



# Department of Pesticide Regulation



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## MEMORANDUM

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TO: Sue Edmiston  
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HSM-01017

FROM: Janet R. Spencer [original signed by J.R. Spencer]  
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DATE: October 26, 2001

SUBJECT: WH&S BRANCH ACTIVITIES AND RESULTS OF ANALYSES RELATED  
TO THE INVESTIGATION OF PRIORITY ILLNESS EPISODE 39-SOL-00  
(PROJECT 0004)

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### Incident Chronology

On August 17, 2000 at 6:00 AM, eight female employees of Harris Moran Seed Company (Harris Moran) entered a watermelon field to conduct hand pollination work near the town of Dixon, in Solano County. Around 6:50 AM, the crew noticed a helicopter about 500 feet to the south of the watermelon field, across Putah Creek. At first, the workers thought it was a police helicopter, and continued working. Shortly after 6:50 AM, when the helicopter began applying pesticides, the workers smelled an offensive odor and realized an application was taking place. The field crew leader immediately ordered the workers to leave the field, which they did by 7:00 AM, having been exposed to the odor for less than 10 minutes. At this time, three workers began vomiting. One of the three also began trembling, feeling alternately hot and cold, and experienced the sensation of a pounding heartbeat.

The workers drove to Harris Moran headquarters, arriving there at 7:10 AM. Under the direction of a Harris Moran supervisor, the workers were decontaminated within 5 minutes of arrival, their clothing was bagged, they were provided with clean clothing, and all eight were transported to Sutter Davis Hospital in Davis. There, the workers were decontaminated again. Subsequently, two more workers developed nausea and headache. The women were examined, had their blood drawn for cholinesterase determination, were treated with Tylenol, and released to home rest around noon. Three workers remained asymptomatic. Of the five symptomatic workers, one continued to experience a slight headache the day after the incident, while the other four women recovered fully after resting at home. For all eight women, the diagnosis was "pesticide odor exposure". The cholinesterase evaluations showed all workers' levels within the normal range.

### Incident Investigation

Since five or more workers sought medical treatment for symptoms associated with pesticide exposure, the incident met priority criteria for human effects and was assigned priority episode case number 39-SOL-00 (1). Solano county agricultural commissioner (CAC) investigators determined that the helicopter was treating processing tomatoes with the pesticide products Monitor<sup>®</sup> 4 (EPA registration number 3125-280; 40% active ingredient methamidophos) at 2



pints per acre and Thiolux<sup>®</sup> (EPA registration number 100-835; 80% active ingredient sulfur) at 8 lb/acre. The tank mix also included Silwet L-77<sup>®</sup>, (EPA registration number 36208-50025) a silicon super wetter spray adjuvant concentrate, applied at 0.6 oz/ac.

*Foliage Samples for Determination of Total Residue* - On August 17, Solano CAC staff collected four foliage samples along a north-south gradient from the tomatoes (south) to the watermelon field (north), to determine whether methamidophos had drifted onto the watermelon field. One sample was of tomato foliage from the treated tomato field. Three weed foliage samples were collected, two of riparian foliage, one each from the south and north sides of Putah Creek, and one from the watermelon field. These samples were analyzed for total methamidophos (ppm). The results are provided in Table 1, below. Methamidophos residues declined steadily with distance north of the tomato field. No methamidophos was detected in the watermelon field (minimum detection limit = 20 µg/sample).

Table 1. Total Methamidophos Residues (ppm) in Four Gradient Samples Collected August 17, 2000 in Investigation of Priority Episode 39-SOL-00

<u>Foliage Sample Type and Location</u>	<u>ppm methamidophos</u>
Tomato foliage	10.7
Riparian weeds 90 feet N of tomatoes	0.11
Riparian weeds 200 feet N of tomatoes	0.01
Weeds in watermelon field 500 feet N of tomatoes	None detected <sup>/a</sup>

/a Minimum detection limit = 0.01 ppm methamidophos

*Clothing Sample* - Also on August 17, Solano CAC submitted a composite sample of approximately 0.5 cubic feet of the workers' outer clothing, consisting of shirts and bandanas, for methamidophos analysis. No methamidophos residues were detected (minimum detection limit = 20 µg/sample).

