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HSM-17008
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DATE: August 30, 2017

SUBJECT: CLOSE-OUT MEMORANDUM FOR THE MITIGATION OF ACUTE OCCUPATIONAL EXPOSURES FROM METHYL ISOTHIOCYANATE (MITC)-GENERATING PESTICIDES

Background

MITC is a general biocide used to control weeds, nematodes, and soil and wood fungi. MITC is the active by-product of the soil fumigants metam-sodium, metam-potassium and dazomet, from which it evolves as a gaseous degradation product. This process accounts for the overwhelming majority of MITC released into the air in California.

Metam -potassium and metam-sodium were first registered in the United States in 1973 and 1975, respectively. The United States Environmental Protection Agency (U.S. EPA) issued a data call-in for metam-sodium and metam-potassium in 1991 and included data requirements for ecotoxicity, toxicology, environmental fate, and residue chemistry. Metam-sodium was included in a 1995 agricultural reentry data call-in. In 2009, U.S. EPA issued an Amended Reregistration Eligibility Document that required mitigation of bystander and handler risks (https://www.regulations.gov/document?D=EPA-HQ-OPP-2005-0125-0519). Concurrently, U.S. EPA also assessed the risks and developed risk management decisions for four other soil fumigants including chloropicrin, dazomet, methyl bromide and methyl iodide or iodomethane (no longer registered). Risk mitigation measures for these fumigants were implemented through label changes by the end of 2012.

The U.S. EPA reviews each registered pesticide every 15 years to determine whether it continues to meet the Federal Insecticide, Fungicide, and Rodenticide Act standard for registration. In 2014, U.S. EPA issued a Final Work Plan for the registration review of metam-sodium, metam potassium and MITC. Dazomet is being reviewed in a separate registration action (https://www.regulations.gov/document?D=EPA-HQ-OPP-2005-0128-0272). The Work Plan calls for ecological, toxicological and exposure data for the registration review. U.S. EPA intends on making a final reregistration review decision by 2019.

The Department of Pesticide Regulation (DPR) completed an Evaluation of Methyl Isothiocyanate as a Toxic Air Contaminant for MITC in 2002 (http://www.cdpr.ca.gov/docs/emon/pubs/tac/finaleval/meth_iso.htm). The evaluation determined the use of MITC-generating pesticides resulted in unacceptable acute and seasonal exposure to bystanders and residents from ambient and off-site air concentrations. On December 2, 2002, DPR issued an RMD (http://www.cdpr.ca.gov/docs/emon/pubs/mitc/dirctv120202.pdf) that directed staff to prioritize mitigating the risks of acute exposures to residents and bystanders. The RMD identified an acute regulatory target concentration for MITC of 220 parts per billion averaged over an eight-hour period. Risks from acute exposures to residents and bystanders have been mitigated through buffer zones implemented through revised product labels and Restricted Materials permit conditions. In 2003, DPR also completed a Risk Characterization Document (RCD) for MITC that identified unacceptable risks of acute occupational exposures from MITC-generating pesticides (http://www.cdpr.ca.gov/docs/risk/rcd/mitc_sb950.pdf).

Effects

The most sensitive eight-hour acute endpoint identified in the MITC RCD was eye irritation, evidenced by an eye-blink response in human subjects. Eye irritation was completely reversible within three to forty-five minutes, when MITC was removed. The current MITC labels require workers to wear a full face respirator at the first notice of sensory irritation or the MITC application must cease and workers that are not wearing a respirator must leave the field. Respirators must be worn until air concentrations decline below sensory irritation levels. If air concentrations continue to cause sensory irritation, work can only continue if a worker wears a respirator.

Conclusion

Given the protection from acute exposures provided to workers by the recently revised label, DPR determines that additional mitigation is not needed at this time. However, there is a lack of data from field exposure studies for all the application methods currently in use. Staff are currently collecting field data to ensure that the labels provide adequate protection for workers.