



Learn about pesticides and clothes

Few Iowans suffer acute poisoning from pesticide use today. This good safety record is possible because people are learning more about ways to minimize exposure to harmful chemicals.

Pesticides can enter the body through the skin. Whether liquid spray or granular, pesticides can soil your clothes, putting them in close contact with your skin where they may be absorbed. Granules may not stick, but fabrics may hold their pesticide residues.

Select the right clothing

Your regular work clothing is your first defense against skin exposure to pesticides. You should wear underclothing (shorts and shirt), long-sleeved shirt, long pants, and socks for all pesticide work. The more layers of clothing you wear, the more protection you have, but all layers will probably be contaminated when your work is finished.

With all pesticides, the precautionary statement on the label explains the additional clothing or personal protective equipment (PPE) that is required under the Worker Protection Standard (WPS). With pesticides having “warning” or “danger” labels, the PPE required is usually greater than for those with “caution” labels.

Since pesticide labels are small, the PPE listings may be very general. For example, “wear coveralls” does not explain the many types available.

If your tasks that involve pesticides do not require special PPE, be thoughtful in selecting your regular work clothes.

Cotton jeans and work shirts offer more protection than blends with polyester or other synthetics. Thicker fabrics generally offer more protection. Crew-necks and sleeves with cuffs help prevent dust from getting to your skin. Cotton coveralls can be worn for an extra layer of protection over other work clothing.

Manage your clothing well

Wear clean clothes daily. Pesticide is more difficult to remove during laundering from clothes that are soiled or dirty with grease, etc. than from clothes not already dirty.

Discard clothes that you accidentally get full-strength or concentrated liquid pesticides on. Leather shoes cannot be refurbished if liquid concentrate soaks into them, so wear chemical resistant boots for mixing and loading.

Launder clothes worn for pesticide work daily, if possible. With careful laundering, the pesticide that remains in clothes after laundering is very small—measured in parts per million or billion. Although it is unknown how these trace amounts in clothes affect human health, they do remain biologically active.

Use these laundering steps

The laundering steps given here will remove most of the pesticide from your clothes, but may leave traces of the pesticides used. Failure to follow these steps could lead to build up of residue that is harder to wash out and your clothes are then riskier to wear.

- Wear chemically-resistant gloves to handle pesticide-soiled clothes.

Pesticide clothing safety

How much do you know ?

Test your skill with this quick quiz.

1. When should you wash pesticide-soiled clothing?
 - a) at the end of the pesticide use season
 - b) when it shows visible soiling or dirt
 - c) on a daily basis, as soon as possible after you quit work
 - d) all of the above, especially c.
2. It is okay to wash pesticide-soiled clothes with your family’s regular wash. True or false?
3. Using bleach will guarantee removal of all pesticides from farm clothing. True or false?
4. Trace amounts of pesticides in clothes are harmful to your health.
 - a) true
 - b) false
 - c) answer is uncertain
5. Pesticides from soiled clothing can be absorbed through the skin. True or false?

See answers on back.

- Discard clothes soiled with a full-strength liquid concentrate.
- Keep work clothes separate from other family laundry—before and during washing—to avoid transfer of residues.
- For maximum pesticide removal, wash pesticide-soiled clothing daily and as soon as possible after wearing.
- Pre-rinse or pre-soak laundry in a separate tub, on the line, or in the pre-rinse cycle of your washer; do not re-use the water.
- Use a hot water wash. To save energy, you can rinse in cold water.
- Use either a heavy-duty liquid detergent or the amount of powdered detergent recommended by the manufacturer for heavily soiled loads.
- Do not overcrowd the washer. Wash only a few items at a time. Use the highest water level setting.
- Use the longest wash time cycle on your machine, at least 10 to 20 minutes (never use a cycle designed for knits).
- Hang clothes on the line to dry in the sun, if possible. Sun may help degrade some pesticides.
- Before doing other family laundry, run the washer through a complete cycle using hot water and detergent (no clothes) to rinse pesticide residues out of your machine.

About laundering additives

- **Ammonia:** Ammonia has not been shown to help remove residues. Never use bleach and ammonia in the same wash load; toxic fumes result.
- **Fabric softeners:** Studies show that fabric softeners neither help nor hinder residue removal in cotton fabrics.

- **Pretreatment sprays:** Solvent-based sprays assist removal of oil-based pesticide formulations in cottons.
- **Starch:** Starch helps trap pesticide soil in cotton or cotton/blend clothes, then it may be washed away with the starch in the next laundering. Starch must be added after the final rinse each time that clothing is laundered. It tends to make fabrics stiff and less comfortable, but for pesticide spray applications that cause lower leg exposure, dipping lower pantlegs in starch before they are dried is a sensible idea. The extra step takes more time in laundering, but it will increase the protection offered by the pants to lower legs.

Summary

Countless combinations of clothing fabrics, pesticide active and inert ingredients, pesticide formulations, laundering procedures, detergents, and additives have not been studied to determine the most effective laundering methods. Laundering studies in the 1990s showed that the amount of residue after laundering varied with the pesticide, its formulation, the detergent and additives used, laundering temperatures, and washer settings used. Health effects of residues remaining in clothing after laundering remain largely unknown, therefore the safest approach is to follow laundering methods that reduce pesticide residues as much as possible.

The laundering methods outlined in this publication are generally accepted as the ones to be followed to minimize your family's exposure to pesticides.

Prepared by Janis Stone, textiles and clothing.

For more information

For more information get these additional publications from Iowa county extension offices:

Family Pesticide Safety [ISU Extension, 2000]

- *Understand label precautions*, Pm1663a,
- *What to do when clothes are soiled with pesticides*, Pm1663b,
- *Wear the right gloves*, Pm1663c,
- *Wear coveralls and aprons*, Pm1663d, and
- *Use eye and lung protection*, Pm1663e.

Guard Your Hands with Gloves, Pm-1878, ISU Extension

Private Pesticide Applicator Study Guide, PAT-1, ISU Extension

PPE for Agriculture: Sources of protective apparel and gear, PAT-13, ISU Extension

Or, consult these web sites:

http://www.iastate.edu/~tc-ext/protect_clothing.html

<http://txnc170.human.cornell.edu/>

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Pesticide clothing safety

What can you do?

You can reduce your exposure to pesticides by wearing protective gear and laundering work clothing properly. Always follow these guidelines when you work around pesticides:

- Wear fresh clothes daily.
- Follow precautionary labeling to choose protective gear.
- Keep pesticide-soiled clothes separate from your family's wash.
- Pre-rinse and/or repeat the wash for maximum pesticide removal.
- Discard all clothes that have been saturated with full-strength liquid pesticide concentrate.

Answers to quiz: 1-d; 2-False; 3-False; 4-c; 5-True



Safe Farm is an Iowa State University Extension project helping to make Iowa farms a safer place to work and live.

Check the World Wide Web at: <http://www.ae.iastate.edu/safety.htm> for more safety information.

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