

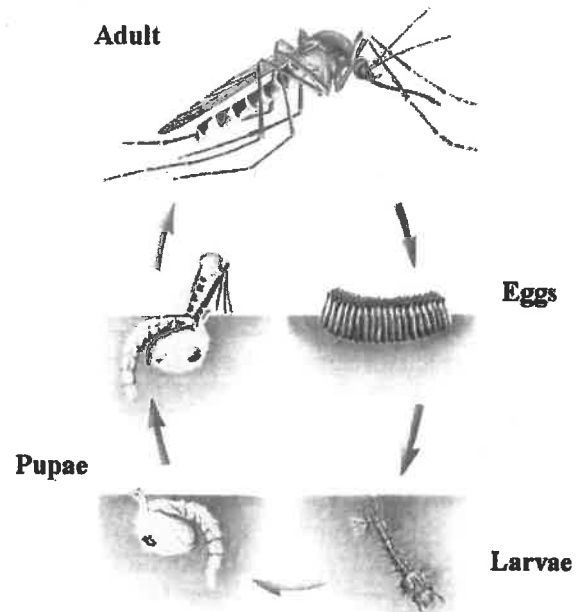
WARREN COUNTY MOSQUITO EXTERMINATION COMMISSION

MOSQUITOES...WHAT EVERYONE SHOULD KNOW

Questions & Answers

What is the life cycle of mosquitoes?

Mosquitoes have four stages of development - egg, larva, pupa and adult. They spend all stages in water, except the adult stage. Some female mosquitoes 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 and, since the water is constant, there are always eggs hatching and larvae developing. Mosquitoes take approximately one week to develop from egg to flying adult. After emerging from the aquatic stages, adult mosquitoes mate. Then, only the females seek a blood meal to obtain the nutrients necessary for egg development. Adult male mosquitoes feed on plant nectar and die shortly after mating. While various species differ, the average life expectancy for adult mosquitoes is 4-6 weeks.



How many kinds of mosquitoes are there?

In Warren County, there have been 47 different species documented out of the 63 species found in the state of New Jersey. The newest species to be added to the county list was in 2021.

What human diseases do mosquitoes cause?

Mosquitoes transmit numerous diseases to humans, but thankfully there are only a few that are transmitted locally. West Nile Virus is a mosquito-borne virus that can cause encephalitis but more commonly presents as flu-like symptoms. The primary vector is a mosquito commonly found around homes in container-type habitats. La Crosse Encephalitis, although rare in this area, is a form of encephalitis occurring almost exclusively in children. This disease is transmitted primarily by mosquito species that also develops in tires and other containers that are often found around the home. Jamestown Canyon virus is also transmitted by the bite of an infected mosquito but rarely causes severe disease.; common symptoms are fever, headache, and fatigue but severe cases can cause inflammation of the brain. Equine Encephalitis (EEE) is also transmitted by mosquitoes and affects humans but is rare in the northwestern part of New Jersey.

What animal diseases do mosquitoes cause?

Dogs and horses are also targets for mosquito-borne 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. Preventative medication can be obtained through your veterinarian. Also, West Nile Virus and EEE pose a serious threat to horses; therefore, an effort should be made to limit your horse's exposure to mosquito bites. A vaccine for horses for both West Nile Virus and EEE is available; your veterinarian can provide more information. Additionally, West Nile Virus has also been responsible for the death of numerous birds, particularly in the wild bird population.

What is the Mosquito Commission and what does it do?

The Warren County Mosquito Commission was established on October 18, 1956 with a mission "to control mosquito populations that present a disease and/or nuisance threat, thereby protecting the health and welfare, as well as the outdoor enjoyment, of the residents of Warren County. The commission is composed of seven members, at least three of which have experience on a Board of Health, and employs a staff of well-educated and highly trained mosquito control professionals.

