water intakes located on the Sacramento River. Due to high detections at the drinking water intakes additional sampling occurred at CBD1 near Knight's Landing. Results of this analysis are contained in this summary.

CBD5 Monitoring Results (Tables 1)

- Molinate was detected above the performance goal (10.0 ppb) six times on May 14 (12.0 ppb), May 16 (12.2 ppb), and 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 9-May 21.
- Thiobencarb was detected above the performance goal (1.5 ppb) on ten consecutive sampling events beginning May 7-June 20. A total of 15 detections occurred from May 7-June 27. The highest detection was 8.2 ppb on May 23.
- There were no detections of malathion or methyl parathion.

BS1 Monitoring Results (Tables 2)

- Molinate was detected 20 times from May 7-July 11 and exceeded the performance goal (10.0 ppb) five times from May 14 to May 30. The highest level detected was 23.7 on May 30.
- Thiobencarb was detected seven times between May 16 and June 6. The performance goal (1.5 ppb) was exceeded on four times from May 21-May 30.
- There were no detections of methyl parathion or malathion at BS1.

SR1 Monitoring Results (Tables 3)

- Molinate was detected 12 times from May 14-July 9 at SR1. The performance goal (10.0 ppb) was not exceeded at SR1. The highest level detected 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 at SR1.

CBD1 Monitoring Results

Preliminary results from CBD1 site located near Knight's Landing for thiobencarb indicate a concentration of 6.2 ppb on May 30; 4.7 ppb on June 4; 2.8 ppb on June 6; 2.0 ppb on June 11; and 1.4 ppb on June 13. These detections are higher than detections on the same dates at CBD5 indicating possible additional inputs of thiobencarb downstream of CBD5.

Department of Fish and Game has reported no incidences of significant mortality of *Ceriodaphnia dubia* in water toxicity tests performed during 10 weeks of the monitoring study.

City of Sacramento and City of West Sacramento

City of Sacramento and West Sacramento analyzed water samples at their drinking water intakes for thiobencarb and molinate (table 4). Thiobencarb exceeded the Central Valley Regional Water Quality Control Board's (CVRWQCB) identified level of 0.59 ppb at the City of Sacramento drinking water intake on May 24 (0.91 ppb) as specified in the CVRWQCB *Resolution No. R5-2002-0080* approving management practices for the 2002-2003 rice seasons. In addition, the secondary MCL for taste and odor (1.0 ppb) for thiobencarb was exceeded at the West Sacramento drinking water intake on May 24 (1.6 ppb) and exceeded the CVRWQCB maximum level (0.59 ppb), on May 22 (0.65 ppb) and May 27 (0.73 ppb). This will result in a further review of the water management practices for thiobencarb by the CVRWQCB prior to the 2003 rice pesticide use season.

The City of Sacramento also analyzed samples for triclopyr (Grandstand[®]) at the drinking water intakes. Triclopyr was detected on June 19 (0.11 ppb), June 26 (0.27 ppb), July 2 (0.22 ppb), and July 10 (0.15 ppb) at the City of Sacramento drinking water intake. Triclopyr (Grandstand[®]) was detected on June 26 (0.20 ppb) and July 2 (0.13 ppb) at the West Sacramento drinking water intake.

The Cities of West Sacramento and Sacramento, DPR, CVRWQCB, and the California Rice Commission remain concerned about the trend of increasing detections of molinate, thiobencarb, and other rice pesticides. DPR staff will be closely analyzing pesticide use data and detections at the agricultural drains and drinking water intakes that have occurred in 2002 to try and determine what can be done to reduce their presence in adjacent waterways. Detections of thiobencarb and molinate are higher than in 2001 even with additional management and education measures put into place prior to the rice season. Although, a storm event on May 20 explains some of the higher detections, there are still detections that cannot be explained due to the storm event.

All results are contained in the data tables following this summary. This is the final update of the monitoring data for the 2002 Rice Pesticide Program. A final report containing a summary and analysis of the 2002 rice monitoring program data will be available December 31, 2002. If you have any questions or concerns contact KayLynn Newhart at (916) 324-4190 or Kean Goh at (916) 324-4072.

