



Using Pesticides?

Be Safe and Clean – Maintain Your Personal Protective Equipment and Clothes

Mercan Derafshi
Graduate Student

Gina Peek
Assistant Professor & Extension Housing and Consumer Specialist

Oklahoma Cooperative Extension Fact Sheets
are also available on our website at:
<http://osufacts.okstate.edu>

What are Pesticides?

Pesticides are powders, granules or liquids used to prevent, destroy, repel or reduce pests. Pesticides are used to prevent insects, mice and other pests from harming our crops. Pests are a part of nature and are sometimes useful. But sometimes, pests need to be controlled to get the most out of crops. One method to control pests and protect our crops is to use pesticides.

How do Pesticides Enter the Body?

Pesticides can enter your body through the following ways:

1. **Absorption:** Pesticides can be absorbed through the skin. Absorption rate is different in each part of the body. The scalp, ear and the genital areas are the most absorbent areas. Skin absorption begins when pesticides are splashed, spilled or drifted and the substance comes in contact with skin. Splashes and spills can happen while mixing, applying pesticides and/or cleaning contaminated equipment.
2. **Mouth:** Liquid pesticides can be ingested orally. Accidental intake can occur while spraying or mixing. Severe cases of poisoning can happen when someone drinks pesticide. For example, some people have wrongly put pesticides in a soft drink bottle for storage. Someone then took a drink from the soft drink bottle containing pesticides.
3. **Inhalation:** Pesticide vapors or fumes can be inhaled. You might be able to smell something or feel itchiness in the eyes, nose and throat. Your eyes might water. Some pesticides start to evaporate in hot temperatures. If you breathe in the vapor, your throat might feel itchy.

(British Columbia Ministry of Agriculture, n.d.)

How can Pesticides get into the Home?

People that both work and live on land for farming or ranching have special considerations. Farmers and ranchers need to be careful that they don't accidentally bring pesticides from work into their homes. People living close to farms where pesticides are applied need to be careful. Pesticides can come into the home several ways:

- Contaminated soil brought into the home

- Contaminated clothes and equipment brought into the home
- Pesticides used in the home to control vermin, including cockroaches

How can Pesticides Harm Health?

Pesticides can harm people. If there is contact with pesticides, you may experience one or more of the following (National Cancer Institute, 2011):

- Itchy skin, eyes, nose or throat
- Headache
- Nausea and/or vomiting
- Diarrhea and/or stomach cramps
- Certain types of cancers (leukemia, cancers of the skin, lip, stomach, brain and prostate)

What are Personal Protective Clothing (PPC) and Personal Protective Equipment (PPE)?

Most people wear work clothes when using pesticides on the farm, yard or garden. Work clothes should be comfortable to wear. More importantly, they must protect against pesticides (DeJonge, Vredevoogd, & Henry, 1983; Weng & Black, 2015).

Personal protective clothing (PPC) and personal protective equipment (PPE) protect from pesticides while spraying. Examples of PPC and PPE are shown in the Figure 1.

Immediately remove PPC and PPE when finished applying pesticides. Don't finish spraying, then move to another without changing PPC and PPE. Dirty PPC and PPE will contaminate anything. For example, moving from the field to the animal pen may expose livestock to pesticides. Also, hugging children and pets while wearing dirty work clothes will expose them to pesticides.

The label instructions will state the type of protective gear needed. Different pesticides require different personal protective equipment and personal protective clothing. For example, spraying orchards and fruit trees require spraying high and over tree branches. This will expose the applicator from head to toe. In this case, the applicator will need to be fully covered. Some crops are shorter and pesticides are applied at the knee level. In both cases, wind is a risk. A sudden change of wind direction will expose pesticide contamination from head to toe.

Personal Protective Equipment	Personal Protective Clothing
Wide brimmed hat	Long sleeved shirt
Goggles	Long pants
Respirator	Apron
Rubber gloves	Coveralls
Rubber boots	
Shoes and socks	

Figure 1. List of personal protective equipment and personal protective clothing.

When using pesticides in the home, read the label and follow the instructions. Consider using integrated pest management (IPM) to reduce pest populations. IPM includes sealing up pest entry points, remove food and water and using low-risk tools such as baits and sticky traps to reduce populations. Only use pesticides designed for indoor use.

Do not wear leather shoes, cotton pants and baseball caps when applying pesticides. Cotton and leather absorb and keep pesticides close to the skin (DeJonge et al., 1983).

Care for Personal Protective Clothing and Personal Protective Equipment

- Wash your contaminated PPC and PPE either in a bucket with detergent and hot water, or wash by themselves in a washing machine. The setting should be hot water

temperature for the wash and rinse cycles. Do not include any other clothes.

