

Homeowner Chemical Safety¹

David E. Baker²

We use chemicals every day. They help us to live better and stay healthy. Yet, when used carelessly, even familiar chemicals can be dangerous. Each year about 200,000 accidental poisonings occur in the United States; of these, about 2,500 result in death. In Missouri there were approximately 14,000 reported cases treated at poison control centers during 1977.

KEEP CHEMICALS OUT OF REACH

Take a quick look around your home - check drawers, storage shelves, cupboards (especially those under the bathroom and kitchen sinks) and medicine cabinets. Inspect the basement, garage and all utility buildings. How many of the following products could a child reach?

- Bleach, bowl cleaner, cleaning powders, wax remover, ammonia, floor wax, etc.
- Food extracts - vanilla, almond and maple are powerful poisons if taken straight from the bottle undiluted.
- Varnish, paints, paint thinners and paint removers.
- Fuels such as kerosene, charcoal lighter and gasoline.
- Pesticides such as weed killers, insect sprays, mothballs and rat poison.
- Aspirin, vitamins, sleeping pills and other medicines.
- Antiseptics such as iodine.

Every one of these products can cause serious illness and even death, and children are usually the victims. Many children will eat or drink anything they can get in their hands. If it

happens to be lye, bleach, pesticides, cleaning fluids, too many aspirin or any of the items listed above, the results can be tragic. Always store these products where children cannot reach them.

Home poisonings should never happen. The best prevention method is a locked storage space. If locked storage is impractical, keep poisons out of the reach of children. Many products are now sold in "childproof" packages as a result of the Poison Prevention Packaging Act. Ask for and use childproof packaging.

The disposal of pressurized spray containers requires special consideration. The contents may be poisonous (insecticides, pesticides), highly flammable (paint, lacquer, hair spray), or selectively damaging (hair spray in the eyes). When using any flammable substance, refrain from smoking or using open flames. Pressurized containers should never be disposed of by burning in a furnace or incinerator because they may explode at high temperatures. Follow the manufacturers label recommendations for safe disposal.

PESTICIDE APPLICATION

The most important rule to follow when using pesticides and other dangerous chemicals is to read the label. Read it before you buy the product, before you open the container, before you mix it, before you apply it and before you get rid of any unused portions or the empty container. Know and follow all of the instructions and precautions.

1. This document is GO1918, published by the University Extension, University of Missouri-Columbia, Columbia, MO 65211. Publication date: October 1993.

2. David E. Baker, Department of Agricultural Engineering, University of Missouri-Columbia, Columbia, MO 65211.

The use of pesticides demands caution and responsibility for effective results. Consider both the hazards of pesticides and the protective clothing you should wear when using pesticides.

Before a pesticide can harm you, it must be taken into your body. There are three ways toxic materials can be taken into the body:

- Oral - through the mouth and digestive system.
- Dermal - through the skin.
- Inhalation - through the nose and respiratory system.

Using protective clothing can usually control the absorption of a chemical by the dermal and/or inhalation routes of entry. Pesticides pass through the skin on some areas of the body more quickly than on other areas (Table 1). You must be especially careful with your eyes. The back of the hands and wrists absorb more than the palms do. The armpits, back of the neck, groin and feet also take in pesticides easily. Cuts or scrapes allow pesticides to enter even more easily.

Table 1. Absorption rates compared to the forearm (1.0)

| Body Part | Absorption rate |
|--------------|-----------------|
| Scalp | 3.7 |
| Forehead | 4.2 |
| Ear canal | 5.4 |
| Abdomen | 2.1 |
| Forearm | 1.0 |
| Palm | 1.3 |
| Scrotal area | 11.8 |
| Ball of foot | 1.6 |

For general protection, a long-sleeved shirt and full length trousers are mandatory. All outer clothing should be made of a closely woven material. When working with concentrates or moderately to severely toxic substances, wear rubber gloves, boots, a rubber apron and/or a chemical cartridge respirator. Check the label to determine what personal protective equipment should be worn, and review MU publication G01917, Personal Protective Equipment for Working With Pesticides.

Once applicators have read the label and are properly protected, they should observe additional precautions during the application process. When

homeowners are using chemicals, some special precautions are necessary both inside and outside the home. Always make sure the chemical you plan to use has been cleared for use in an enclosed area; follow any precautions listed on the label. Restrain pets, children and visitors from entering the sprayed area. The applicator should avoid inhaling chemical vapors, and adequate ventilation should be provided. Use common sense to avoid spraying near dishes, eating utensils and food.

When applying pesticides outdoors, the applicator should consider weather conditions. Loss of spray from a treated area decreases during low winds and high humidity. In Missouri these conditions are most prevalent before 10 a.m. and after 6 p.m.

Avoid spraying near beehives, lakes, streams, pastures, houses, schools, playgrounds, hospitals or sensitive crops such as tomatoes whenever possible. If you must spray these areas, do not spray during low humidity or windy conditions; always spray downwind from the sensitive area.

Before spraying, check the label for re-entry and preharvest intervals. The re-entry interval is the elapsed time after a pesticide application before you can safely re-enter a sprayed area. The preharvest interval is the elapsed time between a pesticide application and harvest of a crop for consumption or canning.

To clean the sprayer, mix about 1/8 cup of detergent per gallon of water. Rinse the tank, hose and spray nozzle with the detergent solution. After rinsing with the detergent solution, flush the sprayer with an ammonia solution (1/2 cup household ammonia per quart of water), then flush thoroughly with clean water. Store the tank upside down to allow it to drain and dry out. Store the pump assembly separately to allow the tank to drain. To reduce rusting, periodically spray the inside of the tank with a light oil spray.