PRELIMINARY DATA/SUBJECT TO CHANGE

Table 1. 2002 Pesticide Concentrations at the Colusa Basin Drain near Highway 20 in Colusa County (CBD5) in parts per billion (ppb).

Laboratory type	Molinate		Thiobencarb		Methyl parathion	Malathion
	<u>Primary</u>	<u>QC</u>	<u>Primary</u>	<u>QC</u>	<u>Primary</u>	<u>Primary</u>
Reporting limit (ug/L)	1.0	0.5	0.5	0.5	0.05	0.05
Date						
9-April	ND	ND	ND	ND	ND	ND
30-April	NA	NA	NA	NA	ND	ND
2-May	NA	NA	NA	NA	ND	ND
7-May	6.49	NA	3.7	NA	ND	ND
9-May	8.76	7.35	5.3	5.75	ND	ND
14-May	12.0	NA	7.2	NA	ND	ND
16-May	12.2	7.61	3.6	3.41	ND	ND
21-May	12.9	NA	5.1	NA	ND	ND
23-May	18.8	13.8	8.2	6.96	ND	ND
28-May	18.8	NA	7.3	NA	ND	ND

Samples collected by Kleinfelder, Inc. under contract with the California Rice Commission. Key to designations on rice monitoring results tables are shown at the end of the Table 1.

PRELIMINARY DATA/SUBJECT TO CHANGE

Table 1 con't. 2002 Pesticide Concentrations at the Colusa Basin Drain near Highway 20 in Colusa County (CBD5) in parts per billion (ppb).

Laboratory type	Molinate		Thiobencarb		Methyl parathion	Malathion
	<u>Primary</u>	<u>QC</u>	<u>Primary</u>	<u>QC</u>	<u>Primary</u>	<u>Primary</u>
Reporting limit (ug/L)	1.0	0.5	0.5	0.5	0.05	0.05
Date						
30-May	12.3	10.8	2.9	3.79	ND	ND
4-June	7.30	NA	2.2	NA	ND	ND
6-June	6.92	4.73	2.0	2.23	ND	ND
11-June	4.26	NA	1.1	NA	ND	ND
13-June	3.06	2.44	0.7	0.985	ND	ND
18-June	1.86	NA	0.7	NA	ND	ND
20-June	2.62	1.05	0.8	0.949	ND	ND
25-June	2.07	NA	ND	NA	ND	ND
27-June	1.40	0.728	ND	0.558	ND	ND
2-July	2.06	NA	ND	NA	ND	ND
5-July	1.71	0.710	ND	ND	ND	ND
9-July	1.78	NA	ND	NA	NA	NA

PRELIMINARY DATA/SUBJECT TO CHANGE

Table 1 con't. 2002 Pesticide Concentrations at the Colusa Basin Drain near Highway 20 in Colusa County (CBD5) in parts per billion (ppb).

Laboratory type	Molinate		Thiobencarb		Methyl parathion	Malathion
	<u>Primary</u>	<u>QC</u>	<u>Primary</u>	<u>QC</u>	<u>Primary</u>	<u>Primary</u>
Reporting limit (ug/L)	1.0	0.5	0.5	0.5	0.05	0.05
Date						
11-July	1.29	0.585	ND	ND	NA	NA
16-July	1.13	NA	ND	NA	NA	NA
18-July	1.10	ND	ND	ND	NA	NA

Samples collected by Kleinfelder, Inc. under contract with the California Rice Commission.

Key to designations on rice water monitoring results tables:

NS Not sampled NA Not Analyzed
 ND Not detected

PERFORMANCE GOALS (ppb):

molinate 10.0 methyl parathion 0.13
 thiobencarb 1.5 malathion 0.10

PRELIMINARY DATA/SUBJECT TO CHANGE

Table 2. 2002 Pesticide Concentrations at Butte Slough at Lower Pass Road (BS1) in Sutter County in parts per billion (ppb).

