

Memorandum

To : Kean S. Goh, Agriculture Prgm. Super. IV
Environmental Hazards Assessment Program

Date : June 30, 1995

Place : Sacramento

Phone : 324-4100

From : Department of Pesticide Regulation - Donald J. Weaver, Sr. Env. Res. Sci., Super.
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Subject : Summary of Results for FY 1994-95 Ground Water Protection List
Monitoring

BACKGROUND

In 1992, a group of 45 pesticide active ingredients (ai's) on the Ground Water Protection List [Title 3, California Code of Regulations, Section 6800(b)] were prioritized for monitoring as previously described¹ and four of the ai's were monitored in seven counties². Those ai's were among 24 ai's in the first priority group of ai's requiring that 25-40 wells be sampled¹. As a continuation of that effort, six of the 20 ai's remaining in the first priority group were monitored during FY 1992-93³ and five ai's were monitored in FY 1993-94⁴. This memorandum summarizes information on monitoring locations and analytical results for each of three ai's monitored during FY 1994-95.

METHODS

The ai's monitored were azinphos-methyl, diazinon, and fonofos. Six wells each had been previously sampled for these pesticides during the 1991 study conducted to test the procedures for determining the Ground Water Protection List⁵ (Table 1). Also, diazinon had been sampled in the FY 1992-93 Ground Water Protection List monitoring. Since 25-40 wells must be sampled for each ai according to the Ground Water Protection List monitoring protocol, additional wells remained to be sampled for each of these ai's. Areas surveyed for potential well sampling locations were selected based on pesticide use reports for 1992. Sampling crews drove through preselected sections of land in each county with the goal of sampling one well per section. At each well site, six water samples were collected for the appropriate ai, consisting of one primary, one field blank, and four backup samples. The minimum detection limit (MDL) for each of the ai's azinphos-methyl, diazinon, and fonofos was 0.05 parts per billion (ppb). Water samples from each well were also subjected to analytical screens which included nine herbicides: atrazine, bromacil, diuron, prometon, prometryn, and simazine each with an MDL of 0.05 ppb and cyanazine, hexazinone, and metribuzin each with an MDL of 0.2 ppb. When backup samples were analyzed by a second laboratory for verification of hexazinone residues, the MDL was 0.05 ppb.



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RESULTS

A total of 73 wells were sampled in 17 counties (Table 1). Twenty-nine wells were sampled for azinphos-methyl, 19 for diazinon, and 25 for fonofos. None of the wells contained residues of those ai's. Atrazine was verified in one well in San Joaquin County; bromacil was verified in one well each in Butte, Kern, San Joaquin, and Tulare Counties; and diuron was verified in two wells in Kern County and one well in Tulare County. There was an unverified detection of hexazinone in Imperial County and in San Joaquin County and one unverified detection of atrazine in Monterey County.

Based on the data presented in Table 1, all required Ground Water Protection List well monitoring has been completed for azinphos-methyl, diazinon, and fonofos. None of those ai's was detected in well water. No additional monitoring will be conducted unless a report of ground water contamination by one of those ai's is received.

REFERENCES CITED

1. Weaver, Don. March 9, 1992. Memorandum to John Sanders: Prioritization of chemicals on the ground water protection list.
2. Weaver, Don and Joe Marade. July 15, 1992. Memorandum to Kean Goh: Summary of results for FY 1991-92 ground water protection list monitoring.
3. Weaver, Donald J. and Joe Marade. August 23, 1993. Memorandum to John S. Sanders: Summary of results for FY 1992-93 ground water protection list monitoring.
4. Weaver, Don J. and Joe Marade. August 19, 1994. Memorandum to Kean S. Goh: Summary of results for FY 1993-94 ground water protection list monitoring.
5. Johnson, B. R. et al. 1992. A test of procedures for determining the ground water protection list. EHAP Report EH 92-06.

Attachment

cc: D. Bartkowiak (attachment)
D. Duncan (attachment)
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Table 1. Wells sampled for three Ground Water Protection List
 ai's during FY 1994-5.

County	Number of wells sampled for:		
	Azinphos-methyl	Diazinon	Fonofos
Butte	2	2	
Fresno	3		
Imperial		5	
Kern	4	2	
Lake	4		
Madera	1		
Merced	2		
Monterey		4	2
Sacramento	2		6
San Benito			4
San Joaquin	3		3
Santa Barbara			2
Stanislaus	5		
Sutter		3	
Tulare	3	3	
Ventura			4
Yolo			4
FY 1994-95 Totals	29	19	25
Sampled 1990- 91	6	6	6
Sampled 1992- 93		16	
Cumulative Total	35	41	31

Table 2. Ground Water Protection List Well Monitoring Results for Azinphos-Methyl, Atrazine, Simazine, Diuron, Prometon, and Bromacil Residues in Samples Collected in Butte, Fresno, Kern, Lake, Madera, Merced, Sacramento, San Joaquin, Stanislaus, and Tulare Counties during April and May 1995.

