DDT Exposures in a Natural History Museum -- Colorado

In October 1981, the Denver Museum of Natural History, Denver, Colorado, requested assistance from the National Institute for Occupational Safety and Health (NIOSH) in evaluating occupational exposures to dichlorodiphenyl trichloroethane (DDT) because of concern about possible health hazards (1). Workers potentially exposed to DDT included curators, preparators, and museum assistants involved in cleaning, packaging, and storing animal skeletons coated with the pesticide.

During a 3-day cleanup and renovation period in November 1982, NIOSH investigators collected environmental air samples for testing for DDT both from the general workplace environment and from personal breathing zones. Test results showed these air samples (range 0.001-0.1 mg/m(3)) were below both the Occupational Safety and Health Administration's (OSHA) standard for occupational exposure to DDT (1.0 mg/m(3)) (2) and the level currently recommended by NIOSH (0.5 mg/m(3)) (3). Bulk samples of dust, dirt, and scrapings from the skeletons were collected from several locations in the storage area. DDT levels ranged from 4 to 5,500 ug/g.

Before and during the cleanup, the museum implemented a NIOSH-recommended program designed to reduce exposures to DDT at the museum, consisting of: (1) preventive work practices (e.g., wearing impervious coveralls, boots, and gloves and using NIOSH-approved respirators); (2) appropriate personal hygiene (e.g., showering at the end of the workday and washing hands and face before eating, drinking, or smoking); (3) engineering controls (e.g., an enclosure to collect DDT waste materials during the cleaning of the bones, an exhaust ventilation system to prevent airborne particulates from reaching the employees' breathing zones, and a vacuum system to remove DDT-laden dust from the room during the final stages of cleaning). Reported by Region VIII and Hazard Evaluations and Technical Assistance Br, Div of Surveillance, Hazard Evaluations, and Field Studies, NIOSH, CDC.

Editorial Note

Editorial Note: Once widely used in the United States, DDT, a chlorinated hydrocarbon insecticide, has been banned from sale in this country since December 31, 1972. Before this time, it was widely used as a disinfectant on animal specimens shipped to museums throughout the United States. Potential exposures to DDT occurred when a curator or preparator cleaned the materials in preparation for display. The renovation of the Denver museum necessitated the complete cleaning and packing of all specimens, as well as decontamination of the old storage area.

Because DDT is more persistent in the environment than most synthetic organic pesticides (e.g., organophosphates, carbamates), concern continues about its chronic absorption, particularly as a residue...
in food. In general, chlorinated hydrocarbons may stimulate or depress the central nervous system. Mild poisoning with chlorinated hydrocarbons causes dizziness, nausea, abdominal pain, and vomiting; other symptoms include confusion, malaise, headaches, and irritation of the eyes and skin. Both OSHA and NIOSH recommend that skin contact with DDT be avoided.

Arsenic is also used for preserving animal specimens (4,5) and may pose an occupational hazard for taxidermists and museum workers. Wherever appropriate, steps should be taken to limit exposures to this hazard as well.

References


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