

Through this report The Sustainability Institute encourages Long Island consumers to seek out and ask for safer alternatives to chemicals to protect themselves from mosquitoes.

Why are Mosquitoes a Health Issue?

Mosquitoes can be more than just a nuisance. Several common species (such as Culex and Aedes) can carry the West Nile Virus, Eastern Equine Encephalitis and other diseases that impact humans. West Nile Virus can produce mild flu-like symptoms or more serious manifestations that can be fatal. West Nile Virus first appeared on Long Island in 1999. It has since become endemic across the U.S., causing 1,131 fatalities in a decade.

Here on Long Island, mosquitoes are a perennial problem. They breed in pools of standing water, and populations can increase dramatically after consistent rains like those our region has experienced this summer. Mos-

quitoes can live from two weeks to several months, and only need a small puddle to breed several hundred larvae. Their eggs hatch approximately five days after they are laid, so if water is left standing longer than that it can provide a breeding ground for multiple generations of mosquitoes. Female mosquitoes seek blood to fuel their egg production.

Some mosquito species fly only a few hundred feet from where they breed while others can fly for miles. Given such a large area of impact we must protect ourselves through preventative measures and repellents.

This report includes information about safer ways to protect yourself and your family from mosquitoes.



Take Action

Many County governments and the Center for Disease Control (CDC) recommend the following:

- Remove standing water from children's toys stored outdoors, flower pots, garbage cans, old tires, or anything that collects water.
- Make sure gutters drain properly and keep gutters free of debris.
- Keep swimming pools chlorinated and covers free of stagnant water.
- Install window and door screens and keep in good repair.
- Wear long sleeves, pants, and mosquito repellent (always follow directions) when outdoors especially at dusk and dawn when mosquitoes are particularly active.

The Sustainability Institute also recommends :

Reporting derelict swimming pools especially those with dirty water (such as those on foreclosed properties) to the County:

Nassau County Department of Public Works 516-572-1166 or Health Department Mosquito Surveillance 516-572-1211,

Suffolk County Mosquito Control (631) 852-4270.

Homeowners with backyard ponds should keep water aerated and moving, stock pond with fish that eat mosquito larvae, and construct ponds with steep walls giving less shelter to larvae.

Choose natural repellents that are safer for yourself and your family as detailed within this report.

Recommended Repellent



The Center for Disease Control (CDC) has recommended a bio-chemical

product, oil of the Lemon Eucalyptus tree (*Eucalyptus Citriodora*) as a mosquito repellent to help avoid bites of disease carrying mosquitoes.

According to the Environmental Protection Agency (EPA):

Eucalyptus oil is an extract from the leaves and twigs of *Eucalyptus Citriodora* also known as *Corymbia Citriodora*. The pesticide products using oil of lemon eucalyptus were registered in 2000 to repel mosquitoes and deer ticks.

There are several products now registered both as lotion and spray formulations. As with most plant oils, no adverse effects to humans are expected from the use of oil of lemon eucalyptus products when label directions are followed.

Products contain a range of 30 to 40 percent of the active ingredient.

There are non-toxic alternatives for personal repellents.



Availability of Lemon Eucalyptus: Our Survey of Local Stores

In light of the growing interest in non-toxic mosquito repellents, especially among parents of young children, The Sustainability Institute at Molloy College researched the availability of Lemon Eucalyptus personal repellents at Long Island retail stores (see results on back page).

The product availability survey found three different brands of personal repellents that contain the active ingredient recommended by the CDC. Two of the products can be found at sporting goods and department stores that sell chemical pesticides. They are: Repel® Lemon Eucalyptus and Cutter® Lemon Eucalyptus.

The third repellent is found primarily at health food stores. It is: *Kiss My Face*® Swy Flotter. The cost of these items ranges from \$6 to \$10 for a 4 oz spray bottle.

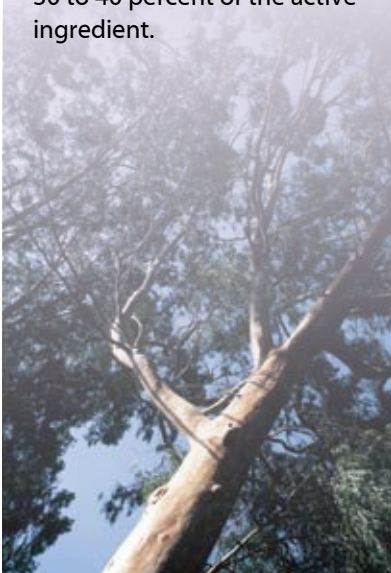
The good news is that the products are available if you know what to search for and where to look. However, the bad news is that the availability of the products is inconsistent and many people may discover that the natural repellents are a challenge to find. Fortunately, these products are also available on the internet at well-known sites such as Amazon.com.

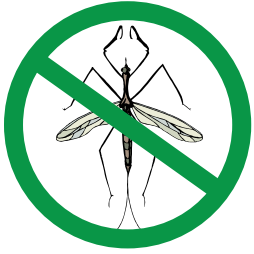
The websites for Repel and Cutter do not sell the products and instead send people to a list of chain stores, which our survey found, often don't carry the products.