County T/R-S ^a	Loc	Concentration (ppb) ^b					
		Azinphos-methyl	Atrazine	Simazine	Diuron	Prometon	Bromacil
0418N03E34	04-01	ND ^c	ND	ND	ND	ND	ND
0421N01E01	04-02	ND	ND ND	ND ND	ND ND	ND ND	0.42 0.50
1016S19E17	10-01	ND	ND	ND	ND	ND	ND
1014S23E33	10-02	ND	ND	ND	ND	ND	ND
1015S23E13	10-03	ND	ND	ND	ND	ND	ND
1526S25E24	15-01	ND	ND ND	ND ND	0.09 0.075	ND ND	0.05 0.052
1527S23E04	15-02	ND	ND	ND	ND	ND	ND
1527S26E34	15-03	ND	ND	ND	ND	ND	ND
1527S26E32	15-04	ND	ND	ND	ND	ND	ND
1713N09W10	17-01	ND	ND	ND	ND	ND	ND
1714N09W35	17-02	ND	ND	ND	ND	ND	ND
1713N09W04	17-03	ND	ND	ND	ND	ND	ND
1713N09W02	17-04	ND	ND	ND	ND	ND	ND
2011S17E17	20-01	ND	ND	ND	ND	ND	ND
5005S11E18	24-01	ND	ND	ND	ND	ND	ND
2405S13E31	24-02	ND	ND	ND	ND	ND	ND
2405S13E22	24-03	ND	ND	ND	ND	ND	ND
3406N04E32	34-01	ND	ND	ND	ND	ND	ND
3405N04E22	34-02	ND	ND	ND	ND	ND	ND
3902S08E15	39-01	ND	ND	ND	ND	ND	ND
3902S09E07	39-02	ND	ND	ND	ND	ND	ND

Table 2 Continued.

County T/R-S ^a	Loc	Concentration (ppb) ^b					
		Azinphos-methyl	Atrazine	Simazine	Diuron	Prometon	Bromacil
3903N08E33	39-03	ND	ND	ND	ND	ND	ND
5008S08E03	50-01	ND	ND	ND	ND	ND	ND
5006S08E35	50-02	ND	ND	ND	ND	ND	ND
5004S08E23	50-03	ND	ND	ND	ND	ND	ND
5005S11E06	50-04	ND	ND	ND	ND	ND	ND
5423S25E08	54-01	ND	ND	ND	ND	ND	ND
5421S26E10	54-02	ND	ND	ND	ND	ND	ND
5419S25E26	54-03	ND	ND ND	ND ND	ND ND	ND ND	0.10 0.071

a. T/R-S = Township / Range - Section.

b. ppb = parts per billion.

c. None detected at the minimum detection limit of 0.05 ppb for all chemicals.

Table 3. Ground Water Protection List Well Monitoring Results for Diazinon, Atrazine, Simazine, Diuron, Prometon, Bromacil, and Hexazinone Residues in Samples Collected in Butte, Imperial, Monterey, Sutter, and Tulare Counties during October and November 1994.

County T/R-S ^a	Location	Concentration (ppb) ^b						
		Atrazine	Simazine	Diuron	Prometon	Bromacil	Hexazinone	Diazinon
0422N01E07	1	ND ^c	ND	ND	ND	ND		ND
0417N03E21	2	ND	ND	ND	ND	ND		ND
1316S23E19	1	ND ND	ND ND	ND ND	ND ND	ND ND	0.55 ND	ND
Resampled 5/95		ND	ND	ND	ND	ND	ND ^d	
1316S23E19	2	ND	ND	ND	ND	ND	ND	ND
1316S23E09	3	ND	ND	ND	ND	ND	ND	ND
1316S23E08	4	ND	ND	ND	ND	ND	ND	ND
1316S23E07	5	ND	ND	ND	ND	ND	ND	ND
1527S26E32	1	ND	ND	ND	ND	ND		ND
1528S25E11	2	ND ND	ND ND	0.06 0.059	ND ND	ND ND		ND
2714S02E23	1	ND	ND	ND	ND	ND		ND
2720S08E07	2	ND	ND	ND	ND	ND		ND
2715S04E27	3	ND	ND	ND	ND	ND		ND
2715S03E15	4	ND	ND	ND	ND	ND		ND
5114N03E27	1	ND	ND	ND	ND	ND		ND
5116N03E21	2	ND	ND	ND	ND	ND		ND
5113N04E13	3	ND	ND	ND	ND	ND		ND

Table 3 Continued.

County T/R-S ^a	Location	Concentration (ppb) ^b						
		Atrazine	Simazine	Diuron	Prometon	Bromacil	Hexazinone	Diazinon
5416S23E16	1	ND ND	ND ND	0.12 0.11	ND ND	ND ND		ND
5416S23E33	2	ND	ND	ND	ND	ND		ND
5416S24E14	3	ND	ND	ND	ND	ND		ND

- a. T/R-S = Township / Range - Section.
- b. ppb = parts per billion.
- c. None detected at the minimum detection limit of 0.20 and 0.05, respectively, for the primary and replicate hexazinone samples and 0.05 ppb for all other chemicals.
- d. For this analysis, the minimum detection limit was 0.05 ppb for the primary hexazinone sample.