*Worker Health and Safety Branch (WH&S) Investigation* - WH&S was informed of the incident on August 18. In order to evaluate potential worker exposures, WH&S requested that the CAC investigators collect dislodgeable foliar residue (DFR) samples from the watermelon foliage and provide us with the field's application history. The watermelon field had been treated with Asana<sup>®</sup> XL (EPA registration number 352-515; 8.4% active ingredient esfenvalerate) on August 13, at the rate of 9 oz/acre. Asana<sup>®</sup> XL has a restricted entry interval (REI) of 12 hours. On August 18, Solano CAC staff collected three DFR samples at 15, 70 and 130 feet north of the southern edge of the watermelon field (about 515, 585, and 630 feet, respectively, north of the treated tomato field). Results are provided in Table 2, below. No methamidophos residues were detected (minimum detection limit = 0.002 µg/cm<sup>2</sup>).

Table 2. Methamidophos and Esfenvalerate Residues ( $\mu\text{g}/\text{cm}^2$ ) on Watermelon Dislodgable Foliar Residue (DFR) Samples Collected August 18, 2000 in Investigation of Priority Episode 39-SOL-00

Watermelon DFR Samples	$\mu\text{g}/\text{cm}^2$ methamidophos	$\mu\text{g}/\text{cm}^2$ esfenvalerate
15 feet north of southern border	None detected <sup>/a</sup>	11.3
70 feet north of southern border	None detected <sup>/a</sup>	8.7
130 feet north of southern border	None detected <sup>/a</sup>	5.9

/a minimum detection limit = 0.002  $\mu\text{g}/\text{cm}^2$  methamidophos

### Investigation Summary

In addition to the foliage and clothing samples, the Solano CAC investigation included both hourly weather data from nearby stations for August 17 and information collected during worker interviews. Weather station data indicated that between 6:00 and 8:00 AM, there was a slight wind of 0 – 3 miles per hour, with variable direction from S to W. During worker interviews, the women reported that they did not feel any spray drift, but did notice a cloud of material in the vicinity of the watermelon field as they were leaving the area. Several workers noted a slight breeze from the south, which was where the aerial application was taking place.

Based on the results of the foliage and clothing samples, the Solano CAC determined that methamidophos did not drift to the watermelon field. The slight breeze may have contributed to the odor moving offsite, but is not likely to have caused drift to the watermelon field. The workers were thus not exposed to methamidophos, but did suffer symptoms related to odor detection from the aerial application.

As a result of this incident, the manager of Martinez and Triad Farming, who owns the tomato field, will inform Harris Moran when he has aerial application scheduled, so that fieldwork can be postponed or coordinated in the areas near pending applications.

### Conclusions and Violations

The aerial applicator complied with all pertinent laws, regulations and conditions. His application did not drift offsite. Both the field crew leader and the supervisor for Harris Moran acted appropriately in removing workers promptly from the field, decontaminating the workers, and transporting them to the hospital. The Solano CAC did, however, identify violations related to the workers' pesticide safety training and knowledge of application-specific information. Two of the field crew were Harris Moran employees and the other six were Contractors Limited employees, working under a labor contract. The Harris Moran employees were fully trained, but did not know where to locate application-specific information, except for asking the company manager. This violated Title 3, California Code of Regulations (3CCR), Section 6761 (2). Since the violation did not contribute to the illnesses, Solano CAC did not take compliance or

enforcement action. Instead, they discussed the training issues with Harris Moran management, who will focus on application-specific information during future safety training sessions. The Solano CAC will follow up by focusing on the adequacy of Harris Moran's fieldworker training program during annual headquarters inspections. Three of the Contractors Limited employees had received inadequate or no training in fieldworker pesticide safety, in violation of 3 CCR, Section 6764. That this lack of training did not contribute directly to the illnesses in this incident was primarily because Harris Moran employees were well-trained. Contractors Limited was issued a violation notice because inadequate training indicated a pervasive lack of compliance that could directly contribute to such incidents in the future.

#### References

1. DPR and US EPA (2001) Cooperative Agreement Between the State of California Department of Pesticide Regulation, California Agricultural Commissioners and Sealers Association, and the United States Environmental Protection Agency, Region IX. California Department of Pesticide Regulation, Pesticide Enforcement Branch, 1001 I Street, Sacramento, California, 95814
2. California Department of Pesticide Regulation (1998) Title 3, Division 6, California Code of Regulations. California Department of Pesticide Regulation, 1001 I Street, Sacramento, California 95814