



DEPARTMENT OF ENVIRONMENTAL AND  
PUBLIC HEALTH SERVICES  
Office of Mosquito Control  
150 Morris Turnpike  
Newton, New Jersey 07860  
Telephone: (973) 940-5225  
FAX: (973) 579-0399

EMRICK G. SEABOLD, M.A., R.E.H.S.  
*Acting Administrator/Health Officer*

## County of Sussex

---

March 1, 2016

Catherine Schultz, Mun. Clerk  
Hopatcong Borough Mun. Bldg.  
River Styx Road  
Hopatcong, NJ 07843

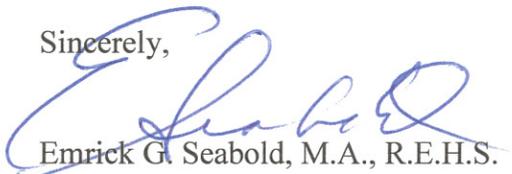
Dear Ms. Schultz,

Pursuant to regulatory requirements, as set forth in N.J.A.C. 7:30-9.10 (e), the Sussex County Office of Mosquito Control is hereby providing your municipality with this year's annual municipal information packet. The packet contains some general mosquito biology and control information as well as some NJDEP- approved handouts of products that may be used in your municipality for mosquito adulticiding purposes.

This, and additional information, may also be found on our website at [www.sussex.nj.us](http://www.sussex.nj.us)  
Please find us under Mosquito Control in the Department heading.

If you have any questions regarding this packet or services, do not hesitate to contact me at 973.948.4545.

Sincerely,



Emrick G. Seabold, M.A., R.E.H.S.  
Acting Administrator/Health Officer

## Sussex County Mosquito Control

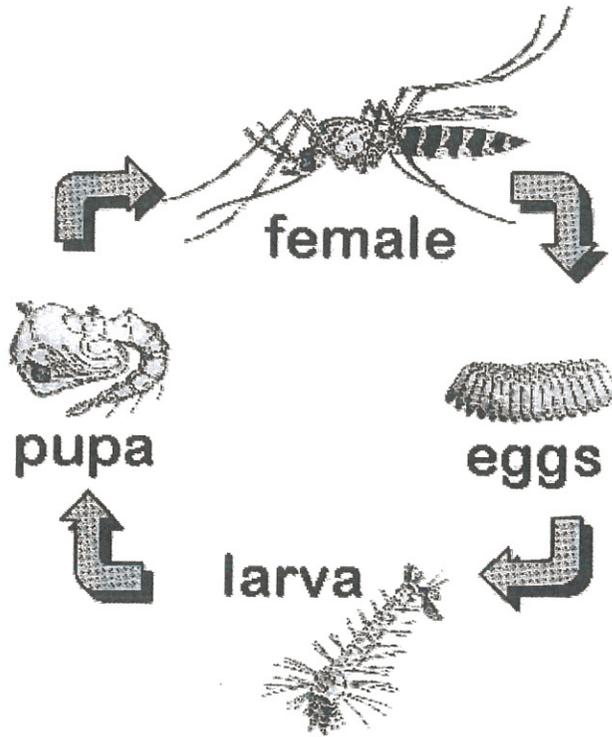
\*\*\*Municipalities are encouraged to share this information with all residents in their community\*\*\*

### MOSQUITOES....WHAT EVERYONE SHOULD KNOW

#### Questions & Answers

#### What is the life cycle of mosquitoes?

All mosquitoes have four stages of development—egg, larva, pupa, and adult. Mosquitoes spend their larval and pupal stages in water. The females of some mosquito species deposit eggs on moist surfaces, such as mud or fallen leaves that may be near water but dry. Later, rain refloods these surfaces and stimulates the eggs to hatch into larvae. The females of other species deposit their eggs directly on the surface of still water in such places as ditches, street catch basins, tire tracks, streams that are drying up, and fields or excavations that hold water for some time. This water is often stagnant and may be close to homes in discarded tires, ornamental pools, unused wading and swimming pools, tin cans, bird baths, plant saucers, and even gutters and flat roofs. The eggs deposited on such waters soon hatch into larvae. In the hot summer months, larvae grow rapidly, become pupae, and emerge one week later as flying adult mosquitoes. A few important spring species have only one generation per year. However, most species have many generations per year, and their rapid increase in numbers becomes a problem.



