



Laundering Pesticide-Soiled Clothing¹

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America's abundant food supply is dependent upon the use of pesticides in crop and livestock management. Some of these chemicals can harm humans, so proper laundering of pesticide-soiled clothing is important. Sound laundry procedures protect the pesticide applicator, the person doing the laundry and the entire family from pesticide residues.

Pesticides can enter the body in several ways -- through the skin, mouth, lungs, and eyes. Skin contamination is the number one cause of pesticide-related illness. To keep pesticides off your skin you will need special protective gear. Try to limit clothing worn while handling pesticides to that use only.

Any time you work with pesticides, you will need at least a long-sleeved shirt, long pants, gloves, a hat and socks and shoes. In some cases you will need more protective clothing and equipment. Always read pesticide labels for information on what to wear.

Pesticides are classified into three levels of toxicity. The more toxic a pesticide, the more care should be taken in protecting against contamination and in laundering clothes. Look for the signal words in the following table to determine toxicity level. Signal words are clearly printed on the pesticide label.

Clothing can keep pesticides away from the skin, however, that same clothing can become a source of contamination if pesticides aren't laundered out after each wearing. The following suggestions for care of pesticide-soiled clothing are based on findings from many research studies in the United States.

Table 1. Signal Words and Toxicities

Signal word	Toxicity*	Examples
Danger Poison	Highly toxic/ concentrated	Temik Di-Syston Parathion** Furadan Lannate/Nudrin
Warning	Moderately toxic	Diazinon Treflan
Caution	Slightly toxic	2,4-D Sevin Atrazine Malathion
* Toxicity of the pesticide may vary depending upon the formula. Use the signal word as an indication of the toxicity level. Note: The pesticide does not have to be concentrated to be highly toxic;		
** Parathion is highly toxic.		

GENERAL GUIDELINES

When storing and laundering pesticide-soiled clothing these precautions help protect all family members.

- Wear rubber gloves to handle pesticide-soiled clothing. Carefully wash the gloves in hot water after each use and store and use them only for this purpose.
- Have a separate, covered container for pesticide-soiled clothes. Never put them with other clothes to be laundered. A Plastic garbage can works

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well. Wash the container thoroughly after the pesticide application season is over, or discard it appropriately.

- Wash pesticide-soiled clothes after each use (daily). The longer the pesticide is in the clothes, the harder it is to remove.
- Wash Pesticide-soiled clothes separately from family laundry. Pesticides can be transferred from one garment to another in the wash water. Be sure you know when pesticides have been used, and what the pesticide label recommended so that clothing can be properly laundered.
- Remove clothes immediately that have become saturated with highly toxic pesticides and discard them in an appropriate manner so that others won't be contaminated. Do not try to launder them.

LAUNDERING RECOMMENDATIONS

Pre-rinsing clothing before washing will help remove pesticide particles from the fabric. Pre-rinsing can be done by:

1. presoaking in a suitable container before washing;
2. pre-rinsing with agitation in an automatic washing machine;
3. spraying/hosing garment(s) outdoors.

Pre-rinsing is an especially effective way to remove particles from clothing when a wettable powder pesticide has been used. Pre-rinse in a safe area away from food or drinking water.

Commercial prewash products help remove pesticide residue. Follow the directions on the product label.

In general, washing in hot water removes more pesticide from the clothing. Avoid cold water washing! Although cold water washing might save energy, research has shown that cold water is relatively ineffective in removing pesticides from clothing.

Wash only one or two garments in a single load. Wash garments soiled by the same pesticides together.

Use the full water level even though you are washing only one or two garments at a time. This allows the water to thoroughly flush the fabric. If your washer has a sudsaver feature, do not use it for pesticide-soiled clothing.

Use the normal 12 to 14 minute wash cycle.

Most laundry detergents are similarly effective in removing pesticides from fabric if the pesticide isn't oil-based. Research has shown that heavy duty liquid detergents are more effective than other detergents in removing oil-based (emulsifiable concentrate) pesticide formulations. Heavy duty liquid detergents are known for their oil-removing ability.

Some research studies show that using 1-1/2 times the recommended amount of detergent is also helpful in removing pesticide residues.

If slightly toxic pesticides were used, the clothing may be effectively laundered in one machine washing. But if the pesticide was highly toxic or concentrated, wash the clothing at least several times. Remember, wear rubber gloves when handling soiled clothing to prevent pesticide exposure.

Bleach or ammonia don't remove pesticides from clothing. Never mix these two products, because they react together to form poisonous chlorine gas.

Small amounts of pesticides remain in the washing machine after the wash cycle is over, so it's important to rinse the washing machine with an empty load. Use hot water, the same detergent, and the same machine setting and cycle used for laundering the soiled clothing and run the machine through an extra cycle.

Line dry the clothes to keep from contaminating the dryer.

Wash hard hat, goggles, respirator, gloves and neoprene boots in hot soapy water after each use. If possible, remove the charcoal filter to avoid getting it wet. Store the clean articles away from where pesticides are stored.

REFERENCES

Laundering Pesticide Contaminated Clothing, University of Nebraska Cooperative Extension Service

Selection and Care of Clothing Used for Pesticide Application, Clemson University Cooperative Extension Service, TC 417

Limiting Pesticide Exposure Through Textile Cleaning Procedures, North Central Cooperative Series #314

What to Do When Clothes Are Soiled With Pesticide, Cooperative Extension Service, Iowa State University, Pm-1087-2

WHEN LAUNDERING PESTICIDE-SOILED CLOTHING ... REMEMBER

- Read the pesticide label for any specific information on laundering.
- Pre-rinse clothing by:
 - a. presoaking in a suitable container;
 - b. agitation in an automatic washing machine;
 - c. spraying/hosing the garment(s) outdoors.
- Wash with the machine settings at: HOT water temperature (140 F/60 C), FULL water level, NORMAL (12 minutes) wash cycle.
- Re-wash the pesticide-soiled clothing several times, if necessary.
- Wash only a few pesticide-soiled garments at a time, using lots of water and detergent
- Wash separately from family laundry. Discard clothing if any part of the clothing has been saturated with a pesticide.
- Launder clothing daily when applying pesticide daily.
- Rinse machine thoroughly after laundering pesticide-soiled clothing with an empty load.
- Line-dry to avoid contaminating the automatic dryer.
- Be aware of when pesticides are being used so that clothing can be appropriately laundered.
- Remember, pesticides affect persons based on their body weight. A 10 pound baby is 15 times more likely to be harmed than a 150 pound adult.

Chart adapted from *Laundering Pesticide Contaminated Clothing*, University of Nebraska Cooperative Extension Service.