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PREVENTION, PESTICIDES AND
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DRINKING WATER ASSESSMENT

SUBJECT: Methidathion - Tier 3 Drinking Water Assessment
PC Code: 100301

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DATE: December 30, 1998

This tier III drinking water assessment was performed at the request of HED based on their risk assessment. According to HED's chapter -

“With the exception of children 1-6 years, these DWLOCs do not indicate a risk concern from exposure to methidathion residues in drinking water. In accordance with OPP's Interim Approach for Addressing Drinking Water Exposure (S. Johnson, 11/17/97), EFED should conduct a detailed review and analysis of all available monitoring data for Methidathion, and determine if they are reliable and appropriate to use for an assessment of the pesticide's impacts on drinking water (tier 3 analysis).”

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This memo provides estimates of surface and ground water drinking water concentrations for methidathion based on the monitoring data collected in the State of California, which has more than 90-95% of methidathion uses and also includes results of additional tier II modeling.

Drinking Water Monitoring Evaluated

The monitoring analysis effort started with EPA's STORET database. The methidathion summaries of STORET are presented in Table 1. In the follow-up with the contact - S. Lowell of California Environmental Protection Agency (916) 657-1830. She suggested that do not use this data due to the two possible reported problems: (1) no detection limit, and (2) all residue values were reported in whole number. At her recommendation, EFED contacted D. Storm (916) 324-2319 of the Drinking Water Field Operational Branch, Department of Health Services, State of California. D. Storm provided EFED results of their drinking water monitoring for methidathion. The monitoring results of Department of Health Services, California Public Drinking Water Sources were summarized in Table 2. Their methidathion database includes results of analysis of a total of 264 samples of drinking water with 259 representing drinking water from groundwater sources and 5 representing surface water sources. Most of the samples were collected in 1986. The most recent sampling year was 1992 and only one sample was collected and analyzed. The results indicate that no positive detections. The levels of detection ranged from 0.5 ppb to 10 ppb, with most samples having levels of detection between 1 ppb (~43) and 5 ppb (~173). Based on analysis of the database, only 5 samples had levels of detection of 10 ppb.

The limited available drinking water monitoring results suggest that methidathion may not be a concern as there are no confirmed detections for the drinking water sources and most levels of detection are 5 ppb or lower.

River Water Monitoring

The EFED also obtained results of monitoring from San Joaquin River. Out of 25 samples, methidathion was detected in 11. Concentrations ranged from less than 1 ppb to about 15 ppb, with an average of less than 3 ppb.

New Modeling

In addition, EFED re-ran PRZM-EXAMS for citrus and cotton in California. In the previous modeling, the citrus scenario was from Florida, and the cotton scenario was from Mississippi. The new modeling from California, where 90-95% of methidathion is used, results in the following EECs:

Cotton: 2 applications at 0.5 lb ai/ac	peak EEC (ppb)	90-day EEC (ppb)	annual average EEC (ppb)
assuming no foliar degradation	2.7	1.1	0.4
assuming a foliar half-life of 2.8 days	2.5	0.8	0.2
Citrus: 1 application at 2 lb ai/ac			
assuming no foliar degradation	5.6	2.1	0.6
assuming a foliar half-life of 2.8 days	5.6	1.6	0.4

The new modeling, using appropriate meteorological conditions where approximately 90-95% of methidathion is used (California), also suggests concentrations in surface water may be lower than previous modeled EECs suggested.

Conclusion

The EFED concluded that peak concentrations in surface water are not likely to exceed 15 ppb. Chronic concentrations in surface water are expected to be significantly lower; i.e., < 1 ppb. However, based on monitoring of drinking water, there is no evidence that these raw water levels continue through processing of surface water. Monitoring suggests drinking water concentrations of methidathion will not exceed 5 ppb.

There is uncertainty because of the small number of monitoring samples, and also because there is no way to link the drinking water supply monitoring that resulted in zero detections to measured levels in raw surface water. So the fact that there were no detections in the drinking water might be the results of methidathion being removed during treatment or because there was no methidathion in the surface water to begin with.

Table 1. STORET Summaries of Methidathion

Chemical: Methidathion

STORET monitoring results

sample type	wells	
total sample number	274	
sampling periods	1984	3 samples
	1985	50 samples
	1986	140 samples
	1987	81 samples
sampling state	(06) California	
sampling counties	(029) Kern	125 samples
	(031) Kings	18 samples
	(037) Los Angeles	68 samples
	(047) Merced	26 samples
	(053) Monterey	5 samples
	(065) Riverside	27 samples
	(073) San Diego	5 samples
residue values (reported in whole number)		
	5 @ 10 ug/L	
	223 @ 5 ug/L	
	2 @ 2 ug/L	
	44 @ 1 ug/L	

Contact: Suzanne Lowell, CA (916)657-1830

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Table 2. Monitoring Results of California Public Drinking Water Sources

<u>Sampling by year</u>		<u>Sampling by sources</u>	
<u>year</u>	<u>number of samples</u>	<u>total sampled</u>	
1984	3	<u>ground water sources</u>	259
1985	49	<u>surface water sources</u>	5
1986	122		
1987	81		
1988	1		
1989	5		
1992	1		
1994	2		

Results - NO DETECTION.

Contact: David Storm at Drinking Water Field Operational Branch, Department of Health Services, State of California, (916) 324-2319