



COLORADO ENVIRONMENTAL PESTICIDE EDUCATION PROGRAM

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Mosquito Adulticides—What are They and How are They Registered?

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

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Adult Mosquito Control Products

Adulticides are a category of insecticides applied to kill adult mosquitoes. Adulticiding is the application of insecticides to control adult mosquitoes. This is usually the least effective mosquito control technique; however, it is an important part of an effective mosquito management program if it is based on mosquito surveillance information. Surveillance is one part of an Integrated Pest Management program (IPM).

The idea behind adulticiding is to release the insecticide in as many very fine droplets as possible. Adult mosquitoes are killed when they come into contact with one of these droplets as they are flying. Very fine droplets are used because the more droplets there are, and the longer the droplets stay in the air, the better the chances that a droplet will come in contact with a mosquito. This technique is referred to as Ultra-Low Volume or ULV.



Mosquito adulticides usually are applied as a last resort in areas where public health officials have decided that the health risks from West Nile Virus or other mosquito borne illness is great enough to warrant the cost.

Registration Process

Adulticides that you buy, or that are being applied 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 mosquitoes 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 [US Environmental Protection Agency](http://www.epa.gov) (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://npirspublic.ceris.purdue.edu/state/state_menu.aspx?state=CO.

A list of adulticides registered in the state of Colorado can be found at: <http://npic.orst.edu/pest/mosquito/mosqcides.html>

For more information on the development of new pesticides see Pesticide Factsheet [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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