- After washing your PPC and PPE, run the washing machine again using only detergent and water to remove any residues.
- Line dry PPC and PPE instead of using the dryer (preferably in a closed room to protect against pesticide drift)
- When hand washing, wear rubber gloves to prevent skin contact with pesticides.

Pesticide Exposure Protection

- Wear PPC and PPE when mixing and applying pesticides and cleaning contaminated equipment
- Wash PPC and PPE separately from regular clothes
- Take shoes or boots off before entering the home
- Do not touch children or pets before cleaning yourself and PPC and PPE

Keep your family safe! Take care of your personal protective equipment and personal protective clothing and minimize exposure to pesticides.

Reviewers

- Amit Dhingra, Washington State University
 Brenda Hill, Oklahoma State University
 Rose Ann Jackson, Oklahoma Home and Community Education, Inc.
 Gloria King, Oklahoma State University

References

British Columbia Ministry of Agriculture. (n.d.). Toxicity & hazard. Retrieved November, 2015, from http://www.agf.gov.bc.ca/pesticides/b_2.htm

DeJonge, J. O., Vredevoogd, J., & Henry, M. S. (1983). Attitudes, practices, and preferences of pesticide users toward protective apparel. *Clothing and Textiles Research Journal*, 2(1), 9-14.

National Cancer Institute. (2011). Agricultural health study. Retrieved November, 2015, from <http://www.cancer.gov/about-cancer/causes-prevention/risk/ahs-fact-sheet>

Weng, C.-Y., & Black, C. (2015). Taiwanese farm workers' pesticide knowledge, attitudes, behaviors and clothing practices. *International journal of environmental health research*, 25(6), 685-696.

Keep Safe when Using Pesticides at Your Farm, Ranch or Garden

At the job site	When you get home: Shower	When you get home: Clean work clothes
<p>OPTION 1: Change clothes</p> <ul style="list-style-type: none"> • Bring a set of clean clothes to wear at the end of the day after applying pesticides • Take off contaminated work clothes and keep them in a separate container or plastic bag 	<p>OPTION 1: Shower</p> <ul style="list-style-type: none"> • Shower as soon as you come home • Shower in warm water 	<p>OPTION 1: Bucket</p> <ul style="list-style-type: none"> • Take off dirty PPC and PPE outside the home or in a separate room, such as the garage • Place items in a bucket and wash in hot water
<p>OPTION 2: Cover vehicle seat</p> <ul style="list-style-type: none"> • Cover you car seat with a thick and tightly woven fabric in case you drive home with contaminated work clothes 	<p>OPTION 2: Wash hands</p> <ul style="list-style-type: none"> • If you can't shower right after you applied pesticides, wash your hands and face with soap and lots of warm water and change into clean clothes 	<p>OPTION 2: Washing machine</p> <ul style="list-style-type: none"> • Place items in washing machine • Wash PPC and PPE in hot water • Do not mix PPC and PPE with your family laundry • After washing your PPC and PPE, run the washing machine using only detergent and water to remove any residues

Wear clean personal protective equipment and personal protective clothing every time you use pesticides!

The Oklahoma Cooperative Extension Service

Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
 - It is administered by the land-grant university as designated by the state legislature through an Extension director.
 - Extension programs are nonpolitical, objective, and research-based information.
 - It provides practical, problem-oriented education
- for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
 - It utilizes research from university, government, and other sources to help people make their own decisions.
 - More than a million volunteers help multiply the impact of the Extension professional staff.
 - It dispenses no funds to the public.
 - It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
 - Local programs are developed and carried out in full recognition of national problems and goals.
 - The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
 - Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, and Title IX of the Education Amendments of 1972 (Higher Education Act), the Americans with Disabilities Act of 1990, and other federal and state laws and regulations, does not discriminate on the basis of race, color, national origin, genetic information, sex, age, sexual orientation, gender identity, religion, disability, or status as a veteran, in any of its policies, practices or procedures. This provision includes, but is not limited to admissions, employment, financial aid, and educational services. The Director of Equal Opportunity, 408 Whitehurst, OSU, Stillwater, OK 74078-1035; Phone 405-744-5371; email: eeo@okstate.edu has been designated to handle inquiries regarding non-discrimination policies; Director of Equal Opportunity. Any person (student, faculty, or staff) who believes that discriminatory practices have been engaged in based on gender may discuss his or her concerns and file informal or formal complaints of possible violations of Title IX with OSU's Title IX Coordinator 405-744-9154.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President for Agricultural Programs and has been prepared and distributed at a cost of 20 cents per copy. 0416 GH.