

Prepared by Janis Stone, professor and extension textiles and clothing specialist; edited by Julie L. Todd, extension program specialist; reviewed by Joyce Hornstein, extension program specialist, Department of Entomology; and layout by Erin Holmes, extension communications intern, Iowa State University. Original artwork by Rex Heer, senior graphic designer.

No endorsement of products or firms is intended, nor is criticism implied of those not mentioned. Suggestions in this publication are intended to alert pesticide users to safety concerns, however, following these procedures cannot guarantee total protection from pesticides.

This project has been funded by the Iowa Department of Agriculture and Land Stewardship through a grant from the United States Environmental Protection Agency.

... and justice for all

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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Stanley R. Johnson, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.

File: Textiles and Clothing 1, 7; Health and Safety 2-2, 2-5

What to do when clothes are soiled with pesticide



IOWA STATE UNIVERSITY
University Extension

PM 1663b Revised June 2000

What to do when clothes are soiled with pesticide

When working outdoors, whether gardening, taking care of flowers, or planting a crop of corn or soybeans, it is difficult to keep your clothes clean. If you get dust, mud, or grease on your clothes, the dirt is easy to see. But, if you are using pesticides, your clothes may look wet or dusty, but otherwise the pesticide contamination may be invisible.

Therefore, it is important to realize that if you are using pesticide products it is fairly certain that your clothing will be contaminated with them. Research has demonstrated that contamination occurs regardless of pesticide formulation—whether liquid, powder, or granular.

Pesticides differ in their toxicity, with some much more dangerous than others, but because long-term effects of even the least toxic pesticide are uncertain, it is best to follow cautionary practices in using them and in cleaning up afterward. The skin can absorb pesticides, so it is very important that you start each working day with clean clothes. By observing this practice, you reduce your risk of pesticide exposure that could lead to harmful health effects.

This pamphlet explains the precautionary procedures that should be used in managing and laundering pesticide-soiled clothing so that you and your family are not unnecessarily exposed to pesticides, thereby reducing your potential health risks.

Correct laundering reduces any residue of pesticide soils that may get on clothes to trace amounts (measured in parts per million or billion). It is not known whether these levels within fabrics represent a health hazard to humans, but research has shown that the pesticides in cloth remain biologically active and can kill fruit flies and cockroaches after the fabric is laundered.

Reducing pesticide exposure by laundering clothes

To minimize your personal exposure and maximize pesticide removal from work clothing, use these laundry steps.

- Wear chemical-resistant gloves to handle pesticide-soiled clothes because pesticide is easily transferred from soiled items to clean ones, and also to your hands.
- Discard clothing that you know is soiled with full-strength liquid concentrate pesticides. It may seem like an unnecessary cost, but keeping these clothes involves an unnecessary risk.
- Store contaminated clothing separately from clothing of other family members. Hang it in a separate closet or storage area, or put it in a plastic bag.
- Never wash pesticide-soiled clothing with regular family wash. Always use a separate load. Pesticides can float off of contaminated clothing in the wash water and contact uncontaminated clothing. In this way, children's clothes could be soiled, putting children at an unknown risk of pesticide exposure.

Follow these laundry steps

- Wash pesticide-soiled clothing as soon as possible after wearing to achieve maximum removal of pesticide residues.
- Prerinse or presoak the pesticide-soiled clothes before washing and do not reuse the water. If your washing machine has a prerinse cycle, use it.
- Use a hot-water wash. To save energy, use a cold-water rinse.
- Use either a heavy-duty liquid detergent or the amount of powdered detergent that is recommended by the manufacturer for heavily soiled loads.
- Wash only a few items at one time, use the highest water setting, and do not overcrowd the washer.
- Set your washer at the setting recommended for heavily soiled clothes, usually a 10–12 minute wash with rinse cycles following. Never use the short cycles recommended for knits and delicate fabrics.
- After washing pesticide-soiled clothes, hang them outdoors on a line in the sun to dry if possible because sunlight can degrade some pesticides or use the high heat setting on your dryer. Pesticides tend to be volatile so that hot air helps reduce contamination.
- After washing a load of pesticide-soiled clothes and before using your washing machine for other family laundry, run the machine through a complete cycle full of water and detergent without any clothes to help remove trace amounts of pesticide that may be in your washer.

Other tips to minimize exposure

- Avoid wearing the same dirty clothes day after day. Pesticides are much easier to remove if clothes are laundered right away after soiling. Starting each day with fresh clean clothes is a good management practice to ensure minimum exposure and maximum cleanup.
- If visible staining or odor is present after laundering, discard the clothes. Although research has shown that washing clothes two or three times before drying helps reduce the amount of residue left in the clothes, it is difficult to judge accurately when a safe wearing level is reached.
- Some pesticides are brightly colored (e.g., Prowl) and may stain clothes. Bleaching may remove the dye, but leave the pesticide. Laundering studies have shown that bleach has little effect on pesticide removal.

Laundering additives

- Starch can be used to trap pesticide soil in the clothes until the starch is washed away during the next laundering. Starch must be added after the final rinse each time that clothing is laundered. Starch tends to make fabrics stiff and uncomfortable, but for pesticide spray applications that involve lower leg exposure, it makes sense to dip pantlegs in starch before they are dried. This extra step makes laundering more time-consuming, but it increases the level of protection a fabric offers.

- Fabric softeners seem to neither help nor hinder removal of pesticides from clothing.
- Use of ammonia in laundering has not proved effective in reducing pesticide residues.

Laundering recommendations are subject to change as new products—fabrics, pesticides, and laundering aids—are introduced.

Countless combinations of clothing fabrics, pesticide active ingredients, pesticide inert ingredients, formulations, and laundering procedures have not been studied to determine the most effective home laundering methods and the effect on skin exposure to pesticides. Laundering studies in the 1990s have shown that the exact amount of residue after laundering varies with the pesticide, formulation, detergent, laundering temperatures, and washer settings.

However, studies indicate that using the practices outlined in this pamphlet can reduce pesticide contamination for many pesticides so that it is measurable only in trace amounts. Following these procedures can help minimize your family's exposure to pesticides.

More information can be found in other publications in the *Family Pesticide Safety* series. A single copy of each is available free at any Iowa State University Extension county office. Ask for these titles:

- *Understand label precautions* PM 1663a;
- *Wear the right gloves*, PM 1663c;
- *Wear coveralls and aprons*, PM 1663d; and
- *Use eye and lung protection*, PM 1663e.