When adult mosquitoes emerge from the aquatic stage, they mate, and the female seeks a blood meal to obtain the protein necessary for the development of her eggs. After a blood meal is digested and the eggs are laid, the female mosquito again seeks a blood meal to produce a second batch of eggs. Depending on her stamina and the weather, she may repeat this process many times without mating again. The male mosquito does not take a blood meal, but may feed on plant nectar. He lives for only a short time after mating.

#### How many kinds of mosquitoes are there?

In Sussex County we have 43 species of mosquitoes. The state of New Jersey has 63 documented species of mosquitoes, with the last state species added in 2001.

#### What human diseases do mosquitoes cause?

Mosquito-borne diseases, such as malaria and yellow fever, have plagued civilization for thousands of years. Organized mosquito control in the United States has greatly reduced the incidence of these diseases. However, there are still a few diseases that mosquitoes in New Jersey can transmit. West Nile Virus is the newest introduced mosquito-borne virus but several other viruses have been in New Jersey for a long time including those that cause Eastern Equine Encephalitis and St. Louis Encephalitis.

#### What animal diseases do mosquitoes cause?

Both dogs and horses are possible hosts for mosquito-borne diseases. Dog heartworm is a serious threat to canine life and is costly to treat once an animal becomes infected. Dog heartworm can be transmitted by one of the mosquito species, the northern house mosquito, which also transmits West Nile Virus. Horses are susceptible to both West Nile Virus and Eastern Equine Encephalitis. In Sussex County during the 2000 season, 3 horses died of West Nile Encephalitis. Consult your veterinarian for the availability of horse vaccines.

#### **What does the office of Mosquito Control do?**

The office of Mosquito Control is responsible for the suppression of vector borne diseases and the control of nuisance mosquito populations. Our activities are based on an extensive surveillance program. Emphasis is placed on elimination of mosquito breeding habitat and the control of mosquitoes while they are still in their aquatic stages of development.

#### **What control efforts are utilized by Mosquito Control?**

This office uses an Integrated Mosquito Management approach to controlling mosquitoes. It starts with the philosophy that a multi-faceted prevention and control plan is the most cost-efficient and effective means of controlling mosquito populations.

Source reduction or the elimination of breeding habitat is the most effective method of preventing mosquito populations. This practice ranges from removing tires and other artificial containers from the landscape to using water management practices to render habitats inhospitable to mosquitoes. In cases where this is not feasible, controlling mosquitoes in the aquatic habitat is the preferred approach. The mosquito larvae are concentrated and limited to their aquatic habitat; they cannot escape control efforts as can adult mosquitoes on the wing. Several control agents can be employed against mosquitoes at this larval stage. Fish ranging from *Gambusia* to native fat-head minnows are natural predators of mosquitoes and are readily stocked in breeding sites to provide 24 hour larval control. Biorational larvicides with active ingredients found in soil everywhere, such as Bti, are used quite extensively and offer effective control as well.

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 are the winter activities of the Office of Mosquito Control?**

The control of mosquitoes starts in February with the first emergence of the snow pool species of mosquitoes and continues through mid November. We also perform source reduction during the months when mosquito populations are low. This includes tire removal and some minor water management activities. Winter provides us time to update information on breeding sites in our database, analyze the season's data and produce the annual reports and permits required of our office by NJ DEP, the National Park Service, USFWS, Sussex County, and Rutgers University. In addition, equipment maintenance is performed, as well as "right of way" work, if time permits.

#### **What can homeowners do?**

The most efficient method of controlling mosquitoes is reducing the availability of water suitable for larval and pupal growth. Large lakes, ponds, and streams that have waves, contain mosquito-eating fish, and lack aquatic vegetation around their edges do not contain mosquitoes; mosquitoes thrive in smaller bodies of water in protected places. Examine your home and neighborhood and take the following precautions:

- Dispose of unwanted buckets and tires.
- Clean clogged roof gutters and drain flat roofs.
- Flush sump-pump pits weekly.
- Stock ornamental pools with fish.
- Change water in birdbaths, fountains, and troughs twice a week.
- Clean and chlorinate swimming pools; when not regularly used, they should be emptied.
- Turn over unused wading pools and other containers that tend to collect rainwater.
- Cover containers tightly with window screen or plastic when storing rainwater for garden use during drought periods.

