

Mosquitoes Question and Answer Sheet

**Distributed by:
Hunterdon County Mosquito and Vector Control Program**

Background

This Q&A sheet has been produced to help residents and local officials understand information pertaining to mosquito control in Hunterdon County. It was designed by personnel from the Hunterdon County Mosquito and Vector Control Program (HCMVCP) and was approved by the New Jersey Department of Environmental Protection, Pesticide Control Program as per the Pesticide Control Regulations (N.J.A.C. Title 7:30). Municipalities are encouraged to share this information with all residents in their community.

What is the life cycle of mosquitoes?

Details of the mosquito life cycle are described in the following pages. In summary, mosquitoes spend the immature stages of their lives in water. Some adult female mosquitoes require a blood meal for the production of eggs. Females lay their eggs in a variety of aquatic environments, including both transient and permanent bodies of water. Mosquitoes are extremely diverse insects; more than 32 species inhabit areas of Hunterdon County alone.

What diseases do mosquitoes cause?

In the eastern United States, mosquitoes transmit a variety of diseases including West Nile virus (WNV), eastern equine encephalitis (EEE), St. Louis encephalitis, LaCrosse virus, malaria and dog heartworm. WNV, a mosquito-borne virus causing encephalitis, was first recognized in New York City in 1999. WNV affects a variety of wildlife, horses and humans. The primary vector of WNV is a mosquito commonly found around homes. A WNV vaccine for horses was conditionally approved by the United States Department of Agriculture in 2001 and has been in use since.

What are the functions of the Hunterdon County Mosquito and Vector Control Program?

The HCMVCP was established in 2000 and conducts surveillance/control of mosquitoes, black flies and ticks. The focus of the program has been mosquito surveillance and control based on the statutory mandate (N.J.S.A. Title 26:9) "to perform all acts which in its opinion may be necessary for the elimination of mosquito breeding areas, or which will tend to exterminate mosquitoes within the county." The HCMVCP has incorporated tick and black fly surveillance in the past few years. The program's activities are guided through comprehensive surveillance, which includes trapping, collecting, etc. to evaluate populations of various species. Mosquitoes are controlled by source reduction, chemical, and biological control. Emphasis is placed on the control of mosquitoes when they are in the aquatic stages of their development.

What control efforts are utilized by the HCMVCP?

The HCMVCP uses an integrated pest management (IPM) approach to controlling mosquitoes. IPM incorporates various methods of control, including the use of biological and synthetic products when needed. With an IPM strategy, control efforts focus primarily on the immature, water-borne stages of the

mosquito. Larval control can be very effective because larvae are more concentrated and accessible than the adult mosquitoes, which disperse after emerging. Adult control can be effective and is used when larviciding is inappropriate. Larval control encompasses a variety of techniques and is not limited to synthetic chemicals. Most larval control in Hunterdon is conducted through the use of biologically derived agents. This includes bacterial products such as *Bacillus thuringiensis israelensis* (abbreviated "Bti") and *Bacillus sphaericus*, and through the use of live organisms such as the mosquito fish, *Gambusia affinis*. All products used by the HCMVCP are registered and licensed by the United States Environmental Protection Agency. They are registered for use by the New Jersey Department of Environmental Protection and are approved for use by the New Jersey Agricultural Experiment Station (NJAES). Biological agents, such as fungi and nematodes, that are not recommended by NJAES for mosquito control are not part of a proper IPM program and are not used by the HCMVCP. Additional information can be obtained by visiting the Hunterdon County website: <http://www.co.hunterdon.nj.us>.

What are the winter activities of the HCMVCP?

Field activities, such as tire cleanup, mapping of sites, laboratory analysis of mosquitoes, etc. are conducted year round. Control operations generally start in February with the hatching of woodland pool mosquito species and continue through November. Inspection routes and trapping sites are revised and analyzed during the winter months. Educational presentations are made for citizen groups, etc. on mosquitoes, black flies, bed bugs ticks and other insects as well during this time. Simply contact HCMVCP for further details on these programs.

What can homeowners do to help control mosquitoes?

