



# COLORADO ENVIRONMENTAL PESTICIDE EDUCATION PROGRAM

Pesticide Fact Sheet #440  
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## **Insect Repellents— What are They and How are They Registered?**

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This fact sheet describes what insect repellents are and how they registered nationally and in the state of Colorado.

<http://www.colostate.edu/Depts/SoilCrop/extension/CEPEP/>

## **Insect Repellents**

Insect repellents can discourage biting insects from landing on treated skin or clothing. They are available in various forms and concentrations. Aerosol and pump-spray products are intended for skin applications as well as for treating clothing. Liquid, cream, lotion, spray, and stick products enable direct skin application. Products with a low concentration of active ingredient may be appropriate for situations where exposure to insects is minimal. Higher concentration of active ingredient may be useful in highly infested areas or with insect species which are more difficult to repel.

Like any chemical, insect repellents should be used safely. Here are some suggestions:

- Apply repellents only to exposed skin and/or clothing (as directed on the product label). Do not use under clothing.
- Never use repellents over cuts, wounds, or irritated skin.
- Do not apply to eyes and mouth, and apply sparingly around ears. When using sprays do not spray directly onto face; spray on hands first and then apply to face.
- Do not allow children to handle the products, and do not apply to children's hands. When using on children, apply to your own hands and then put it on the child.
- Do not spray in enclosed areas. Avoid breathing a repellent spray, and do not use it near food.
- Use just enough repellent to cover exposed skin and/or clothing. Heavy application and saturation is generally unnecessary for effectiveness; if biting insects do not respond to a thin film of repellent, then apply a bit more.
- Do not apply under clothing
- After returning indoors, wash treated skin with soap and water or bathe. This is particularly important when repellents are used repeatedly in a day or on consecutive days. Also, wash treated clothing before wearing it again. If you suspect that you or your child are reacting to an insect repellent, discontinue use, wash treated skin, and then call your local poison control center. If/when you go to a doctor, take the repellent with you.

## **Registration Process**

Insect repellents that you buy are the result of ten or more years of research and testing. The process starts with the

discovery of a new chemical and proceeds to initial evaluation of activity against insects and preliminary toxicology screening. Eventually, the compound undergoes extensive field and toxicology testing. Finally, the data from the years of testing regarding the pesticide, its formulation and its proposed use are evaluated by the United States [Environmental Protection Agency](#) (EPA) to determine if it can be registered. Standards for registration of pesticides are provided by the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and the Food Quality Protection Act (FQPA) of 1996.

The Federal Government carefully regulates pesticides to ensure that they do not pose unreasonable risks to human health or the environment. EPA requires extensive test data from pesticide producers that demonstrate pesticide products can be used without posing harm to human health or the environment.

The process EPA uses for evaluating the health impacts of a pesticide is called risk assessment. Risk assessment is broken up into a four-step process:

- **Step One: Hazard Identification** - identify potential health effects that may occur from different types of pesticide exposure. EPA considers the full spectrum of a pesticide's potential health effects
- **Step Two: Dose-Response Assessment** - the amount of substance a person is exposed to is as important as a chemical's toxicity. This step involves considering the dose levels at which adverse effects were observed in test animals, and using these dose levels to calculate an equal dose in humans
- **Step Three: Exposure Assessment** - People can be exposed to pesticides in three ways: Inhaling pesticides (inhalation exposure), absorbing through the skin (dermal exposure), and getting pesticides in their mouth or digestive tract (oral exposure). Pesticides could enter the body by any one or all of these routes. EPA looks at the following exposure sources: food, home and personal use pesticides, pesticides in drinking water, and worker exposure to pesticides
- **Step Four: Risk Characterization** - process of combining the hazard, dose-response and exposure assessments to describe the overall risk from a pesticide. EPA's role is to evaluate both toxicity and exposure to determine the risk associated with use of the pesticide.  $RISK = TOXICITY \times EXPOSURE$ , this means that the risk to human health from pesticide exposure depends on both the toxicity of the pesticide and the likelihood of people coming into contact with it



## Colorado Specifics

In addition to being registered with EPA every pesticide product used or sold in the state of Colorado must also be registered with the [Colorado Department of Agriculture](#).

The Colorado Department of Agriculture offers a pesticide registration query to verify the registration status of a pesticide product in the state of Colorado. The query can be found at <http://www.ag.state.co.us/DPI/Pesticides/PPRS/PPRSQuery.htm>.

For more information on the development of new pesticides see Pesticide Factsheet [#102](#) "Discovery and Development of New Pesticides".

## References and Resources

*Assessing Health Risks from Pesticides*. 2004. U.S. Environmental Protection Agency. <http://www.epa.gov/pesticides/factsheets/riskassess.htm>

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