The Commission's activities are guided by a comprehensive surveillance program, which directs control efforts to where populations of mosquitoes, which pose a disease and/or nuisance threat, exist. Emphasis is placed on the elimination of mosquito-breeding habitat and the control of mosquitoes when they are still in the aquatic stages of their development.

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What are the winter activities of the Commission?

The seasonal control operations start in February with the hatching of snowpool mosquito species and continue into October, when a heavy frost usually occurs. Water management activities are conducted year round. Follow-up record keeping on the season's mosquito activity at the 1,400+ breeding sites continues beyond the active mosquito season. The inspection routes are revised after additions/deletions of breeding sites. New sites, where the breeding source was not apparent due to the presence of heavy vegetation in the summer, are inspected after the foliage falls for a clearer view of the area. Breeding sites that are difficult to access are kept clear with brush clearing. Leaf dams are cleared from drainage to keep water flowing. Site evaluation occurs to target sites for fish stocking or water management potential. Every spring, registered beehive locations are verified to avoid exposure to honey bees during our adult mosquito control applications. Appropriate permits are pursued for water management projects. The equipment is maintained and readied for the upcoming mosquito season. Educational presentations on mosquito biology and control are made at schools, civic groups, and other public events throughout the year.

What control efforts are utilized by the Commission?

The Commission uses an Integrated Pest Management (IPM) approach to control mosquitoes with surveillance as the base of all that we do. IPM combines various methods of control including public education, source reduction, water management, biological control and also insecticides, when necessary. Control efforts focus primarily on the larval (immature, aquatic) stage of the mosquito. The larvae cannot escape control measures and are more concentrated and accessible than the adult mosquitoes, which disperse after emerging. The primary insecticide used to control the immature stage is a biological pesticide, which is a bacterial larvicide (*Bti*), which specifically targets mosquitoes. When mosquito larvae ingest the *Bti*, the high pH of the mosquito gut releases the toxins from the larvicide, which then kills the larvae. Mosquito fish (*Gambusia affinis*), and other fish species that consume mosquito larvae, can be stocked at roughly 15% of our sites as a biological control method. These fish are raised by the NJ Division of Fish, Game & Wildlife in Hackettstown as part of the State Mosquito Control Commission's bio-control program. Another control method is water management/source reduction projects, which control mosquitoes by eliminating the standing water. Hand labor and/or heavy equipment are utilized and Best Management Practices for Water Management on Freshwater Wetlands are followed. As part of source reduction, proper tire disposal is encouraged and the commission actively participates in tire collections programs with the county. As a final line of defense, a treatment for adult mosquitoes may be applied by truck-mounted sprayer if a significant mosquito population exists. All pesticide applications comply with guidelines published by Rutgers University and regulations set by NJ Department of Environmental Protection.

What pesticides are used to control mosquitoes in Warren County?

The majority of the pesticides used are products to control mosquito larvae in the water, some of which are applied by aircraft. Also, it is sometimes necessary to use insecticides to control adult mosquitoes. For more information regarding the pesticides which may be used for adult mosquito control, please refer to the accompanying NJ Department of Environmental Protection approved Fact Sheets. All pesticides are applied by licensed pesticide applicators/operators.

What can I do to help as a homeowner?

- Eliminate standing water on your property. Any container holding water is a potential mosquito-breeding source and is likely to cause problems around your home. Clean up clogged rain gutters and unused tires as both tend to collect leaves, then fill with water and provide very attractive sites for mosquitoes to breed. Since these containers are water tight, they dry out very slowly. Remove or overturn containers, if possible, and items such as dog 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 Commission personnel.
- Keep adult mosquitoes out of your home by securing window and door screens. Make sure they 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. Most repellents contain the same active ingredient, only the percentages vary. The repellents are effective but caution should be used and directions followed carefully.

What do I do if there are adult mosquitoes or possible breeding areas around my home?