- Homeowners can provide effective control by eliminating standing water on their property. Any container holding water is a potential source of mosquito production. Of particular concern are clogged gutters and scattered tires. Residents should keep gutters clean and remove or overturn containers if possible. Items such as birdbaths should be emptied and refilled at least once a week.
- Small depressions in the yard can be filled to prevent the collection of water. If larger wet areas exist on the property, residents should bring them to the attention of HCMVCP personnel.
- Keeping adult mosquitoes out of the home is an additional step residents can take. Window and door screens should be properly fitted and holes patched to prevent mosquitoes from entering the home.
- A variety of repellents are available to provide relief from mosquitoes and other insects. Historically, the most effective repellents are those containing the active ingredient DEET.

What do I do if there are mosquito problems around my home?

If mosquitoes present a problem in your area, contact the HCMVCP office at (908) 788-1351. The staff will investigate your call. Each area is inspected to verify the presence of mosquitoes. Adult mosquitoes are often collected for surveillance purposes and virus testing.

How do residents avoid exposure to pesticides?

Larvicides are most frequently applied in areas where there is no exposure to people. However, people should take the same precautions that are used when handling chemicals around the home to avoid exposure. Avoid consumption and direct exposure to any larvicide or adulticide. If residents are in a spray zone, windows can be closed to reduce drift into a home. Adulticide products are sprayed on a low rate basis. Exposure to outdoor products is therefore minimal and there is generally no need to move items

indoors. However, exposure can be avoided by covering outdoor items if needed. Higher risk individuals, particularly pregnant women, children and those who are chronically ill should avoid direct contact with pesticides. Exposure can be reduced by keeping a distance from application equipment and avoiding immediate and direct contact with habitat that has been treated. Treatment information is routinely updated during the field season on the Hunterdon County website: <http://www.co.hunterdon.nj.us>.

What are the symptoms of pesticide exposure?

Symptoms of exposure vary with each product and vary with the amount of exposure. Generally speaking, exposure to small doses may cause mild irritation to the skin and eyes. Because symptoms vary so greatly, and because symptoms of exposure can present themselves like many other illnesses, residents should contact a physician if they suspect they have been exposed to a pesticide. Residents should also contact the New Jersey Poison Information and Education System (1-800-222-1222) if they have been exposed to a pesticide. The Material Safety Data Sheets (MSDSs) provide useful first aid information for individuals who have been exposed to a concentrated material (for example, exposure during the mixing process). MSDSs for products used by the HCMVCP are available to residents upon request. Pesticide fact sheets, which are included in this packet, provide more detailed information on inadvertent and mild exposure to pesticides.

Where can I find more specific information on the activities of the mosquito program?

Current activities of the mosquito program can be found at the Hunterdon County website: <http://www.co.hunterdon.nj.us> or by calling the HCMVCP office at 908-788-1351. Information on the website changes on an as needed basis over the course of the season. Items included on the web page include maps of disease activity, announcements, information on products used in mosquito control, and information pertaining to mosquito spraying. Area-wide spraying notifications are also announced in newspaper advertisements (typically in the *Hunterdon Democrat*, *Courier News*, *Easton Express Times* or *Star Ledger*) over the course of the season. These announcements provide details on products used and appropriate contact information. An example of such an announcement is provided on the last page of this packet.

With whom do I correspond to attain more technical information on pesticide usage and exposure?

National Pesticide Information Center (for overall information 9:30 AM – 7:30 PM)
800-858-7378

New Jersey Poison and Information and Education System (for pesticide health information and exposure)
800-222-1222

NJDEP Pesticide Control Program (for NJ pesticide regulations and misuse complaints)
609-984-6057

US Environmental Protection Agency, Region 2 Office (for federal pesticide regulation)
732-321-6759

NJDEP Office of Mosquito Control Coordination (for State-wide mosquito control information)
609-292-3649

Hunterdon County Division of Health (for local mosquito control information)
908-788-1351

