



# Department of Pesticide Regulation



Mary-Ann Warmerdam  
Director

## MEMORANDUM

Arnold Schwarzenegger  
Governor

TO: Susan Edmiston, Chief  
Worker Health and Safety Branch

**HSM-07006**

FROM: Bernie Hernandez, Associate Environmental Research Scientist  
Worker Health and Safety Branch *(original signed by B. Hernandez)*  
(916) 445-4203

Zahangir Kabir, Associate Environmental Research Scientist  
Worker Health and Safety Branch *(original signed by Z. Kabir)*  
(916) 445-4244

DATE: September 12, 2007

SUBJECT: PROJECT 0706 - WORKER HEALTH AND SAFETY'S INVOLVEMENT IN:  
CHLORPYRIFOS DRIFT INVESTIGATION IN FRESNO COUNTY

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### Incident Chronology

On August 16, 2007, at 1320 hours, Al Lomeli, Supervisor of Department of Pesticide Regulation (DPR), Pesticide Enforcement Branch, Central Regional Office, informed the Worker Health and Safety (WHS) Branch of a possible drift incident in Fresno County to a grape vineyard from an aerial chlorpyrifos application on a nearby cotton field (T12S R12 E S27). Bernie Hernandez and Zahangir Kabir were dispatched to the incident site and at 1430 hours, met with Charles Melton and Gilbert Urquizu (Supervising Agricultural/Standards Specialist and Agricultural/Standards Specialist III, respectively) of the Fresno County Agricultural Commissioner's (CAC) Firebaugh District office). Mr. Melton and Mr. Urquizu provided maps of the incident site (Appendix 1), a copy of the Pesticide Use Report (Appendix 2) and a brief summary of the transpired events.

Mr. Urquizu is in the process of confirming the following:

The pesticide product used was Lorsban 4E (62719-220-AA, [44.9% chlorpyrifos]; see Appendix 2). At approximately 2000 hours on August 7, 2007, a mechanic arrived to service the mechanical grape harvesters for the evening's operation and reported feeling mist when the pilot turned at the south end of the cotton field to begin his next pass. He did not report any symptoms from his exposure, nor did he seek medical attention. At 2030 hours, workers began arriving to harvest the grapes and by 2100 hours the workers complained of the strong pesticide odor and refused to work that evening. No worker illnesses were reported. The pilot ceased the application when he noticed the workers arriving. The prevailing wind on August 7 had been approximately 5 mph from the northwest; the recorded high temperature was 85 °F.



### **On-Site Observations**

At 1650 hours, Bernie and Kabir evaluated the incident site to develop an appropriate sampling strategy. Appendix 1 (map), Appendix 3 (schematic), and photos 1-5 document observations made at the incident site and show the proximity of the cotton field to the vineyard. The distance between the two fields varied between 220 – 270 feet, and the mechanic felt the spray mist approximately 240 feet from the cotton field (photos 1-3). The grapevines were about six to seven feet in height (photo 4) and the row numbers (photo 5) identify the rows where Bernie and Kabir collected dislodgeable foliar residue (DFR) samples.

### **Sampling and Results**

At approximately 1710 hours on August 16, Bernie and Kabir began collecting DFR samples from the grapevines. They collected twelve DFR samples from the vineyard where the workers and the harvesting equipment were located. DFR sampling was conducted according to HS-1600, Guidance for Determination of Dislodgeable Foliar Residue (Edmiston et al., 2002)<sup>1</sup>. DFR samples were collected using precision leaf samplers equipped with a 1-inch diameter-cutting die fitted to a four-ounce glass jar. Each sample consisted of 40 1-inch leaf disks, for a total foliar area of 400 cm<sup>2</sup> per sample.

Kabir delivered the DFR samples to chemist Vincent Quan of the California Department of Food and Agriculture, Center for Analytical Chemistry, in Sacramento, on August 17, 2007 at approximately 0830 hours. Trace amounts of chlorpyrifos were detected on three of the samples; all residues were below the limit of quantification. Table 1 provides sample numbers, sampled rows and sample results.