	Molinate	Thiobencarb	Methyl parathion	Malathion
Laboratory type	<u>Primary</u>	<u>Primary</u>	<u>Primary</u>	<u>Primary</u>
Reporting limit (ug/L)	1.0	0.5	0.05	0.05
Date				
9-April	ND	ND	ND	ND
30-April	NA	NA	ND	ND
2-May	NA	NA	ND	ND
7-May	2.33	ND	ND	ND
9-May	5.51	ND	ND	ND
14-May	10.8	ND	ND	ND
16-May	17.6	1.4	ND	ND
21-May	8.41	2.3	ND	ND
23-May	13.4	3.4	ND	ND
28-May	17.0	2.0	ND	ND
30-May	23.7	1.8	ND	ND
4-June	6.23	0.7	ND	

Samples collected by Kleinfelder, Inc. under contract with the California Rice Commission.

PRELIMINARY DATA/SUBJECT TO CHANGE

Table 2 con't. 2002 Pesticide Concentrations at Butte Slough at Lower Pass Road (BS1) in Sutter County in parts per billion (ppb).

	Molinate	Thiobencarb	Methyl parathion	Malathion
Laboratory type	<u>Primary</u>	<u>Primary</u>	<u>Primary</u>	<u>Primary</u>
Reporting limit (ug/L)	1.0	0.5	0.05	0.05
Date				
6-June	2.48	0.5	ND	ND
11-June	1.81	ND	ND	ND
13-June	1.84	ND	ND	ND
18-June	1.35	ND	ND	ND
20-June	1.93	ND	ND	ND
25-June	1.78	ND	ND	ND
27-June	2.89	ND	ND	ND
2-July	1.94	ND	ND	ND
5-July	1.70	ND	ND	ND
9-July	1.26	ND	NA	NA
11-July	1.06	ND	NA	NA
16-July	ND	ND	NA	NA
18-July	ND	ND	NA	NA

Samples collected by Kleinfelder, Inc. under contract with the California Rice Commission.

PRELIMINARY DATA/SUBJECT TO CHANGE

Table 3. 2002 Pesticide Concentrations in the Sacramento River at the Village Marina (SR1) in Sacramento County in parts per billion (ppb).

Laboratory type	Molinate	Thiobencarb	Methyl parathion	Malathion
	<u>Primary</u>	<u>Primary</u>	<u>Primary</u>	<u>Primary</u>
Reporting limit (ug/L)	1.0	0.5	0.05	0.05
Date				
9-April	ND	ND	ND	ND
30-April	NA	NA	ND	ND
2-May	NA	NA	ND	ND
7-May	ND	ND	ND	ND
9-May	ND	ND	ND	ND
14-May	1.26	ND	ND	ND
16-May	1.06	ND	ND	ND
21-May	1.90	0.60	ND	ND
23-May	3.21	0.90	ND	ND
28-May	2.26	0.60	ND	ND

Samples collected by Kleinfelder, Inc. under contract with the California Rice Commission.

PRELIMINARY DATA/SUBJECT TO CHANGE

Table 3 con't. 2002 Pesticide Concentrations in the Sacramento River at the Village Marina (SR1) in Sacramento County in parts per billion (ppb).

Laboratory type	Molinate	Thiobencarb	Methyl parathion	Malathion
	<u>Primary</u>	<u>Primary</u>	<u>Primary</u>	<u>Primary</u>
Reporting limit (ug/L)	1.0	0.5	0.05	0.05
Date				
30-May	2.27	ND	ND	ND
4-June	1.35	ND	ND	ND
6-June	1.26	ND	ND	ND
11-June	ND	ND	ND	ND
13-June	ND	ND	ND	ND
18-June	ND	ND	ND	ND
20-June	ND	ND	ND	ND
25-June	ND	ND	ND	ND
27-June	1.42	ND	ND	ND
2-July	1.47	ND	ND	ND
5-July	1.43	ND	ND	ND

Samples collected by Kleinfelder, Inc. under contract with the California Rice Commission.

PRELIMINARY DATA/SUBJECT TO CHANGE

Table 3 con't. 2002 Pesticide Concentrations in the Sacramento River at the Village Marina (SR1) in Sacramento County in parts per billion (ppb).

