

**Answers to Health and Environmental Questions
About the Aerial Application of Permethrin
For Mosquito Control**

August 20, 2004

Q: What are the potential human health effects of permethrin exposure?

A: At the levels used in mosquito control, no health effects in humans are expected. The amount of permethrin used in mosquito control is many times lower than the amount of permethrin that causes adverse effects in animals or that would cause health effects in humans.

Q: Why does permethrin kill mosquitoes and yet doesn't present a significant risk to people when applied aerially?

A: Very small amounts of permethrin are used during aerial spraying (0.007 pounds per acre). There is virtually no risk of adverse health effects in humans. Like any chemical, the health effects that could potentially occur in an individual depend on the amount that enters the body. While the amount of airborne permethrin after mosquito spraying is insufficient to cause any significant health effects in humans, it is sufficiently potent to kill mosquitoes.

Q: What does the Florida Department of Health recommend for protecting health?

A: The most certain way to prevent adverse effects from pesticides is to eliminate the possibility of exposure. It is not usually necessary or practical to leave the area that will be sprayed. Rather, you can reduce or prevent exposure by remaining indoors. If you must go outside during the application, you can reduce your exposure by wearing clothing that reduces skin contact with the permethrin. There is very little likelihood that being outside during the spray application will cause any adverse health effects.

Q: What is permethrin?

A: Permethrin is a member of a pesticide class called pyrethroids, which are similar to the natural insecticide pyrethrum present in chrysanthemum plants. It is effective against a broad range of pests, such as external parasites and flying insects. Permethrin and other pyrethroids are commonly used to control adult mosquitoes. Products containing pyrethroids usually contain piperonyl butoxide (PBO) which makes the pyrethroid more effective in killing insects. Permethrin and other pyrethroids work by over-stimulating the nervous system of insects, causing the insect to die.

Q: Where, when and how much permethrin may be applied?

In mosquito control programs conducted by state or local authorities, permethrin may be applied on the ground via truck-mounted sprayers or backpack sprayers or by air using aircraft.

Permethrin is applied as an ultra-low volume (ULV) spray. ULV sprayers dispense very fine aerosol droplets that stay aloft and kill mosquitoes on contact. ULV applications involve small quantities of pesticide active ingredient in relation to the size of the area treated. For aerial applications, permethrin is applied at 0.007 pounds of permethrin per acre.

Q: What happens to permethrin in the environment?

A: Permethrin is moderately persistent in soil and sediment, but is readily broken down by soil microorganisms and also by sunlight. In surface water, permethrin is rapidly (within hours) absorbed onto organic matter in the water and sediment, resulting in very low concentrations of permethrin in water.

Q: Are some people unusually susceptible to aerially applied permethrin?

A: The effect of a chemical for each individual depends on the amount of chemical that enters the body. This is called the dose. The dose that produces an effect in humans is usually about the same for most people. Although rare, some individuals may have an adverse effect at a dose lower than would affect most other people. There is no way to predict when someone will respond at a lower dose. Again, this is a very rare event.

Q: What can people do if they think permethrin might be making them sick?

A: If you are ill you should contact a physician. You can also contact the county health department or the Bureau of Community Environmental Health, Pesticide Surveillance at 1-800-606-5810 or the Florida Poison Information Center at 1-800-222-1222.

Q: What if my child puts fingers or unwashed toys in his or her mouth while playing outdoors?

A: The amount of permethrin that contacts solid surfaces is expected to be well below any amount that could cause any adverse health effects.

Q: Can I swim in my pool after permethrin is sprayed?

A: Since permethrin is most effective at killing adult mosquitoes when airborne, applications are made to minimize the amount of permethrin that settles. Therefore, little permethrin is likely to settle in your pool. In addition, any permethrin that may reach the water would be significantly diluted and broken down quickly. You can cover your pool before the spraying occurs; however, no special precautions or waiting periods are required for swimming pools.

Q: Will permethrin harm my pets?

A: The amount of permethrin that enters the body of dogs, cats, or other animals will be very small. It is unlikely any adverse effects will occur if they are outside during the application of permethrin. To further reduce any risk of adverse effects, the same precautions should be taken as for humans. Permethrin is of low to moderate mammalian toxicity, and therefore it is not likely to harm pets such as dogs or cats when used according to the label instructions.

Q: Will permethrin affect my fishpond?

A: Permethrin has been found to be highly toxic to fish in laboratory experiments. However, the concentration expected to enter an outdoor fishpond or any other water body after an aerial application is much lower than what is considered toxic to fish. To minimize exposure, fishponds can be covered with a tarp before spraying. Do not leave tarps on long enough to cause overheating or oxygen depletion. If practical, you could also consider bringing your fish inside.

Q: What effect does permethrin have on wildlife?

A: Permethrin used in mosquito control programs does not pose unreasonable risks to wildlife or the environment. Permethrin degrades rapidly in the environment and it displays low toxicity to birds and mammals. Acute and chronic toxicity to fish is not expected based on the low application rate used for mosquito control. EPA has established specific precautions on the label to reduce the risk to aquatic invertebrates from repeated use of permethrin. Permethrin is considered toxic to bees. However, spraying operations are likely to be conducted when bees are not foraging thus minimizing the potential for exposure.

Q: How do I get more information about permethrin?

Information on the use of permethrin in mosquito control can be obtained from Florida Department of Agriculture and Consumer Services Bureau of Entomology and Pest Control (http://www.flaes.org/aes-ent/public_html/index.html) or at (850) 921-4177.

Additional technical information about permethrin can be obtained by contacting the Florida Department of Agriculture and Consumer Services Bureau of Pesticides (<http://www.flaes.org/Pesticide/index.htm>) or at (850) 487-0532.