Table 1. Project 0706, Chlorpyrifos Dislodgeable Foliar Residue (DFR) Grape Sampling

<b>Sample No.</b>	<b>Row</b>	<b>µg/cm<sup>2</sup></b>
EF07-001	93	Trace
EF07-002	100	ND
EF07-003	103	ND
EF07-004	110	ND
EF07-005	130	ND
EF07-006	140	ND
EF07-007	160	Trace
EF07-008	175	Trace
EF07-009	200	ND
EF07-010	210	ND
EF07-011	240	ND
EF07-012	255	ND

None detected - ND; less than 0.13 µg chlorpyrifos

Trace - Chlorpyrifos residues detected below the limit of quantification of 0.4 µg/sample

Project documentation, sample collection, labeling and handling, and chain of custody were conducted in accordance with the following WHS standard operating procedures (SOPs):

- WHS-FO03, Dislodgeable Foliar Residue Sampling
- WHS-FO04, Identification and Labeling of Samples
- WHS-FO05, Sample Tracking, Shipping and Receiving
- WHS-FO07, Records and Notebooks (Field Data), and
- WHS-FO08, Project Documentation and Numbering

As indicated in the results table (Table 1) the presence of chlorpyrifos was found to have been on some of the vineyard foliage indicating potential drift. The very low levels found were likely due to our sampling nine-days post application. Iwata et al., in a 1983 citrus study<sup>2</sup>, found initial residues of 0.3 – 0.7  $\mu\text{g}/\text{cm}^2$  chlorpyrifos, and a mean half-life of 3 days following respective applications of 5 and 10 lb/acre chlorpyrifos. Since this was a potential drift incident from a cotton field that was treated at one pound of active ingredient per acre nine days prior to our DFR sampling the vineyard where the drift occurred we would expect to find extremely low levels of chlorpyrifos.