#### **What do I do if there are adult mosquitoes or standing water around my home?**

If mosquitoes present a problem in your area, contact the office at 973-948-4545. Our staff will investigate your service request. Each area is inspected to verify the presence of adult mosquitoes and to locate the breeding source(s) to facilitate controlling the mosquitoes in their immature stages in the future. If warranted, spraying for adult mosquitoes may be carried out. \*What triggers adult spraying? The number of mosquitoes trapped, species trapped, disease presence, weather conditions, location of bodies of water, location of bee hives, and other factors.

**What pesticides are used to control mosquitoes?**

The majority of the pesticides used are products to control mosquito larvae in water, some of which may be applied by aircraft in a granular form. Also, it is sometimes necessary to use pesticides to control adult mosquitoes. For more information regarding the pesticides which may be applied by aircraft or the pesticide used for adult control, please refer to the accompanying NJ Department of Environmental Protection approved Fact Sheet. All pesticides used by the Sussex County Office of Mosquito Control are registered with both the USEPA and the NJDEP, which means that they are legal for use in New Jersey. All employees of Sussex County Mosquito Control are licensed by the NJDEP.

**What do I do if exposed to pesticide?**

See enclosed NJDEP pesticide Fact Sheets.

**Where can I find more specific information on mosquito spraying and how will I be notified of the spraying?**

You can find on our Web Site at [www.sussex.nj.us/mosquito](http://www.sussex.nj.us/mosquito) for updated information on time and location of application(s).

# Help Control Mosquitoes that Spread Dengue, Chikungunya, and Zika Viruses



# Bzzzz.



Aside from being itchy and annoying, the bite of an infected female mosquito (*Aedes aegypti* or *Aedes albopictus*) can spread dengue, chikungunya, or Zika viruses. People become infected with dengue, chikungunya, or Zika after being bitten by an infected mosquito.

- Female mosquitoes lay several hundred eggs on the walls of water-filled containers. Eggs stick to containers like glue and remain attached until they are scrubbed off. When water covers the eggs, they hatch and become adults in about a week.
- Adult mosquitoes live inside and outside.
- They prefer to bite during the day.
- A few infected mosquitoes can produce large outbreaks in a community and put your family at risk of becoming sick.

## Protect Yourself, Your Family, and Community from Mosquitoes

# 1.

### Eliminate standing water in and around your home:

- **Once a week**, empty and scrub, turn over, cover, or throw out items that hold water, such as tires, buckets, planters, toys, pools, birdbaths, flowerpots, or trash containers. Check inside and outside your home.
- Tightly cover water storage containers (buckets, cisterns, rain barrels) so that mosquitoes cannot get inside to lay eggs.
- For containers without lids, use wire mesh with holes smaller than an adult mosquito.

# 2.

### If you have a septic tank, follow these steps:

- Repair cracks or gaps.
- Cover open vent or plumbing pipes. Use wire mesh with holes smaller than an adult mosquito.

# 3.

### Keep mosquitoes out of your home:

- Use screens on windows and doors.
- Repair holes in screens.
- Use air conditioning when available.



Put plants in soil, not in water.



Drain water from pools when not in use.



Recycle used tires or keep them protected from rain.



Drain & dump any standing water.



Weekly, scrub vases & containers to remove mosquito eggs.

# 4.

## Prevent mosquito bites:

- Use an Environmental Protection Agency (EPA)-registered insect repellent with one of the following active ingredients. All EPA-registered insect repellents are evaluated to make sure they are safe and effective.

| Active ingredient<br>Higher percentages of active ingredient provide longer protection  | Some brand name examples*   |
|---|---|
| <b>DEET</b>   | Off!, Cutter, Sawyer, Ultrathon   |
| <b>Picaridin</b> , also known as <b>KBR 3023</b> , <b>Bayrepel</b> , and <b>icaridin</b>  | Cutter Advanced, Skin So Soft Bug Guard Plus, Autan (outside the United States) |
| <b>IR3535</b>   | Skin So Soft Bug Guard Plus Expedition, SkinSmart                               |
| <b>Oil of lemon eucalyptus (OLE)</b> or <b>para-menthane-diol (PMD)</b>   | Repel   |
| * Insect repellent brand names are provided for your information only. The Centers for Disease Control and Prevention and the U.S. Department of Health and Human Services cannot recommend or endorse any name brand products. |   |