Hunterdon County Division of Health

In compliance with Section 9.10 of the New Jersey Pesticide Control Code (N.J.A.C. Title 7, Chapter 30) notice is hereby given that the Hunterdon County Division of Health, Route 12 County Complex Flemington, NJ 08822 will be applying insecticides for the control of larval black flies on an area wide basis in Hunterdon County (primarily in the South Branch of the Raritan River), as needed, during the period of April 20, 2012 through October 16, 2012. The Hunterdon County Division of Health will also be applying insecticides for the control of adult mosquitoes, on an area wide basis in Hunterdon County as needed, during the period of May 18, 2012 through November 20, 2012. The insecticide to be used for larval black flies [with active ingredient (a.i.) *Bacillus thuringiensis israelensis*] will be Vectobac 12AS (EPA reg #73049-38) applied according to product labeling. The products to be used in adult mosquito control could be Scourge 4+12 [a.i. resmethrin and piperonyl butoxide (PBO)] (EPA reg #432-716), Scourge 18+54 (a.i. resmethrin and PBO)(EPA reg #432-667), Atrapa VCP (a.i. malathion) (EPA reg #1812-407), Anvil 2+2 (a.i. sumithrin)(EPA reg #1021-1687-8329), and Zenivex E20 (a.i. etofenprox)(EPA reg #2724-791). All products will be applied with truck-mounted or handheld equipment (nothing by aircraft).

All persons interested in obtaining additional information regarding these activities may call the program coordinator, Mr. Tadhg Rainey (Pesticide License # 24344B) at (908) 788-1351, Rte 12 Complex, Flemington, NJ 08822 or by visiting the Hunterdon County Website: www.co.hunterdon.nj.us. "Upon request the pesticide applicator or applicator business shall provide a resident with notification at least 12 hours prior to the application, except for Quarantine and Disease Vector Control only, when conditions necessitate pesticide applications sooner than that time." In order for health department officials to correctly identify these areas, residents should indicate the name, street address and phone number at the residence, and should make such requests annually (no deadline is required) in writing or by email. For routine health inquiries or pesticide exposure information please contact the National Pesticide Information Center at 1-800-858-7378. For emergencies relating to pesticides contact the New Jersey Poison Information and Education System at 1-800-222-1222. Contact "this number for pesticide regulation information, pesticide complaints, and health referrals" 1-609-984-6507 (NJ Pesticide Control Program).

Hunterdon County Mosquito & Vector Control 2016 Fact Sheet

Anvil®

(Sumithrin-Containing Product Used for Adult Mosquito Control)

What is Anvil® and how is it used?

Sumithrin is the active ingredient in the product Anvil® and is produced for the control of adult mosquitoes. Sumithrin is used as an ultra low volume (ULV) spray following the product label and guidelines produced by the New Jersey Agricultural Experiment Station (NJAES). Sumithrin is a synthetic form of the pyrethrins, the naturally occurring compounds found in chrysanthemum flowers, and is included in a group of products collectively known as the "pyrethroids." Piperonyl butoxide (also known as "PBO") is a synergist that is contained in Anvil formulations. PBO, although not capable of effectively controlling mosquitoes by alone, increases the activity of sumithrin in mosquitoes by decreasing the ability of mosquitoes to detoxify sumithrin. The US Environmental Protection Agency's current evaluation states that pyrethroids do not pose unreasonable health risks to people or unreasonable risks to wildlife and the environment when used properly.

How can exposure to these products be avoided?

Although risk to the general public from use of this of this product is minimal, avoiding exposure is always the safest course of action. Higher risk individuals, particularly pregnant women, children and those who are chronically ill, should avoid direct contact with Anvil. Exposure can be reduced by keeping a distance from application equipment and avoiding immediate and direct contact with habitat that has been treated. Treatment information is routinely updated during the field season on the Hunterdon County website: <http://www.co.hunterdon.nj.us>. In addition, notices containing information about the use of resmethrin are periodically placed in newspapers in the Hunterdon region throughout the season. Residents can avoid incidental contact with resmethrin by remaining indoors and keeping windows closed during sumithrin applications.

What are the symptoms of exposure to Anvil?

Direct exposure could cause mild eye and skin irritation. Eyes should be flushed with plenty of water upon exposure. The chance of experiencing symptoms by exposure to Anvil when properly used is low. Should symptoms exist, immediate medical attention is advised by either contacting a physician or by contacting the New Jersey Poison Information and Education System (NJPIES) at 1-800-222-1222.

How long does Anvil last in the environment?