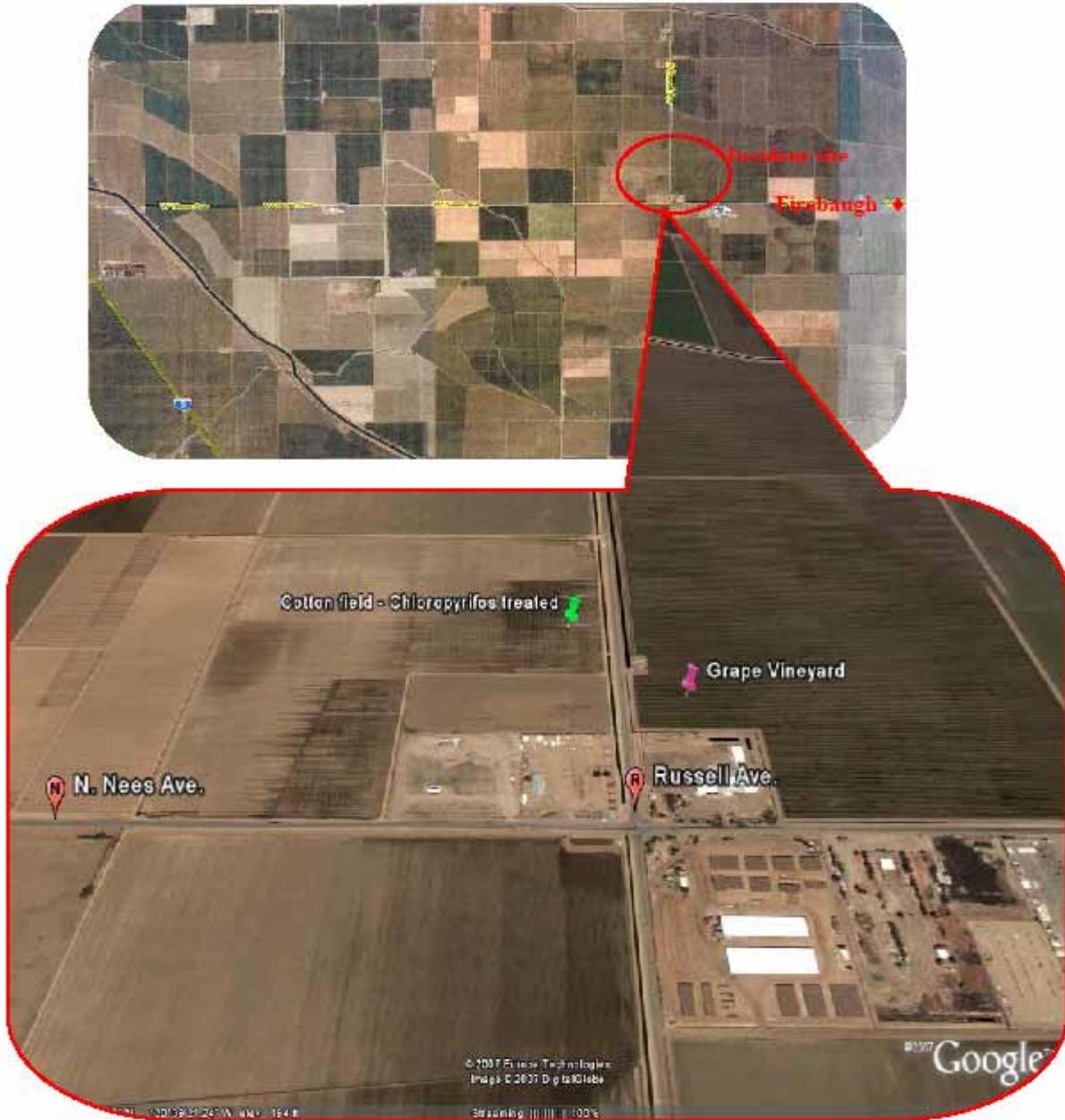
## **References**

<sup>1</sup> Edmiston S, Powell S, Spencer J, Curtis C. 2002. Guidance for Determination of Dislodgeable Foliar Residue, HS-1600. California Department of Pesticide Regulation, Worker Health and Safety Branch. Available on-line at:  
<http://www.cdpr.ca.gov/docs/whs/pdf/hs1600.pdf>

<sup>2</sup> Iwata Y., O'Neal JP, Barkley JH, Dinoff TM, Dusch ME. 1983. Chlorpyrifos applied to California citrus: residue levels on foliage and on and in fruit. *J. Agric. Food Chem.* 31: 603-610.

cc: Al Lomeli, Pesticide Enforcement Branch, Central Regional Office  
Jim Shattuck, DPR Agricultural Commissioner Liaison  
Janet Spencer, Sr. Environmental Research Scientist, WHS Branch  
Charles Melton, Supervisor Agricultural/Standards Specialist, Fresno CAC, Firebaugh

Appendix 1: Map of incident site, Firebaugh District, Fresno County



Appendix 2: Pesticide Use Report Application Completion Notice of Lorsban 4E on Cotton

Aug 23 2007 1:33PM FIREBAUGH DISTRICT 5596591382 p. 2  
 08/17/2007 10:46 12093646904 THIEL AIR CARE PAGE 02

JILL (C-9.21/R-9.21/H-9.21/D-8.1) User: Thiel Air Care, Inc. 8/16/2007 4:13:11PM Version: 6.5

