Department of Pesticide Regulation

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FROM: Harvard R. Fong, CIH, Senior Industrial Hygienist *(original signed by H. Fong)*
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DATE: November 29, 2004

SUBJECT: CONSULTATION ON WOOLF-HARRIS FACILITY AND THEIR USE OF PHOSPHINE GAS

On October 22nd, both Frank Schneider and I, of the Department of Pesticide Regulation (DPR), Worker Health and Safety Branch accompanied you and Roger Taff of the Fresno County Agricultural Commissioner's office to the processing facility of Woolf-Harris Almonds in Five Points. This was done in response to your request for an industrial hygiene assessment of the phosphine use at this facility. This facility had recently experienced a phosphine gas exposure event that had resulted in the illness of several employees. Our assessment of the facility is as follows:

We conducted a walk-around and observed the two application areas, the semi-enclosed bin storage area, the interior storage and primary processing areas, and the secondarily enclosed grading room where the illnesses originated.

In our walk-around of the processing facility, we noted that the facility operator had initiated a program to identify each fumigated bin. Had this program been in place earlier, as required by Title 3 CCR Section 6782 (c), the confusion that led to the previous exposure event might have been avoided.

The remainder of the walk-around was informative. Our phosphine monitor did not detect any phosphine in the ambient air comprising the worker's breathing zone. The only time the monitor detected phosphine was when the probe was deeply inserted between two stacked bins. The reading of 0.06 ppm was not unexpected nor was it cause for immediate concern. We would suggest that the emergency respirator storage bin located outside the building be better maintained and in accordance with Sections 6738 (h)(3) and (h)(5).

During the meeting with Mr. Evans of Woolf-Harris, he stated that his company is considering the purchase and installation of a stationary phosphine monitoring system with remote sensors. DPR highly recommends such a proactive approach to worker protection and can provide consultative service to ensure that the system installed is appropriate to the work environment. A

system that monitors airborne phosphine concentrations, from initial injection of the gas, through emissions through the tarpaulins while in storage to final aeration and processing, would be the best approach to monitoring and controlling phosphine exposure to workers. A major concern of DPR is that even though the applicators may be using personal phosphine monitors, there is no detection system for fugitive emission (by leakage from tarpaulin damage or from simple penetration of the gas through the plastic) from treated commodity. Even if there is only, on average, slight leakage per treated bin, the accumulation of hundreds of treated bins within a confining structure could result in detectable concentrations of phosphine gas in the breathing zone of workers. Concentrations of phosphine that are below the legally enforceable Permissible Exposure Level (PEL: 0.3 ppm) are not necessarily completely harmless, since there is variation in individual susceptibility. A worker may suffer discomfort, aggravation of a pre-existing condition, or occupational disease at exposure to levels below the PEL. This suggests that storage structures may require monitoring, ideally constant real-time monitoring, for the duration of fumigated product storage. It is strongly advised that the real-time stationary phosphine-monitoring system mentioned by Mr. Evans be installed a quickly as feasible. Other mitigation measures may also be applicable.

Since phosphine gas, in the form of the ECO2FUME formulation, appears to be a methyl bromide replacement, it is critical that the use of this material be properly reviewed and that facilities using it sample and document air concentrations in the workplace. DPR is willing to discuss these recommendations with a consultant.

We look forward to providing further consultation services to CRO/Enforcement in investigating and reviewing work environments where phosphine gas fumigants are in use.

cc: Susan Wilson, Enforcement Branch
Susan Edmiston, Worker Health and Safety Branch
Frank Schneider, Worker Health and Safety Branch