



## Mosquitoes and Insect Repellents

With warmer weather comes camping trips, hiking adventures, picnicking by the lake, and those little mosquitoes that go buzzing about. Mosquito bites may be more than just a nuisance; a bite can potentially be serious. This article will inform you about the possible diseases and germs that mosquitoes can transport, as well as the chemicals you may be using in your mosquito repellent.

### DISEASES AND GERMS

**West Nile Virus:** (WNV) has made quite a hit in the news media. This is because it spread from New York all the way to Florida over the past few summers. The illness is spread by the bite of an infected mosquito. The mosquito becomes infected when it feeds on a bird or mammal that has the virus already. West Nile Virus has killed 188 people and there have been 3391 confirmed human cases of the disease, as of October 25th, 2002, according to the Centers of Disease Control (CDC). Less than one percent of humans that are bitten by an infected mosquito will actually develop symptoms of encephalitis (an inflammation of the brain). Nevertheless, it is important to reduce your chances of being bitten by an infected mosquito especially in high-risk areas (i.e. Southern states, lakes or heavily wooded areas). (*CDC. West Nile Virus Activity, September, 2001/49 (36); 820-2*)

**La Crosse Encephalitis:** (LAC) encephalitis was discovered in La Crosse, Wisconsin in 1963. Since then, the virus has been identified in several Midwestern and Mid-Atlantic states (Minnesota, Wisconsin, Iowa, Illinois, Indiana, West Virginia, Virginia, North Carolina and Ohio). During an average year, about 75 cases of LAC encephalitis are reported to the CDC. Most cases of LAC encephalitis occur in children under 16 years of age.

**St. Louis Encephalitis:** (SLE) is the most common mosquito-transmitted human pathogen in the U.S. While periodic SLE epidemics have occurred only in the Midwest and Southeast, SLE virus is distributed throughout the lower 48 states. Since 1964, there have been 4,437 confirmed cases of SLE with an average of 193 cases per year. Illness ranges in severity from a simple febrile headache to meningoencephalitis, with an overall case-fatality ratio of 5-15 %.

### **If Traveling Outside Of The Country, Be Aware Of:**

**Dengue Fever:** mainly found in Southeast Asia and Africa, some cases have been reported in North America.

**Malaria:** found all over Africa, with the largest outbreaks in Angola, Tanzania and Uganda.

**Rift Valley Fever:** found in regions of eastern and southern Africa where sheep and cattle are raised.

**Yellow Fever:** discovered in Africa and South America.

**Heartworm Disease** occurs in dogs and cats wherever and whenever mosquitoes are found. Heartworm disease is caused by a parasite named *Dirofilaria immitis*. In their immature, microscopic stage, the heartworms are carried by mosquitoes. They are injected into your pet while the mosquito is feeding and migrate through the body, eventually reaching the heart, lungs, and connecting blood vessels. In approximately six months, they grow to become adults as long as 14 inches in length. They reproduce, and their offspring called microfilariae circulate in the bloodstream. At this point they can be spread to another animal by a mosquito bite.

*(Information and Statistics were taken from the Center for Disease Control and Prevention. For more information about these diseases and the updated number of outbreaks around the world, visit [www.CDC.gov](http://www.CDC.gov).)*

### THE HARMFUL INGREDIENTS IN INSECT REPELLENT

Concern about the ingredients used in most insect repellents is reasonable, given what we know about the adverse affects of chemicals in many everyday products.

**DEET** (N-diethyl-m-toluamide) is the most common and effective ingredient in commercial mosquito repellents. DEET was developed by the U.S. Department of Agriculture, was patented by the Army in 1946, and became available to the general public in 1957. It has been the subject of many studies over the years looking for indications of toxicity or other problems. In a few cases, exposure to high levels of DEET has been reported to be toxic to the brain. Understandably, that's made some people leery of using it. It is recommended that children only use up to a maximum of 10% DEET. (*August 2000, [www.webMD.com](http://www.webMD.com)*) Our response is, "why use it at all?"

**Permethrin** is another ingredient you may find in some insect repellents. This insecticide causes nervous system toxicity that leads to the death of the mosquito. There are warnings on permethrin products to only apply to clothing and not directly to the skin. This really should be a warning to consider not using it at all. With heavy exposure to DEET and other insecticides, people may experience memory loss, headache, weakness, fatigue, muscle and joint pain, tremors and shortness of breath. These symptoms may not be evident until months or even years after exposure. The most severe damage occurs when DEET and Permethrin are used together for frequent periods of time.

## SAFE ALTERNATIVES

There is a promising natural product made from the oils of soybeans, geraniums, and coconuts, and used successfully in Europe for many years. It is marketed in the United States under the brand name Bite Blocker® and has been shown to prevent mosquito bites just as well, and for just as long, as DEET. Bite Blocker® is a topical, all-natural mosquito and black fly "DEET-FREE" insect repellent which is sweat-proof, **child-safe**, and gives 3-8 hours of protection. It is non-toxic, non-flammable, and won't harm plastics or the environment. Backed by a patented Swiss formula, Bite Blocker® complies with EPA regulations. It is recommended by the New England Journal of Medicine, the United States Dept. of Agriculture and the Center for Disease Control and Prevention. The USDA found Bite Blocker® to be the most effective natural-based insect repellent and as effective as 15% DEET products. The other leading natural product, citronella oil, has a comparatively short-lived and modest effect.

## Q and A

### What about Avon's "Skin-so-soft"?

*Although Skin-so-soft is a mild insect repellent, it only provides 40 minutes of protection from bites. When researchers at the University of Guelph in Ontario, Canada, compared the effects of Bite Blocker® and Avon's Skin-So-Soft they found that the people who used Bite Blocker® got by far the fewest number of bites. (Frandin, M.S. Mosquitoes and Repellents: A Clinician's Guide. Annals of Internal Medicine, June 1998)*

### Do citronella candles help keep mosquitoes away from the house?

*Citronella candles decrease bites by 42% in the people sitting directly next to them. Regular candles decrease bites by 23%. The mosquito is drawn to the light more than anything, but it does help. Just be sure to blow them out before going inside.*

### Should I just get a bug zapper or an ultrasonic device for my yard?

*Electrical bug zappers do not work against mosquitoes and typically kill off your beneficial insects. Ultrasonic devices have no value in reducing mosquito bites.*

## HELPFUL TIPS

- If you are prone to mosquito bites, avoid spending a lot of time outdoors between dusk and dawn when mosquitoes are most active.
- When you are outdoors cover up as much of your body with clothing as possible and re-apply a non-toxic repellent every 3-4 hours or as recommended on the bottle.
- Light colored clothing is less likely to attract mosquitoes.
- Make sure screen windows and doors are in good repair.
- Empty standing water from any sources around your yard (i.e. birdbaths, buckets, tires).
- Clean out roof gutters to prevent water collecting in them.

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