After equipment is cleaned and stored, it is important to sanitize clothing worn during the application process. Before the applicator removes his gloves, he or she should wash them thoroughly with detergent and water. These items should be rinsed, dried and stored in an area free from chemicals. It is important that contaminated protective clothing is not washed with usual family laundry. Wear clean clothing whenever you handle pesticides. If the pesticide is spilled directly on the clothing, flush large amounts of water over them before removing the clothes. This action

will decrease skin contamination and dilute the chemical. Then take a bath and change into fresh clothes immediately. Beware of heavily contaminated clothing. Such clothes should be discarded because they probably will not come entirely clean. The applicator should always bathe thoroughly after applying or handling any pesticides.

LABELS

Labels on most household chemicals will contain important information on use and storage. Some chemical labels (pesticides, cleaning products, etc.) will also contain precautionary information on chemical hazards (toxicity, flammability, etc.) and emergency first aid information. But labels are effective only if applicators read them and follow the warnings.

Key words on labels may be used - "danger" for substances that are extremely flammable, corrosive or highly toxic, and "warning" or "caution" on substances that require care in storage or handling. Each label should carry information on the principal hazard or hazards that may be associated with the chemical - "causes burns", "flammable," "rapidly absorbed through the skin," "avoid contact with the skin and eyes," or "keep away from heat and open flame." The user should be familiar with the potential hazards of each material used around the home.

CONTAINERS

A common cause of household chemical poisonings is the frequent use of improper containers such as beer or soft drink bottles to store cleaning fluids, paint thinners, pesticides and other mixtures. To a child, a soft drink bottle means something good to drink regardless of what may be in it.

Keep all substances in their original containers. If it is necessary to transfer contents from the original container, attach the original label to the new container. Be sure to indicate on the new container the exact substance, trade name, concentration and any special directions regarding its use.

Never reuse any container that once held poison. Rinse it thoroughly and throw it away. Dispose of it properly where children cannot find and play with it.

FIRST AID MEASURES FOR POISONING

Should a poisoning occur, quick and calm action is extremely important. Poison control centers that are located in various cities of the state handle emergency poisoning telephone calls. Check your telephone directory for the nearest Poison Control Center.

To assist in case of a poisoning, post the following list of phone numbers inside your medicine cabinet door and near your telephone.

Emergency telephone numbers: _____
 Physician's Office: _____
 Home: _____
 Poison Control Center: _____
 Hospital: _____
 Pharmacist: _____
 Rescue Squad: _____
 Fire Department: _____
 Police Department: _____

Follow these steps in case of poisoning:

1. First, dilute the poison whenever possible. Give the victim a glass of water.
2. Call the Poison Control Center, doctor or hospital promptly! Since the doctor must know what chemicals are in the poison, have this information available (if possible) before calling.
3. If so directed on the label, make the patient vomit. Do not make the patient vomit if:
 - a. He or she is unconscious or is having seizures.
 - b. Swallowed poison was a strong corrosive.
 - c. Swallowed poison contained kerosene, gasoline or other petroleum distillates (unless it contains dangerous insecticide as well, which must be removed).
4. To induce vomiting:
 - a. Give syrup of ipecac: Children, 20 ml (4 teaspoons); adults, 30 ml (2 tablespoons); taken with at least two to three glasses of water. Do not use carbonated beverages with syrup of ipecac. If vomiting does not occur after using syrup of ipecac (approximately 20 minutes, depending on distance to the emergency room), the victim's stomach must be pumped because the syrup of ipecac has been absorbed and will interfere with heart action.
 - b. Do not waste time waiting for vomiting; transport the patient to a medical facility

immediately. Bring the poison package or container with the label intact. Bring a container for the patient to vomit into during transportation. Save all vomitus for evaluation if needed. Call for help promptly - be sure to keep one ounce of syrup of ipecac in your home.

These recommendations were provided by the American Association of Poison Control Centers.

CHECKLIST FOR POISON PROOFING YOUR HOME

How poison proof is your home? Use the following checklist to evaluate:

- Kitchen
 - No household products under the sink.
 - No medicines on counters or in open areas such as on top of the refrigerator or window sills.
 - All cleaners, household products and medications out of reach.
- Bathroom
 - Medicine chest cleaned out regularly.
 - Old medications thrown out.
 - All medicines in original, safety top containers.
 - All medicines, sprays, powders, cosmetics, fingernail preparations, hair care products, etc. out of reach.
- Bedroom
 - No medicines in or on dresser or bedside table.
 - All perfumes, cosmetics, powders and sachets out of reach.
- Laundry area
 - All bleaches, soaps, detergents, fabric softeners, bluing agents and sprays out of reach.
 - All of the above in original containers.
 - All cleaners out of reach.
- Garage/basement
 - Pesticides in locked area.
 - Gasoline and car products in locked area.
 - Turpentine, paints, and paint products in locked area.
 - All of the above in original containers.
- General household
 - Alcoholic beverages out of reach.
 - Ashtrays empty or out of reach.
 - Plants out of reach.
 - Paint in good repair.
 - Household and personal products out of reach.

FOR MORE INFORMATION

Other MU publications related to chemical safety and its application available at your University Extension Center are: G01915, First Aid for Pesticide Poisoning, G01917, Personal Protective Equipment for Working with Pesticides, G01916, Pesticide Application Safety, and G01908, Fires in Agricultural Chemicals.