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Pesticide Enforcement

Information Systems

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EXECUTIVE SUMMARY of Report EH 95-10 Entitled "Summary of Assembly Bill 1807/3219 Pesticide Air Monitoring Results Conducted by the California Air Resources Board 1986 to 1995"

Environmental Hazards Assessment Program
Environmental Monitoring and Pest Management Branch
Division of Enforcement, Environmental Monitoring, and Data Management

PURPOSE

This document summarizes all the pesticide air monitoring data that have been collected and published in reports by the California Air Resources Board (ARB) from 1986 to 1995. This document does not include subsequent monitoring conducted by DPR. The monitoring conducted under 1807 provides data to initially assess the hazards of the pesticides monitored.

BACKGROUND

As required by California's air toxics law (Assembly Bill 1807),[1] the Department of Pesticide Regulation (DPR) uses pesticide monitoring data from ARB, information from any prior monitoring studies, and

[1]California's air toxics law, Assembly Bill 1807 (Chapter 1047, Statutes of 1983, and amended by Assembly Bill 3219, Chapter 1380, Statutes of 1984), defines California's air toxics program (Health and Safety Code Sections 39650 *et seq.*, Food and Agriculture Code Sections 14021 *et seq.*).

toxicological data on health effects to determine whether certain pesticides pose a potential threat to public health and should be identified as toxic air contaminants (TACs). To ensure that those pesticides of most concern are evaluated first, the air toxics law requires that the following criteria be used for prioritizing compounds: risk of harm to public health, amount of pesticide used (based on use reports and sales records), manner of usage in California, and persistence in the atmosphere. DPR has developed a list of pesticides that are candidates for evaluation using these mandated criteria. DPR selects pesticides from this list and asks ARB to conduct air monitoring. DPR then conducts preliminary reviews of ARB data to determine if a potential public health concern exists and whether immediate action is needed to reduce public exposure. This is followed by a comprehensive risk assessment prepared by DPR in consultation with the Office of Environmental Health Hazard Assessment. If a pesticide is identified as a TAC, DPR will evaluate current public exposure and any need for changes in the way the pesticide is used to reduce public exposure.[2]

In addition to Assembly Bill 1807, there are other regulatory authorities which allow DPR to move quickly if the health hazard warrants it. If high levels of a pesticide are detected in air and the Director of DPR determines that these levels present an unacceptable risk, the Director may use his/her authority to immediately suspend or modify use of the pesticide. (See "Conclusions" below.)

STUDY METHODS

ARB measures outdoor concentrations of pesticides in the air at DPR's request. For each pesticide being evaluated, concentrations are measured in the ambient community air and in the air near an

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[2]The statutes do not specify any required activities for pesticides identified as TACs pursuant to Food and Agriculture Code Section 14021(b).

application. In general, the monitoring is done in a county of high use, during the season of peak use. After DPR asks ARB to monitor for a particular pesticide, DPR staff notifies the county agricultural commissioner. After this initial contact, ARB staff contacts the county agricultural commissioner's office to receive specific information on the location and timing of anticipated applications, as well as names of applicators or growers likely to be using the particular pesticide.

For ambient measurements, monitoring is done at three to five sites (*e.g.*, at schools) near agricultural areas expected to receive applications of the pesticide being monitored. Samples of 24 hours in duration are collected four days per week for about four weeks. Samples are also collected at urban background sites away from pesticide applications.

In addition, application-site monitoring (*e.g.*, sampling before and after application) is also done for 72 hours around a field during and after an application of the pesticide. Prior to this application-site monitoring, ARB staff contacts applicators or growers to request access to their land to monitor near an upcoming application of the pesticide. Following the monitoring, results are given to DPR, Office of Environmental Health Hazard Assessment, the county agricultural commissioner, the county air pollution control officer, and the applicator or grower (in the case of application-site monitoring).