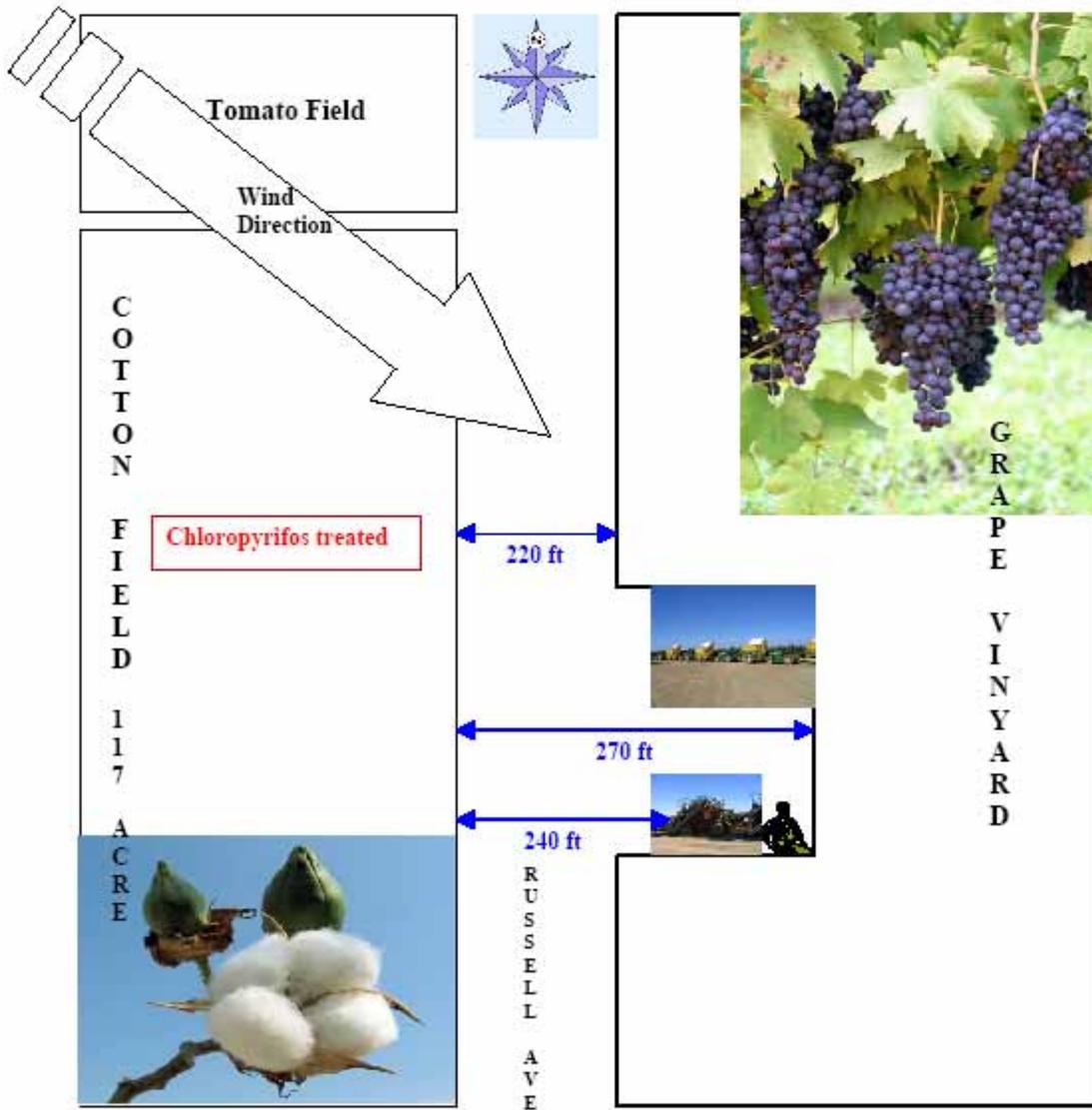
STATE OF CALIFORNIA - ENVIRONMENTAL PROTECTION AGENCY  
 DEPARTMENT OF PESTICIDE REGULATION  
 PESTICIDE USE REPORT (33-025 Rev 3/90) PMIS 0033

Rec.# TACF-03349-AD-1  
 ( ) Nursery

County 10	Section 28	Township 12S	Range 12E	Base & Meridian M	Method A	Permitte / Customer DEL MAR FARMS	Applicator Name & Address THIEL AIR CARE, INC. P.O. BOX 605 CHOWCHILLA, CA 93610
Operator Identification Number 10-07-1010411		Site Identification Number 17COTF37		Planted Area 117.00 ac		Block ID 17COF37	
Location SE 1/4				Date / Time Applied Proposed: 08/07/07 8:10 pm Actual: 08/07/07 8:53 pm		Area Treated Actual 117.00 ac	
				Commodity or Site Treated COTTON		Crop ID	
Restricted Material	Chemical Number	Product and Manufacturer		Registration Number From Label	Total Formulated Product Used	Rate Per	Dilution Volume
N	2530	LORSBAN-4E Dow Agrosciences		62719-225-AA	29.25 gal	2.00 pt	10.00 gal
N	57620	ASSAIL 70WP INSECTICIDE Corteva Agriscience LLC		8033-33-AA-458T	14.63 lb	2.00 oz	10.00 gal
		AMIGO OTHER		34764-56028-AA	58.50 gal	4.00 pt	10.00 gal
		Britz Buffer Britz Fertilizers		10951-J	1.46 gal	0.1000 pt	10.00 gal
Days Recntry 24 hr	Days Preharvest 28 day	Application Supervised By DOUG THIEL		NW		N	NE
Environmental Changes / Comments				W		Target Area	
				SW		S	SE
Submitted By: DOUG THIEL	Date 8/16/2007	Time 04:13 PM	PCA Name PABLO RANGEL 02746				
Received By:	Box No.	Date	Time	Approved	Denied		

Revised

Appendix 3. Schematic diagram of the incident site on August 16, 2007



**Photo # 1. Distance between the Cotton Field and Grape Vineyard**



**Photo # 2. Mechanical Grape Harvester**



**Photo # 3. Grape Gondolas**



**Photo # 4. Grape Vineyard Plant Height**



**Photo # 5. Grape Row Identifier**