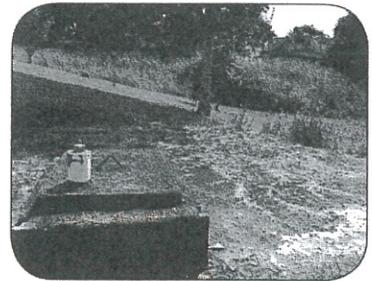
- Always follow the product label instructions.
- Reapply insect repellent every few hours, depending on which product and strength you choose.
- Do not spray repellent on the skin under clothing.
- If you are also using sunscreen, apply sunscreen first and insect repellent second.
- Treat clothing and gear (such as boots, pants, socks, and tents) with permethrin or purchase permethrin-treated clothing and gear.
  - Treated clothing remains protective after multiple washings. See product information to find out how long the protection will last.
  - If treating items yourself, follow the product instructions carefully.
  - Do **not** use permethrin products, intended to treat clothing, directly on skin.
- Wear long-sleeved shirts and long pants.



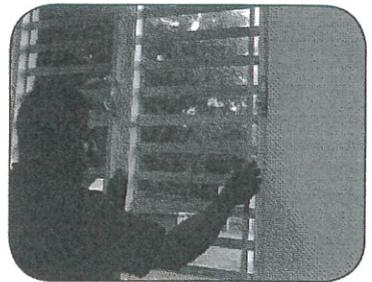
Keep rain barrels covered tightly.



Weekly, empty standing water from fountains and bird baths.



Keep septic tanks sealed.



Install or repair window & door screens.

For more information, visit:  
[www.cdc.gov/dengue](http://www.cdc.gov/dengue), [www.cdc.gov/chikungunya](http://www.cdc.gov/chikungunya), [www.cdc.gov/zika](http://www.cdc.gov/zika)

# "DUET"

## Dual Action Adulticide

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

### What is Duet and how is it used?

**Duet** is an insecticide product that is recommended for mosquito control in New Jersey by Rutgers, The State University of New Jersey. It contains the pesticides called "Prallethrin (ETOC), d-Phenothrin (Sumithrin), Piperonayl Butoxide." The U.S. Environmental Protection Agency's (EPA) current evaluation considers **Prallethrin, d-Phenothrin and Piperonyl Butoxide**-containing products to be slightly toxic with minimal potential risk to people when used properly as part of a complete mosquito control program.

**Duet** 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 Duet?

Risk to the general public from the use of **Duet** 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 Duet?

Irritation or sensitization sometimes occurs after exposure, causing an asthmatic condition or skin rash. The chance of experiencing these symptoms of exposure with



# "Fyfanon"

This sheet answers some basic questions about a mosquito control product in use in your county. Sussex County Mosquito Control, 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 Pesticide Control Program**                      **609-984-6507**

For Federal pesticide regulation:

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

For state-wide mosquito control information:

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

For local mosquito control information:

**Sussex County Mosquito Control**                      **973-948-4545**

For mosquito control recommendations:

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

For local health information:

**Sussex County Health Department**                      **973-79-0370**

## "Scourge®"

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

### **What is Scourge and how is it used?**

**Scourge** is an insecticide product that is recommended for mosquito control in New Jersey by Rutgers, The State University of New Jersey. It contains the pesticides called "**Resmethrin and Piperonyl Butoxide.**" The U.S. Environmental Protection Agency's (EPA) current evaluation considers **Resmethrin and Piperonyl Butoxide**-containing products to be slightly toxic with minimal potential risk to people when used properly as part of a complete mosquito control program.

**Scourge** 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 Scourge?**

Risk to the general public from the use of **Scourge** 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 Scourge?**

Irritation or sensitization sometimes occurs after exposure, causing an asthmatic condition or skin rash. 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 Scourge last in the environment?**

The **Scourge** spray stays in the air for a short time until it lands on surfaces. **Resmethrin** has a low persistence and lasts no longer than 25 days in water and soil. **Resmethrin** breaks down faster in sunlight.

### **Where can I get more information on Scourge?**

The following are resources for more information regarding **Scourge** 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**                      **609-984-6507**

For Federal pesticide regulation:

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

For state-wide mosquito control information:

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

For local mosquito control information:

**Sussex County Mosquito Control**                      **973-948-4545**

For mosquito control recommendations:

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

For local health information:

**Sussex County Health Department**                      **973-579-0370**