RESULTS

From 1986 to 1995, ARB has conducted ambient air monitoring for 20 pesticides and 5 primary pesticide degradation products in 10 counties. Values are reported as the maximum positive detections for each chemical. These values range from 0.001 micrograms per cubic meter ($\mu g/m^3$ or 0.102 parts per trillion) for methyl parathion in Sutter County to 161 $\mu g/m^3$ (35 parts per billion) for

1,3-dichloropropene in Merced County. Application-site monitoring for 17 pesticides and 4 primary pesticide degradation products was conducted in 12 counties from 1986 to 1995. The values range from 0.09 $\mu g/m^3$ (0.01 parts per billion) for a monocrotophos application to cotton in Fresno County to 3,493 $\mu g/m^3$ (900 parts per billion) for a methyl bromide application to strawberries in Monterey County.

CONCLUSIONS

Data received from ARB are reviewed immediately by DPR; DPR uses this preliminary review to determine if these levels may pose significant risk. The majority of pesticides for which ARB has conducted ambient or application-site air monitoring have been detected at levels subsequently determined not to pose an immediate risk to human health by this preliminary DPR review. When the air concentrations are high and the Director determines that they present an immediate and unacceptable risk, the Director may immediately suspend or modify use of the pesticide.

It is important to remember that a chemical does not need to follow the lengthy Assembly Bill 1807 process for DPR to determine that it presents a threat to public health at levels found in air. There are two recent examples. (1) In 1990 during air monitoring for the TAC candidate 1,3-dichloropropene (also known as 1,3-D or Telone®), a widely used soil fumigant, ARB found air concentrations determined by DPR to pose a significant risk to human health. DPR immediately notified the county agricultural commissioners of this finding and recommended that all permits be suspended. No permits were issued until limited reintroduction occurred in 1995. This limited use was reinstated under strictly controlled conditions that are protective of worker and public health. (2) Another example is metam-sodium, although it was not originally part of the Assembly Bill 1807 process. Applied to moist soil, metam-sodium degrades rapidly to methyl isothiocyanate (MITC), which is the pesticidal active agent, and several minor breakdown products including hydrogen sulfide and

carbon disulfide. In 1993 residents in Contra Costa County living near fields treated with metam-sodium reported odor, eye and nose irritation, headache, nausea, and sore throats. In response to these problems and at DPR's urging, chemical companies amended all agricultural use metam-sodium labels on pesticide products. Users are required to comply with the instructions for safe handling and use in the Technical Information Bulletin (TIB) which was developed by chemical companies and DPR. The TIB instructions are now part of the registered label in California; therefore, following these instructions is required by law. California is the only state which requires that TIB instructions be part of the registered label for metam-sodium. In response to residents' concerns, ARB conducted monitoring in Contra Costa County and ARB and DPR conducted monitoring in Kern County to obtain air data for MITC emissions. In 1994 the agricultural uses of metam-sodium and MITC were designated as California Restricted Materials.[3]

This action was based on monitoring data developed during the summer of 1993 by DPR.[4] The data showed that levels of MITC capable of causing eye irritation were detectable outside the boundaries of treated fields under certain application and weather conditions. DPR also developed suggested permit conditions, including using buffer zones, which county agricultural commissioners require agricultural production users to follow. DPR continues to evaluate the success of the permit conditions in minimizing exposure.

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[3]Title 3, California Code of Regulations, Section 6400.

[4]Wofford, P., K.P. Bennett, J. Hernandez and P. Lee. 1994. Air Monitoring for Methyl Isothiocyanate During a Sprinkler Application for Metam-Sodium. Report Number EH 94-02. California Department of Pesticide Regulation, Sacramento, California

Other laws and regulations may impact the status of a pesticide in the Assembly Bill 1807 review process. Pesticides may be canceled or have their uses severely restricted by the U.S. Environmental Protection Agency, or may be withdrawn from use by the registrant. In these cases, there is no further evaluation of the pesticide as a TAC. Examples of pesticides in this category are maneb, ethylene dibromide, ethylene dichloride, carbon tetrachloride, captafol, and monocrotophos. Use of maneb has been severely reduced, and all uses of the other pesticides have been canceled; therefore, there will be no further evaluation of these pesticides as TACs. Two other pesticides, molinate and DEF (s,s,s-tributyl phosphorothioate), are still in the Assembly Bill 1807 evaluation process; however, levels found in air led DPR to conclude that they posed a significant risk to human health. This determination led DPR to establish mitigation measures, including buffer zones, to reduce human exposures until the Assembly Bill 1807 evaluation of molinate and DEF has concluded.

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December 1996