If mosquitoes present a problem in your area, contact the Commission office at (908) 453-3585. Our staff will investigate your call promptly. Each area is inspected to verify the presence of adult mosquitoes. The area of the complaint is also searched to locate the source(s) of the problem and control the mosquitoes in their immature stages. Spraying for adult mosquitoes may be carried out as soon as possible if warranted based on the number and species of mosquitoes present (considering their disease or nuisance potential).

Where can I get more information? www.warrencountymosquito.org

WARREN COUNTY MOSQUITO CONTROL COMMISSION

"Zenivex"

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

This Fact Sheet answers some basic questions about mosquito control products in use in your County. The Warren County Mosquito Commission, 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:

New Jersey Poison Information & Education System **800-222-1222**

For New Jersey pesticide regulation & misuse complaints:

NJDEP Bureau of Pesticide Compliance & Enforcement **609-984-6568**

For Federal pesticide regulation:

USEPA Region 2 Office of Pesticide Programs **877-251-4575**

For statewide mosquito control information:

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

For local mosquito control information:

Warren County Mosquito Control Commission **908-453-3585**

For local health information:

Warren County Health Department **908-475-7960**

For mosquito control recommendations:

Rutgers University, Department of Entomology **848-932-9437**

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 Zenivex or any other mosquito control related products or practices, please feel free to call the Warren County Mosquito Commission at (908) 453-3585, or visit our web site at www.warrencountymosquito.org

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

"Deltamethrin"

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

What is Deltamethrin and how is it used?

DeltaGard® contains an insecticide called deltamethrin which is a Type II pyrethroid insecticide – a man-made molecule modeled after pyrethrins which are natural insecticides extracted from the chrysanthemum flower (*Chrysanthemum cinerariae folium*). As a class, pyrethroids are the most widely-used insecticides for controlling adult mosquitoes by professionals in the United States and traditionally recommended for Ultra-Low-Volume (ULV) mosquito control in New Jersey by Rutgers, The State University of New Jersey. Deltamethrin is the only single-active isomer pyrethroid adulticide which ensures consistent biological activity at low rates and does not require a synergist such as piperonyl butoxide. The U.S. Environmental Protection Agency (EPA) has classified deltamethrin 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 DeltaGard® adulticide, deltamethrin is considered a non-carcinogen, non-teratogen and non-mutagen.

This Type II 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 commonly used, the spraying of adult mosquitoes is necessary when biting populations reach critical levels or when a disease-causing agent is present in adult mosquitoes. A very fine mist is sprayed into the air since flying mosquitoes must directly contact the pesticide for effective control.

How can I reduce my exposure to deltamethrin?

Because of the very small amounts of active ingredients released per acre, the risk to the general public from the use of Type II 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 deltamethrin?

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 deltamethrin last in the environment?

The Type II pyrethroid deltamethrin has a half-life of 1-2 weeks in soil and is rapidly adsorbed by sediment in surface water. It is insoluble in water and is immobile in the environment. Deltamethrin is nontoxic to plants and residues are not present after 10 days.

Where can I get more information on this adulticide?

The following are resources for more information regarding deltamethrin 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:

New Jersey Poison Information & Education System **800-222-1222**

For New Jersey pesticide regulation & misuse complaints:

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

For Federal pesticide regulation:

USEPA Region 2 Office of Pesticide Programs **732-321-6759**

For statewide mosquito control information:

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

For local mosquito control information:

Warren County Mosquito Control Commission **908-453-3585**

For mosquito control recommendations:

Rutgers University, Department of Entomology **732-932-9437**

For local health information:

Warren County Health Department **908-475-7960**

Spraying for adult mosquitoes is a last resort. Most mosquito control work goes on “behind the scenes”, using water management, fish, and other 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 deltamethrin or any other mosquito control related products or practices, please feel free to call Warren County Mosquito Control Commission 908-453-3585

WARREN COUNTY MOSQUITO CONTROL COMMISSION

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

"Merus 3.0 "

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

What is Merus 3.0™ and how is it used?