	Molinate	Thiobencarb	Methyl parathion	Malathion
Laboratory type	<u>Primary</u>	<u>Primary</u>	<u>Primary</u>	<u>Primary</u>
Reporting limit (ug/L)	1.0	0.5	0.05	0.05
Date				
9-July	1.23	ND	NA	NA
11-July	ND	ND	NA	NA
16-July	ND	ND	NA	NA
18-July	ND	ND	NA	NA

Samples collected by Kleinfelder, Inc. under contract with the California Rice Commission.

Key to designations on rice water monitoring results tables:

NS Not sampled NA Not Analyzed
 ND Not detected

PERFORMANCE GOALS (ppb):

molinate 10.0 methyl parathion 0.13
 thiobencarb 1.5 malathion 0.10

Table 4. 2002 rice herbicide monitoring results for molinate and thiobencarb reported by the City of Sacramento Division of Water, Water Quality Laboratory taken at the Sacramento River WTP Intake (SRR) and West Sacramento River WTP Intake. Results in ug/L, (ppb).

Date	Molinate Sacramento (SRR)	Thiobencarb Sacramento (SRR)	% Sacramento water flow at intake to SRR	Molinate West Sacramento (WSR)	Thiobencarb West Sacramento (WSR)	Triclopyr Sacramento (SRR)	Triclopyr West Sacramento (WSR)
12-April	NA	NA	68.9	NA	NA	NA	NA
15-April	NA	NA	78.6	NA	NA	NA	NA
19-April	NA	NA	53.9	NA	NA	NA	NA
22-April	NA	NA	65.6	NA	NA	NA	NA
24-April	<0.10	<0.10	69.3	<0.10	<0.10	NA	NA
26-April	NA	NA	70.5	NA	NA	NA	NA
29-April	NA	NA	74.3	NA	NA	NA	NA
1-May	<0.10	<0.10	59.8	<0.10	<0.10	NA	NA
3-May	NA	NA	47.6	NA	NA	NA	NA
6-May	<0.10	<0.10	67.0	0.18	<0.10	NA	NA
8-May	NA	NA	70.2	NA	NA	NA	NA
10-May	0.34	0.12	67.0	0.96	0.23	NA	NA
13-May	NA	NA	63.6	NA	NA	NA	NA
15-May	0.57	0.19	77.4	0.88	0.22	<0.20	<0.20
17-May	NA	NA	88.4	NA	NA	NA	NA
20-May	0.71	0.22	56.8	1.4	0.34	NA	NA
22-May	1.1	0.58	54.8	2.4	0.65	<0.10	<0.10
24-May	1.7	0.91	53.2	4.2	1.6	NA	NA
27-May	1.2	0.49	57.5	2.8	0.73	NA	NA
29-May	NA	NA	73.8	NA	NA	<0.10	<0.10
31-May	0.78	0.21	83.0	1.5	0.30	NA	NA
3-June	NA	NA	66.3	NA	NA	NA	NA
5-June	0.57	0.15	76.0	1.0	0.25	<0.10	NA
7-June	NA	NA	79.8	NA	NA	NA	NA
10-June	NA	NA	54.3	NA	NA	NA	NA
12-June	0.21	<0.10	40.0	0.22	<0.10	<0.10	<0.10
19-June	NA	NA	NA	NA	NA	0.11	<0.10
26-June	NA	NA	NA	NA	NA	0.27	0.20

Table 4 con't. 2002 rice herbicide monitoring results for molinate and thiobencarb reported by the City of Sacramento Division of Water, Water Quality Laboratory taken at the Sacramento River WTP Intake (SRR) and West Sacramento River WTP Intake. Results in ug/L, (ppb).

Date	Molinate Sacramento (SRR)	Thiobencarb Sacramento (SRR)	% Sacramento water flow at intake to SRR	Molinate West Sacramento (WSR)	Thiobencarb West Sacramento (WSR)	Triclopyr Sacramento (SRR)	Triclopyr West Sacramento (WSR)
2-July	NA	NA	NA	NA	NA	0.22	0.13
10-July	<0.10	<0.10	54.4	<0.10	<0.10	0.15	<0.10
17-July	NA	NA	NA	NA	NA	pending	pending