

Pesticide Incident Reporting

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While a wide array of toxic chemicals is generated inadvertently, pesticides are manufactured specifically for their toxic properties. The successes of pesticides in controlling target organisms, such as insects, weeds, and plant pathogens, are well documented. The historical use of pesticides to control vector-borne diseases, such as malaria and yellow fever, undoubtedly saved the lives of millions. Modern agricultural systems continue to rely heavily on pesticides to maintain cost-effective and competitive crop yields. However, the benefits accrued from pesticides are paired with inherent, often underemphasized, risks to public and environmental health.

Controversy in the 1960s and 1970s surrounding the persistence and bioaccumulative potential of organochlorine pesticides, such as DDT and dieldrin, promoted the shift to pesticides that were shorter-lived in the environment. Organophosphate pesticides have replaced many of the previously relied upon organochlorines. Organophosphates tend to degrade in water and soil more rapidly and generally do not biomagnify in the food chain. However, organophosphates pose a much greater risk in terms of acute toxicity than their organochlorine predecessors. While the threat of chronic effects exhibited by organochlorines decreased with the shift to organophosphates, the immediate risk to public health and safety markedly increased.

Pesticides are subject to complex laws such as the Federal Insecticide, Rodenticide, and Fungicide Act and the Federal Food, Drug and Cosmetic Act. However, no federal requirements explicitly govern the protection of public, occupational, and environmental health from direct pesticide exposure. Instead, the primary regulation of pesticides has, for nearly thirty years, been based on risk-benefit analysis before sale and use. As a result, the benefits of pesticides are more

widely understood and scientifically accepted than the risks. While recent amendments to the basic laws provided increased standards of health protection, the need to limit pesticide exposure and thoroughly document incidents of pesticide-related illness remains paramount.

Several states have adopted specific programs to document and investigate incidents of pesticide exposure. Arizona, California, Florida, New Mexico, New York, Oregon, Texas and Washington currently have on-going programs designed to assess both occupational and non-occupational cases involving accidental pesticide exposures. These states share data with the US Environmental Protection Agency and the National Institute of Occupational Safety and Health and work collectively to identify incident patterns. Though pesticide incident programs cannot feasibly investigate all incidents of exposure or misuse, they do provide a systematic basis to consistently document cases and help identify specific areas where intervention and educational services should be directed.

Washington State's Pesticide Incident Reporting and Tracking program may be used to illustrate how a particular multi-agency pesticide surveillance effort operates. The Pesticide Incident Reporting and Tracking program was established in 1990 to gather data on the adverse health effects of pesticides and to work to prevent future pesticide-related illnesses from occurring. The review panel for the program is composed of experts from the Washington State Departments of Health, Ecology, Agriculture, and Labor and Industries, as well as university specialists, a toxicologist, and a member of the public. The review panel is required by law to:

- Establish criteria for centralizing the actual or alleged health cases involving pesticides.
- Assess the response times of participating regulatory agencies in investigating pesticide incidents.
- Identify inadequacies in state or federal laws in protecting public health and safety.
- Protect the health and safety of farmworkers by advising appropriate regula-

tory agencies on pesticide re-entry intervals and pesticide labeling issues.

- Make recommendations for the implementation of pesticide incident investigation.
- Prepare an annual report for review by the Washington State governor, agency heads, legislators, and the general public.

In 1997, 441 cases were investigated by one of the four regulatory agencies and 214 were confirmed as definite, probable, or possible pesticide incidents. Of the 214 pesticide cases, 79 were agricultural occupational and 66 were non-agricultural occupational. For each of the pesticide incidents, the Washington Department of Agriculture assigns a severity rating and tracks the severity of all reported incidents over time. The ratings are determined by accounting for human exposure, economic damage, environmental disturbance, and regulatory compliance. After researching all pesticide incidents and identifying any trends in misuse, symptoms of illness, types of pesticides used, and severity of exposures, the appropriate state agencies provide advice on how such occurrences can be prevented in the future and proceed with administrative action as necessary.

Some examples of pesticide incidents in 1997 reported to Washington State agencies include:

- The sale of an unregistered insecticide by an unlicensed dealer.
- A bee kill, affecting 137 hives, resulting from the use of an insecticide.
- An aerial application of insecticides which sprayed children.
- A 24-year-old farmworker developed chemical conjunctivitis after herbicide exposure.
- A woman developed a skin irritation that lasted several months after a pest control company mistakenly applied an insecticide outside her home.
- A 71-year-old farmer fell ill after harrowing his field following an herbicide application.

Though statewide pesticide incident reporting programs should be required given the widespread reliance on chemical inputs, a number of areas in need of improve-

ment have been noted by participating states. Many physicians are unaware that they are required to report pesticide exposure incidents to regulatory agencies and many health practitioners do not know how to properly diagnose pesticide-related illnesses. Though cholinesterase inhibition is thought to be a plausible biological marker that signifies organophosphate insecticide poisoning, the flu-like symptoms often manifested can be easily confused with other, non-chemically induced illnesses. Many farmworkers, who certainly face the greatest risk of pesticide exposure, have claimed that they fear retaliation from employers, or risk losing their jobs, if they report incidents of chemical exposure or misuse. In general, underreporting is thought to be extensive.

Statewide pesticide use statistics complement pesticide incident reporting programs, but only California, New York, and Oregon document the volumes and types of pesticides used for specific purposes.

Such efforts, in conjunction with pesticide incident surveillance, are the needed next step to help regulatory agencies focus outreach efforts on areas of greatest pesticide exposure. Though the implementation of national pesticide surveillance standards is long overdue, statewide pesticide incident programs must first be developed and enforced. Some ongoing recommendations for states developing or currently utilizing pesticide incident programs include:

- Regulatory bodies at the local, state, and federal levels must collaborate efforts with universities, environmental groups, industry, and medical centers to identify ongoing pesticide related problems and collectively prescribe solutions.
- Pesticide use and incident data must be readily accessible and decipherable to the general public.
- Health care providers must be required to learn how to properly diagnose, treat, and report pesticide induced illnesses.
- Environmental health and toxicology

courses should become more widely integrated into the curricula of medical schools

- The Worker Protection Standard of 1995 must be more stringently enforced; educational material on pesticide toxicity and preventative measures must be widely distributed to farmworkers as well as physicians and the general public.
- Integrated Pest Management, less toxic pesticides, and alternatives to pesticides must continue to receive serious attention in agricultural research.

If properly implemented, pesticide incident programs offer an important tool for protecting public and environmental health from the dangers of chemical inputs. While pesticides remain an integral part of modern agricultural production, pesticide related illnesses can be prevented.

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