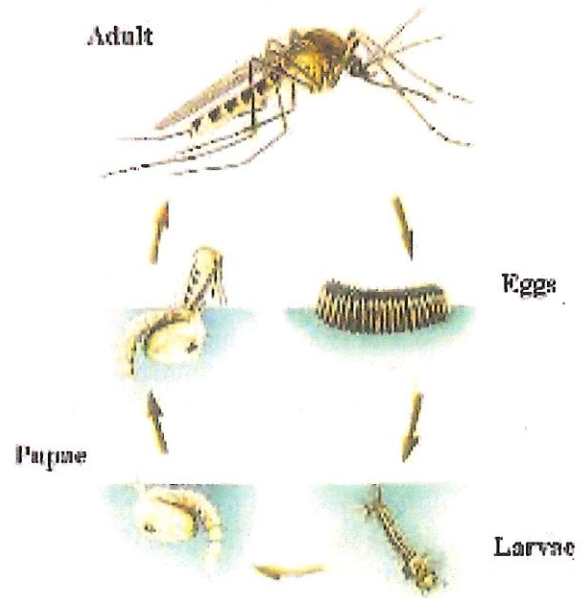


MOSQUITOES...WHAT EVERYONE SHOULD KNOW

Questions & Answers

What is the life cycle of mosquito?

Mosquitoes have four stages of development - egg, larva, pupa, and adult. They spend their larval and pupal stages in water. Female mosquitoes of most species deposit eggs on moist surfaces such as mud or fallen leaves. Rain re-floods these surfaces and stimulates the hatching of the eggs, starting the life cycle. Other mosquito species lay their eggs on permanent water surfaces. Since the water source is constant, egg hatching and larval development is an on-going process. Mosquitoes take approximately one week to develop from egg to adult. After emerging from the aquatic stages, adult mosquitoes mate and females seek a blood meal to obtain nutrients necessary for egg development. Only the female mosquitoes bite. Adult male mosquitoes feed on plant nectar and die shortly after mating. The average life span for adult mosquitoes is 2 – 3 weeks.



How many kinds of mosquitoes are there?

In Bergen County, there are more than 40 different mosquito species, with more than 63 species found in New Jersey. Fortunately, most mosquito species either do not prefer to feed on humans or do not occur in high enough numbers to cause a problem. Between 24 and 28 problematic species regularly occur throughout the county during the year.

What human diseases do mosquitoes transmit?

West Nile virus (WNV), St. Louis (SLE) and Eastern Equine encephalitis (EEE) are several diseases that can be transmitted by mosquitoes found in Bergen County. WNV was first identified in the United States in New York City and surrounding areas in the fall of 1999. The primary transmitter of WNV and SLE are mosquitoes commonly found around homes. They are mosquitoes that will readily utilize tires or any container holding water. Both of these diseases can pose a significant threat to the very young and old, as well as individuals with compromised immune systems. EEE, while rare in Bergen County, is a more dangerous disease and is transmitted by mosquitoes that are produced in permanent swamps and saltwater marshes.

What animal diseases do mosquitoes transmit?

Dogs and horses are also susceptible to mosquito-transmitted diseases. Dog heartworm is a serious threat to your pet's life and is costly to treat once it is contracted through the bite of an infected mosquito. Fortunately, a preventative medicine to protect your dog from contracting heartworm is available. WNV and EEE are threats to horses as well as to humans. Vaccines that can protect your horse against EEE and WNV are also readily available. Contact your local veterinarian to get more information. WNV has also been responsible for the death of numerous birds, mostly in the wild bird population.

What does the Division do?

Bergen County has been performing mosquito control since 1914. Mosquito-borne disease control and quality of life assurance are the principal concerns of the Division. The statutory mandate of the Division is "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 key to the Division's activities is a comprehensive surveillance program. The presence of a mosquito problem must be documented before any control measures can be initiated. Emphasis is placed on the elimination of mosquito production habitat and the control of mosquitoes while they are still in the aquatic stages of their development.

What control efforts does the Division utilize?