Our survey of more than 50 Long Island stores found that either the Repel® or Cutter® Lemon Eucalyptus product was available at most Target stores, that were likely to carry the products, but only a few Walmart and Ace Hardware stores on Long Island actually carry the products despite both chains being listed on manufacturers' websites as selling the products. Some health food stores sell *Kiss My Face*® Swy Flotter. For the full results, see our website at si.molloy.edu.

As informed consumers, Long Islanders can use our dollars to increase supply and placement of these products by asking store managers to stock their shelves with these less toxic products.

Note: there are other alternatives available at health food stores that are often made with citronella and other essential oils such as geraniol. These may also have some repellent effectiveness but since the CDC does not recommend them, the Sustainability Institute at Molloy College did not review their availability.





Keep Backyards Mosquito-Free Naturally



No one wants uninvited guests in their yard - especially mosquitoes. Your yard should be your sanctuary, where your children play and your pets romp. But, how can you keep your yard chemical free and non-toxic while eliminating mosquitoes?

One alternative is Garlic Barrier® and Mosquito Barrier® produced by Garlic Research Labs in California. These products have been proven effective in several tests including one by the Division of Malaria Control in Kenya, which showed that Mosquito Barrier is effective against both Anopheles and Culex adult mosquitoes.

The staff of the Sustainability

Institute have, for several years, recommended the use of garlic juice as a way to rid yards of mosquitoes so that people can enjoy backyard barbecues and other activities. This recommendation was based on efficacy study results and positive feedback from many Long Islanders who found garlic juice very effective.

Two products we recommend are Garlic Barrier® and Mosquito Barrier® (see below), which can be difficult to find at local stores, however it is worth the effort to find them. They are easy to apply, non-toxic and effective.

The application process requires a basic pump sprayer (two common brands are Hudson and Solo) or hose-



HUDSON AND SOLO PUMP TYPE SPRAYERS

end sprayer. The product should be sprayed onto both sides of the leaves on all types of trees and bushes in the area being treated. Particular attention should be given to greenery around the perimeter of the property.

The treatment should last for about two weeks, but remember that the more often it rains the more frequently you will need to re-apply the treatment.

If you have an event planned, applying the product a few days before should provide the best results.

It is very common for people to ask if the yard will smell like garlic. Generally, humans only notice the smell for a few hours after application. Mosquitoes, however, have a very powerful sense of smell and find it overpowering, which causes them head in another direction.



There are non-toxic alternatives for repelling mosquitoes from the yard.



Garlic Barrier® and/or Mosquito Barrier® are available at:

- Greener Country in Jericho, NY (516-470-1881)
- Marders Nursery in Bridgehampton, NY (631-537-3700)
- Professional Tree Surgeon Supply in Lindenhurst, NY (631-957-0301)
- Sag Harbor Garden Center in Sag Harbor (631-725-3345)
- Olsen's Nursery in Nesconset (631-265-8093)
- Online through www.gemplers.com (800-382-8473), or www.extremelygreen.com (781-953-4604)

Other garlic products for yards are available:

- Mosquito Beater Natural Granules, by Bonide (They also offer a liquid form that does not contain garlic)
- Mosquito Shield, by Gro-Well
- Dr. T's Mosquito & Gnat Scat Granules, by Woodstream



**Stores that carry
Cutter® or Repel®
Lemon Eucalyptus
Products:**

TARGET

Farmingdale
Copiague
Levittown
Bay Shore
Valley Stream
Riverhead
Commack South
South Setauket
Medford

*(Out of 13 Target stores surveyed
9 had the products)*

ACE HARDWARE

Bellmore
Rockville Centre
Port Washington
Nesconset

*(Out of 18 Ace Hardware stores
surveyed 4 had the products)*

WALMART

Valley Stream
Centerach

*(Out of 11 Walmart stores
surveyed 2 had the products)*



Other Safe Ways to Control Mosquitoes For Large Yards or Parks

The Mosquito Magnet®

The Mosquito Magnet® is a patented device that works by releasing a continuous stream of carbon dioxide (CO2) to draw mosquitoes to the trap. With patented "Counterflow™" technology, mosquitoes are vacuumed into a net where they dehydrate and die. The device can also be used with scientifically proven attractant scents such as octenol for added efficacy.

See www.mosquitomagnet.com/advice/how-it-works/how-it-works-independent-testing.



The Rush Hampton Mosquito Catcher®

We have gotten very positive feedback about the Rush Hampton Mosquito Catcher from some trusted sources. The catcher is an electric device that does not use propane. Therefore, it does not release any additional CO2 into the atmosphere.

This product can be bought online and at Essco stores.



**The Sustainability
Institute was created to
catalyze Long Island to
become a national leader
in developing, promot-
ing, and implementing
sustainable solutions
to environmental and
quality-of-life challenges.**

**For further
information please call
516.678.5000 ext. 7562**

Some organic landscapers provide professional applications of garlic juice or other natural repellents. Please check with your landscaper, or visit our website for a list at si.molloy.edu