Sumithrin tends to breakdown relatively quickly in the environment. Breakdown is highly dependent on temperature and sunlight. In direct sunlight, resmethrin will likely breakdown in hours; however, it could persist in the soil for several days if conditions are favorable. In practical terms, sumithrin used at ULV rates will only provide mosquito control within a couple of hours of use. PBO breakdown follows a similar pattern to sumithrin although probably shows slightly greater persistence in the soil.

Where can more information on sumithrin be found?

The following resources can be used to attain more information on sumithrin as it pertains to mosquito control in Hunterdon County:

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| National Pesticide Information Center | 800-858-7378 |
| - For overall pesticide specific information
(9:30 AM – 7:30 PM) | |
| New Jersey Poison Information and Education System | 800-222-1222 |
| - For pesticide health information and possible
exposure (24 hours) | |
| NJ DEP Pesticide Control Program | 609-984-6057 |
| - For NJ pesticide regulation and misuse complaints | |
| US EPA Region 2 Office of Pesticide Programs | 732-321-6759 |
| - For federal pesticide regulation information | |
| Hunterdon County Division of Health | 908-788-1351 |
| - For pesticide information and information on
local mosquito control | |

Products Used in Larval Black Fly Control

Vectobac® 12AS

What is Vectobac® 12AS and how is it used?

Vectobac® 12AS is a liquid formulation that contains the active ingredient *Bacillus thuringiensis israelensis* (Bti). Bti stands for the name of the bacteria of which certain components of these bacteria effectively control black fly larvae. Proteins from the bacteria are pathogenic to filter feeding black flies and these proteins comprise the active ingredient of Vectobac. Vectobac is applied to black fly larval habitat (generally rivers and streams) in either a concentrated or diluted fashion (by the use of water). The US Environmental Protection Agency's current evaluation considers Bti containing products to be practically non-toxic when used according to label instructions. Method of application is either by hand or truck mounted equipment.

How can exposure to Vectobac be avoided?

Although risk to the general public from use of this of this product is minimal, avoiding exposure is always the safest course of action. Because of the physical and chemical properties of Vectobac, generally the only health concern is associated with an allergic reaction to the bacteria. Residents should therefore take precautions to avoid direct eye and skin contact with Bti. Areas of the body that have come in contact with Vectobac can be washed with water. There are no specific categories of individuals who are more susceptible to problems associated with Bti; however, residents who perceive themselves at a higher risk for exposure to other products should take extra care to avoid direct contact with Bti. Such residents might include those who have general allergic reactions to a variety of other products, young children, and chronically ill individuals. Exposure can be reduced by keeping a distance from application equipment and avoiding immediate and direct contact with habitat that has been treated. Treatment information is routinely updated during the field season on the Hunterdon County website: <http://www.co.hunterdon.nj.us>. In addition, notices containing information about the use of Vectobac are periodically placed in newspapers in the Hunterdon region throughout the season.

What are the symptoms of exposure to Vectobac?

Direct exposure could cause mild irritation from eye and skin contact. These conditions could be aggravated by pre-existing skin or eye lesions and hypersensitivity. The chance of experiencing symptoms with diluted material when properly used is low. First aid procedure includes flushing exposed areas with copious amounts of water and seeking medical attention if irritation persists. Should symptoms persist, immediate medical attention is advised by either contacting a physician or by contacting the New Jersey Poison Information and Education System (NJPIES) at 1-800-222-1222.

How long does Bti last in the environment?

Bti tends to breakdown quickly in the environment, primarily due to its susceptibility to heat and sunlight. Breakdown in water generally occurs within hours of use.

Where can more information on these products be found?

Numerous publications exist on the efficacy and environmental fate of Bti. Staff of the HCMVCP can provide examples of these upon request. The following resources can also be used to attain more information on Bti as it pertains to black fly control:

National Pesticide Information Center 800-858-7378

- For overall pesticide specific information
(9:30 AM – 7:30 PM)

New Jersey Poison Information and Education System 800-222-1222

- For pesticide health information and possible exposure (24 hours)

NJ DEP Pesticide Control Program 609-984-6057

- For NJ pesticide regulation and misuse complaints

US EPA Region 2 Office of Pesticide Programs 732-321-6759

- For federal pesticide regulation information

Hunterdon County Division of Health 908-788-1351

- For pesticide information and information on local black fly control