The Division uses an Integrated Pest Management (IPM) approach to controlling mosquitoes. An IPM program employs various methods of control including, but not limited to: surveillance, water management, source reduction, biological control, biological and man-made pesticides, and education. With an IPM strategy, control efforts focus primarily on the immature, water-borne stages of the mosquito. These immature stages are more concentrated and accessible than the adult mosquitoes, which disperse after emerging. The primary insecticide applied from the ground is a bio-rational insecticide derived from the bacteria, *Bacillus thuringiensis* var. *israelensis* (Bti), which is specific to the mosquito's metabolism. Fish are available to the Division from the NJ Division of Fish, Game & Wildlife as part of the State Mosquito Control Commission's bio-control program. The fish available are fathead minnows, banded killifish, sunfish, and the Mosquito fish. The Division will supply fish free of charge to any county resident to control mosquitoes after NJ Department of Environmental Protection (NJDEP) fish stocking criteria are satisfied. The Division conducts year round water management (source reduction) projects that control mosquitoes by eliminating mosquito habitat water. These operations are accomplished following the NJDEP Best Management Practices manual. Hand labor and excavating equipment are utilized for this work. If surveillance indicates that a nuisance level of mosquitoes is reached or disease is detected, a spray for adult mosquitoes may be applied by hand-held or truck-mounted sprayers or from the air. All pesticides used are registered with the US Environmental Protection Agency (USEPA), and the NJDEP, and are legal for use in New Jersey. These products are also reviewed and recommended by the New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences/Rutgers University.

What are the winter activities of the Mosquito Control Division?

While the Division practices an IPM approach to mosquito control, the pesticide portion of the IPM program is not conducted during the time of year when larval production sources are not active. However, all other activities are continuous throughout the year. These include stream clearance and water management project, necessary repairs and maintenance, and follow-up record keeping on the past season's mosquito control activities at all larval production sources continues beyond the active mosquito season. The inspection routes are reviewed and revised as necessary to record new larval sources and remove sources that no longer exist. Larval production sources that were difficult to access due to the presence of dense vegetation are inspected after the foliage falls for a clearer view of the areas. These sources then may have paths cleared to allow easier access during the next mosquito production season, and debris dams are cleared from drainage structures. Site evaluation is conducted on potential areas for fish stocking or for water management projects. Beehives are located to avoid accidental pesticide exposure to honey bees in the event adult mosquito spraying (adulticiding) is required. Presentations are made at public events at to interested groups on mosquitoes and mosquito control. Division employees attend training classes to maintain their NJDEP-issued Certified Pesticide Applicators license.

What can homeowners do?

- Homeowners can control mosquitoes by eliminating standing water on their property. Any container holding water is a potential mosquito-production source and is likely to cause problems around your home. Of particular concern are clogged gutters, scattered tires and unopened swimming pools. All tend to collect leaves and water and provide very attractive larval sources for mosquitoes. These containers dry out very slowly. Keep gutters clean and free flowing. Remove or overturn containers that may collect water.
- Remove water from swimming pool covers. If pools are not covered, make sure the water is clean so it is not attractive to mosquitoes. Natural depressions in your yard can hold water. They will not be a problem, however, if the water disappears within 4 to 5 days. Artificial containers will remain wet for a much longer period of time. If you wish to collect rainwater, tightly screen the tops of the containers to prevent mosquitoes from depositing their eggs on the water surface. Items such as pet water bowls and birdbaths should be emptied and refilled at least once a week.
- Small depressions in your yard can be filled to prevent the collection of water. If larger wet areas exist on your property, bring them to the attention of the Mosquito Control Division.
- Make sure windows and door screens are properly fitted and holes are patched to prevent mosquitoes from entering the house.
- A wide variety of repellents are available to provide relief from mosquitoes and other insects. Always **read and follow the label** before using any repellent.

What can I do if there are adult mosquitoes around my home?

If mosquitoes present a problem in your area, contact the Division's office at (201) 634-2881. Our staff will investigate your call promptly. Each area is inspected to locate mosquito-production sources and to verify the presence of adult mosquitoes. If an adult or larval mosquito problem is identified, insecticides may be applied for their control.

What pesticides are used to control mosquitoes?

The majority of the pesticides used are insecticides to control immature mosquitoes in the water. These insecticides may be applied either by ground equipment or aircraft. If a major adult mosquito problem is identified, or if disease-carrying mosquitoes are detected, an adulticide may be applied throughout the area of infestation. For more information regarding the pesticides used for adult mosquito control, please refer to the accompanying NJDEP approved pesticide fact sheets. It should be noted that some of the insecticides used for the control of mosquitoes are used to control other pests. The dosage rates used for mosquito control are usually much less, as low as 5/8ths of an ounce per acre to control mosquito larvae.

Where can I find more specific information on spraying for adult mosquitoes in Bergen County and will I be notified of the spraying?

