

## **Reducing Human Pesticide Handling Risks<sup>1</sup>**

---

Kenneth Rosenman<sup>2</sup>

Risks associated with pesticide handling are a combination of hazard and exposure to the chemical. To minimize these risks, any exposure to the chemical should be small or nonexistent. Taking proper precautions to minimize risks can be applied to all phases of pesticide applications, including mixing, loading, application, and equipment cleaning and repair. This factsheet covers only exposure risks to the applicator; physical equipment hazards relative to operator safety are covered in other factsheets.

Applicators face the greatest risk of chemical exposure while mixing and loading pesticides. While there are numerous risks during the application process, it is during the mixing and loading process that the applicator is working with full-strength, undiluted materials. Pesticides in the diluted, ready-for-application stage are generally less toxic. Hazards associated with application are increased when there are significant drift problems, equipment failures, pesticide spills, or when appropriate safety and application procedures are ignored. An often overlooked hazard occurs when the farmer, family members or farm animals are allowed to enter a treated area during the prescribed no-entry period.

### **SELECTING PESTICIDES**

Thoroughly read the label and any supplemental information before selecting or applying any pesticide. The pesticide label contains all the information needed for proper and safe use of the chemical, treatment for accidental exposure, and directions for appropriate use and disposal of the pesticide container. For the safety

of the applicator and to reduce environmental risks, it is a good practice to select the least toxic pesticide capable of providing the desired pest control.

It is important that you use only the pesticide for the purposes listed on the label and to follow proper mixing, loading and application recommendations. Based on the label information, you can select a pesticide that is appropriate for use on the host and pest to be controlled. Proper selection and use are important for effective and economical pesticide performance, protecting human and livestock health, and to reduce the impact on the environment.

### **PESTICIDE TRANSPORT AND STORAGE**

Care must be taken to ensure safe transport of pesticides; remember, you are legally responsible for the safe transport of the chemicals. It is advisable that you have the dealer deliver the pesticides directly to your storage facility to reduce this liability risk. If you must transport small amounts of pesticides, be sure all containers are secured in an open area of the truck. Never haul pesticides in the passenger compartment of a vehicle or in an area where feed is being transported. Keep absorbent material such as cat box litter readily accessible in the event of a small spill. Use the litter to absorb the spill and then handle the absorbed material and litter as if it were the chemical itself. In the event of a large spill, build a dike of sand or dirt around the spill and contact the fire department to alert a professionally-trained chemical spill clean-up team. Never hose down a spill as this may spread the contamination.

---

1. Michigan State University

2. Kenneth D. Rosenman, M.D., Occupational Medicine, Michigan State University, 5/92. This information is for educational purposes only. Funded by the National Institute of Occupational Safety and Health - #UO5/CC-4506052-01. Reviewed by Dr. Larry Olsen, Pesticide Education Coordinator, Michigan State University.

Proper storage of pesticides is important for maintaining the quality of the chemical and to protect you, your family, farm animals, and the environment from any unnecessary exposure. It is advisable that all farms have a separate structure for pesticide storage. This building should be locked at all times and must provide protection from temperature extremes, high humidity and direct sunlight. The structure should be dark, cool, dry, well-ventilated, insulated to prevent freezing, and constructed to state and local fire codes for storing flammable/combustible materials. Never store feed, seed, food or fertilizers in an area where pesticides are kept.

### **HANDLING, MIXING AND APPLICATION OF PESTICIDES**

Always wear protective clothing and equipment when handling, mixing or applying pesticides, or when cleaning application equipment. Protective clothing and equipment should also be worn when entering a pesticide-treated area before the no-entry period has passed. Basic protection includes a washable hat or cap with a full-brim, firmly woven cotton long-sleeved shirt and long pants, cotton underwear and socks, non-leather shoes, and a non-leather belt. Leather shoes and belts must be avoided because they cannot be washed. Additional protective clothing and equipment includes a waterproof hood, a hard hat or rain hat, a face shield with goggles and a respirator, cotton coveralls, a waterproof apron, unlined liquidproof elbow-length gloves, and lightweight unlined liquidproof calf-high boots. Specialized clothing may be needed when handling liquid concentrates and highly toxic materials, or when clothing may become wet from spray drift. Refer to the pesticide label for recommended protective clothing.

Minimizing exposure to a pesticide goes beyond the use of protective clothing and equipment. Daily washing of clothing worn by the applicator will reduce the risk of pesticide buildup on the clothing. Never wash clothing exposed to pesticides with other household laundry. Clothing saturated with pesticides should be disposed of properly.

Proper hand and face washing minimizes the risk of pesticide exposure when eating, smoking or touching the face. An enclosed tractor cab with an air filtration system provides excellent operator protection when applying pesticides.

Performing mixing and loading operations on a concrete pad with a curb and a drain to a holding tank minimizes the risk of environmental contamination. Triple or pressure rinse all empty pesticide containers, puncture and discard according to state and local codes. Most pesticide containers are to be used only once and then discarded. Never reuse a container; no matter what cleaning procedure is used there is still a high risk of contamination.

Appropriate preparation and planning are essential for the safe application of pesticides. The general recommendations for pesticide applicator safety in this factsheet are intended to provide you with information about the important issues to be considered when applying pesticides. Contact your local Cooperative Extension Service for more specific information.

### **ADDITIONAL INFORMATION ABOUT PESTICIDE APPLICATOR SAFETY**

For more details and information about pesticide applicator safety, refer to the following publications from the Michigan State University Cooperative Extension Service:

- *Choosing Clothing for Pesticide Safety*, Extension Bulletin E-2150.
- *Reading a Pesticide Product Label*, Extension Bulletin E-2182.
- *Commercial and Private Pesticide Applicator Core Manual*, Extension Bulletin E-2195.
- *Using Pesticides Safely: A Guide for the Applicator*, Extension Bulletin E-2215.
- *Washing Pesticide-Soiled Clothing*, Extension Bulletin E-2413.
- *Rinsing and Recycling Pesticide Containers*, AM-95.