Merus 3.0™ contains botanical insecticides called **pyrethrins**, a class of organic compounds extracted from *Chrysanthemum* flowers. Unlike most pyrethroids (the synthetic equivalent of pyrethrins that are more commercially available), **Merus 3.0™** does not contain additional chemical synergists such as piperonyl butoxide. **Merus 3.0™** is Organic Materials Review Institute (OMRI) listed and meets National Organic Program (NOP) standards for adult mosquito control in and around organic gardens, farms and crops. It poses a low risk to human health and the environment when used properly as part of an integrated mosquito control program. Pyrethrins are considered non-carcinogenic at exposure relevant to human use, and no data is available to indicate the product or any components present at greater than 0.1% are mutagenic or teratogenic.

Merus 3.0™ 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 Merus 3.0™?

Because of the very small amounts of active ingredients released per acre, the risk to the general public from the use of pyrethrin-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 Merus 3.0™?

Symptoms of over-exposure to pyrethrins can include irritation to skin and eyes, asthma-like symptoms, nausea, and vomiting. 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 Merus 3.0™ last in the environment?

In the presence of sunlight, pyrethrin 1 (a component of pyrethrins) has a half-life of 11.8 hours in water and 12.9 hours on soil surfaces. In the absence of light, pyrethrin 1 breaks down more slowly in water. Half-lives of 14 to 17 days have been reported. When water was more acidic, pyrethrin 1 did not readily break down. Pyrethrins that enter the water do not dissolve well but tend to bind to sediment. Half-lives of pyrethrin 1 in sediment are 10.5 to 86 days.

Where can I get more information on this adulticide?

The following are resources for more information regarding Merus 3.0 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:

New Jersey Poison Information & Education System

800-222-1222

For New Jersey pesticide regulation & misuse complaints:

NJDEP Bureau of Pesticide Compliance & Enforcement

609-984-6568

For Federal pesticide regulation:

USEPA Region 2 Office of Pesticide Programs

877-251-4575

For statewide mosquito control information:

NJDEP Office of Mosquito Control Coordination

609-292-3649

For local mosquito control information:

Warren County Mosquito Control Commission

908-453-3585

For local health information:

Warren County Health Department

908-475-7960

For mosquito control recommendations:

Rutgers University, Department of Entomology

848-932-9437

If you have questions about Merus 3.0 or any other mosquito control related products or practices, please feel free to call the Warren County Mosquito Commission at (908) 453-3585, or visit our web site at www.warrencountymosquito.org

WCMEC 3/4/22

WARREN COUNTY MOSQUITO EXTERMINATION COMMISSION

"Fyfanon"

This sheet answers some basic questions about a mosquito control product in use in your county. The Warren County Mosquito Commission, 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 called "Malathion." The U.S. Environmental Protection Agency's (EPA) current evaluation considers **Malathion**-containing products to be slightly toxic with minimal potential risk to people when used properly as part of a complete mosquito control program.

Fyfanon is used for the control of adult mosquitoes. While habitat management and measures to control immature mosquitoes in water are the preferred routine approaches, 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.

How can I avoid exposure to Fyfanon?

Risk to the general public from the use of **Fyfanon** is minimal. Avoiding exposure is always the safest course of action, particularly for populations 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 possible pesticide treatments.
- 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, 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 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 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 lands on surfaces. **Malathion** has a low persistence and lasts no longer than 25 days in water and soil. **Malathion** breaks down faster 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:

New Jersey Poison Information & Education System **800-222-1222**

For New Jersey pesticide regulation & misuse complaints:

NJDEP Bureau of Pesticide Compliance & Enforcement **609-984-6568**

For Federal pesticide regulation:

USEPA Region 2 Office of Pesticide Programs **877-251-4575**

For state-wide mosquito control information:

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

For local mosquito control information:

Warren County Mosquito Control Commission **908-453-3585**

For mosquito control recommendations:

Rutgers University, Department of Entomology **848-932-9437**

For local health information:

Warren County Health Department **908-475-7960**