All spraying for adult mosquitoes on more than 3 acres aggregate, whether conducted from the ground or air, will be advertised in The Record and The Herald News. The advertisements will contain information such as intended application dates or range of application dates, location, contact name, and phone number. This information is also available by accessing the Bergen Bites Back web page (<https://www.co.bergen.nj.us/health-promotions/bergen-bites-back>). Individual homeowners can request to be notified prior to an adulticide application near their home. Contact the Division for details on the procedure to request notification.

Municipalities are encouraged to share this information with all residents in their community

Adult Mosquito Control Product

Fyfanon

This **fact sheet** answers some basic questions about a mosquito control product used in your county. The Bergen County Mosquito Control Division, along with several other resources (listed at the end of this sheet), can provide more detailed information.

What is Fyfanon and how is it used?

Fyfanon is an insecticide product that is recommended for mosquito control in New Jersey by Rutgers, The State University of New Jersey. It contains the pesticide malathion. The U.S. Environmental Protection Agency (EPA) "evaluates and registers (licenses) pesticides to ensure they can be used safely", and their current evaluation of products containing malathion shows them to be slightly toxic with minimal potential risk to people when used properly as part of a complete mosquito control program.

Malathion is used for the control of adult mosquitoes in an integrated pest management (IPM) approach to mosquito control. IPM strategy includes habitat management, source reduction, biological control and other measures to control immature mosquitoes, augmented by adult mosquito control when needed. The spraying of adult mosquitoes is called for when biting populations reach critical annoyance levels or when a disease organism is present in adult mosquitoes. A fine mist of malathion is applied during times of peak mosquito activity, since flying mosquitoes must directly contact the pesticide in order for it to be effective.

How can I avoid exposure to Fyfanon?

Risk to the public from the use of Fyfanon is minimal. Avoiding exposure is always the safest course of action, particularly for those that may be at higher risk such as pregnant women, children, the elderly, and those with chronic illnesses. Any possible exposure risk can be reduced by following some common sense actions:

- Pay attention to notices about spraying found through newspapers, websites, automated telephone messages or distributed by municipal, county or state agencies.
- Plan your activities to limit time spent outside during times of potential pesticide treatments, usually at sunset and sunrise.
- Move children's toys out of application areas.
- Move animals and their food and water dishes out of application areas.
- Stay away from application equipment, whether in use or not.
- Whenever possible during spraying, remain indoors with windows closed, window air conditioners set on non-vent (closed to the outside air), and window fans turned off.
- Avoid direct contact with surfaces that are wet from pesticide spraying. Do not allow children to play in areas that have been sprayed until they have completely dried (approximately one hour).
- If you must remain outdoors, avoid eye and skin contact with the spray. If you get spray in your eyes or on your skin, flush and rinse with water.

What are the symptoms of exposure to Fyfanon?

Symptoms of exposure can include headache, nausea, dizziness, excessive sweating, salivation, excessive tearing and a runny nose. The chance of experiencing these symptoms of exposure with proper use is extremely low. You should contact your physician, other medical providers, or the New Jersey Poison Information and Education System (NJPIES) at 1-800-222-1222 if you experience these symptoms following a pesticide spraying. Bring this sheet with you if you visit a physician or other medical provider.

How long will Fyfanon last in the environment?

The Fyfanon spray stays in the air for a short time until it settles out and lands on surfaces. Fyfanon has a low persistence and lasts no longer than 25 days in water and soil. Fyfanon breaks down quickly in sunlight.

Where can I get more information on Fyfanon?

The following are resources for more information regarding Fyfanon and mosquito control in your area (unless otherwise noted, available during normal business hours):

For overall pesticide-specific information – 9:30am to 7:30pm:

National Pesticide Information Center **800-858-7378**

For pesticide health information & possible exposures – 24 hours:

NJ Poison Information & Education System **800-222-1222**

For pesticide regulation & misuse complaints:

NJDEP Pesticide Control Program **609-984-6568**

For pesticide regulation:

USEPA Region 2 Office of Pesticide Programs **732-321-6768**

For pesticide health information:

Bergen County Department of Health Services **201-634-2600**

For mosquito control insecticide recommendations:

Rutgers University, Department of Entomology **732-932-9774**

Where can I get more information about local mosquito control?

Bergen County Mosquito Control **201-634-2880**

For state-wide mosquito control information:

NJDEP Office of Mosquito Control Coordination **609-292-3649**

Municipalities are encouraged to share this information with all residents in their community

Adult Mosquito Control Product

Zenivex

This Fact Sheet answers some basic questions about mosquito control products in use in your County. The Bergen County Mosquito Control Division along with several other resources (listed at the end of this sheet), can provide more detailed information.

What is Etofenprox and how is it used?

Zenivex contains a pesticide called Etofenprox, a member of the category of pesticides called non-ester pyrethroids, which are synthetic versions of pesticides produced by plants called pyrethrins. Traditional pyrethroid/piperonyl butoxide mixtures are recommended for Ultra-Low-Volume (ULV) mosquito control in New Jersey by Rutgers, The State University of New Jersey. Zenivex is a non-ester pyrethroid, and therefore does not require a synergist such as piperonyl butoxide. The U.S. Environmental Protection Agency (EPA) has classified Etofenprox as a reduced risk molecule. It poses a low risk to human health and the environment when used properly as part of an integrated mosquito control program. As formulated in Zenivex adulticide, Etofenprox is considered a non-carcinogen, non-teratogen and non-mutagen.

This non-ester pyrethroid-containing product is used for the control of adult mosquitoes. While habitat management and measures to control immature mosquitoes in water are preferred and most used, the spraying of adult mosquitoes is necessary when biting populations reach critical levels or when a disease organism is present in adult mosquitoes. A very fine mist is sprayed into the air since flying mosquitoes must directly contact the pesticide in order for it to be effective.

How can I reduce my exposure to Etofenprox?

Because of the very small amounts of active ingredients released per acre, the risk to the general public from the use of non-ester pyrethroid-containing products is minimal. Avoiding exposure is always the safest course of action. Any possible exposure risk can be reduced by following some common sense actions:

- Pay attention to notices about spraying found through newspapers, websites, automated telephone messages, or distributed by municipal, county or state agencies.
- Plan your activities to limit time spent outside during times of possible pesticide treatments.
- Move your pets, their food, and water dishes inside during ULV applications. Also bring clothing and children's toys inside.
- Stay away from application equipment, whether or not it is in use.
- Whenever possible, remain indoors with windows closed, window air conditioners on non-vent (closed to the outside air), and window fans turned off during spraying.
- Avoid direct contact with surfaces still wet from pesticide spraying. Do not allow children to play in areas that have been sprayed until they have completely dried (approximately one hour).
- If you must remain outdoors, avoid eye and skin contact with the spray. If you get spray in your eyes or on your skin, immediately flush and rinse with water.

What are the symptoms of exposure to Etofenprox?

Symptoms of over-exposure can include irritation to skin and eyes. The chance of experiencing these symptoms of over-exposure with proper use is low. You should contact your physician, other medical providers, or the New Jersey Poison Information and Education System (NJPIES) at 1-800-222-1222 if you experience these symptoms following a pesticide spraying.

How long will Etofenprox last in the environment?

The non-ester pyrethroid in Etofenprox has a half-life of 1.7 days in water and 4.4 days in soil. The Etofenprox molecule rapidly degrades in sunlight at the soil and water surface into its constituent elements Carbon, Hydrogen, and Oxygen.

Where can I get more information on this adulticide?

The following are resources for more information regarding Etofenprox and mosquito control in your area (unless otherwise noted, available during normal business hours):

For overall pesticide-specific information -- 9:30am to 7:30pm:

National Pesticide Information Center **800-858-7378**

For pesticide health information & possible exposures – 24 hours:

NJ Poison Information & Education System **800-222-1222**

For pesticide regulation & misuse complaints:

NJDEP Pesticide Control Program **609-984-6568**

For pesticide regulation:

USEPA Region 2 Office of Pesticide Programs **732-321-6768**

For pesticide health information:

Bergen County Department of Health Services **201-634-2600**

For mosquito control insecticide recommendations:

Rutgers University, Department of Entomology **732-932-9774**

Where can I get more information about local mosquito control?

Bergen County Mosquito Control **201-634-2880**

For state-wide mosquito control information:

NJDEP Office of Mosquito Control Coordination **609-292-3649**

Municipalities are encouraged to share this information with all residents in their community

Duet/AquaDuet/Duet HD

This Fact Sheet answers some basic questions about mosquito control products in use in your county. The Bergen County Mosquito Control Division, along with several other resources (listed at the end of this sheet), can provide more detailed information.

What is Duet adulticide and how is it used?

Duet contains two pesticides called prallethrin and sumithrin, and a synergistic compound called piperonyl butoxide which increases the effectiveness of the pesticides. AquaDuet is a water-based formulation of Duet. Duet HD is a heavier formulation developed for aerial applications. Prallethrin and sumithrin are members of a category of pesticides called pyrethroids, which in turn are synthetic versions of pesticides produced by plants called pyrethrins. Pyrethroid/piperonyl butoxide mixtures have been recommended for Ultra-Low-Volume (ULV) mosquito control in New Jersey by Rutgers, The State University of New Jersey. The U.S. Environmental Protection Agency's (EPA) current evaluation considers pyrethroid-containing products to be slightly toxic with minimal potential risk to people when used properly as part of an integrated mosquito control program.

This pyrethroid-containing product is used for the control of adult mosquitoes. While habitat management and measures to control immature mosquitoes in water are preferred and most used, the spraying of adult mosquitoes is called for when biting populations reach critical levels or when a disease organism is present in adult mosquitoes. A very fine mist is sprayed into the air since flying mosquitoes must directly contact the pesticide in order for it to be effective. The combination of the two pesticides has been shown to produce what the manufacturer calls 'benign agitation'. In other words, mosquitoes are agitated from a resting state to a non-biting flying state where they are more vulnerable to pesticide exposure. This makes Duet Dual-Action® adulticide more effective against hard-to-control species like *Aedes albopictus* which typically rest during the evening hours when adulticiding usually takes place.

How can I reduce my exposure to Duet?

Because of the very small amounts of active ingredients released per acre, the risk to the general public from the use of pyrethroid-containing products is minimal. Avoiding exposure is always the safest course of action. Any possible exposure risk can be reduced by following some common-sense actions:

- Pay attention to notices about spraying found through newspapers, websites, automated telephone messages or distributed by municipal, county or state agencies.
- Plan your activities to limit time spent outside during times of possible pesticide treatments.
- Move your pets, their food, and water dishes inside during ULV application. Also bring clothing and children's toys inside.
- Stay away from application equipment, whether in use or not.
- Whenever possible, remain indoors with windows closed and with window air conditioners on non-vent (closed to the outside air) and window fans turned off during spraying.
- Avoid direct contact with surfaces that are still wet from pesticide spraying. Do not allow children to play in areas that have been sprayed until they have completely dried (approximately one hour).
- If you must remain outdoors, avoid eye and skin contact with the spray. If you get spray in your eyes or on your skin, immediately flush and rinse with water.

What are the symptoms of exposure to Duet?

Symptoms of over-exposure can include irritation to skin and eyes, respiratory and nasal irritation, irritability to sound or touch, abnormal facial sensation, sensation of prickling, tingling or creeping of skin, numbness, headache, dizziness, nausea, vomiting, diarrhea, excessive salivation, and fatigue. The chance of experiencing these symptoms of over-exposure with proper use is low. You should contact your physician, other medical providers, or the New Jersey Poison Information and Education System at 1-800-222-1222 if you experience these symptoms following a pesticide spraying.

How long will Duet last in the environment?

Pyrethroids have a soil half-life of 12 days. They have an extremely low pesticide movement rating because they bind tightly to the soil. Pyrethroids are unstable in light and air. They rapidly degrade in sunlight at the soil surface and in water. Piperonyl butoxide has a soil half-life of approximately 4 days.

Where can I get more information on this adulticide?

The following are resources for more information regarding Duet and mosquito control in your area (unless otherwise noted, available during normal business hours):

For overall pesticide-specific information – 9:30am to 7:30pm:
National Pesticide Information Center 800-858-7378

For pesticide health information & possible exposures – 24 hours:
NJ Poison Information & Education System 800-222-1222

For pesticide regulation & misuse complaints:
NJDEP Pesticide Control Program 609-984-6568

For pesticide regulation:
USEPA Region 2 Office of Pesticide Programs 732-321-6768

For pesticide health information:
Bergen County Department of Health Services 201-634-2600

For mosquito control insecticide recommendations:
Rutgers University, Department of Entomology 732-932-9774

Where can I get more information about local mosquito control?
Bergen County Mosquito Control 201-634-2880

For state-wide mosquito control information:
NJDEP Office of Mosquito Control Coordination 609-292-3649

Spraying for adult mosquitoes is a last resort. Most mosquito control work goes on behind the scenes, using water management, fish, and products to control immature mosquitoes in the water where they begin their life cycle. Controlling adult mosquitoes is more difficult because they are spread out and moving.

If you have questions about Duet or any other mosquito control related products or practices, please feel free to call the Bergen County Mosquito Control Division at (201) 634-2880 (Mon-Fri; 7:00 AM – 3:30 PM), or visit our web site at <https://www.co.bergen.nj.us/mosquito-control>.