



Avoiding and Repelling Mosquitoes and Other Biting Arthropods¹

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Do Mosquitoes And Biting Arthropods Like You?

The reasons mosquitoes are attracted to humans are complex. We know for certain that the carbon dioxide you exhale is an important attractant for all biting arthropods. There are other chemicals in your breath and on the surface of the skin (such as the lactic acid produced by muscle movement) that also attract biting arthropods.

The color, texture, temperature and moisture content of skin and clothing may also be important. Certain soaps, perfumes, lotions, shampoos and other personal care products also have chemicals in them that may attract biting arthropods.

Avoiding Mosquitoes

An obvious, although not always acceptable, way to avoid mosquitoes is to stay indoors during periods of peak mosquito biting activity, usually dusk to dawn. This is especially good advice if there is a vector-borne disease outbreak. When outdoor activity is desired or required, mosquitoes can be avoided by staying away from calm, shaded, and humid areas. Mosquitoes are less likely to bite in open, sunny, and

breezy areas. If bothered by a few mosquitoes, you can often protect yourself by wearing long pants and a long-sleeved shirt. The more skin you cover, the fewer bites you will receive. Light colored clothes are less attractive, and loose fitting clothes make it more difficult for insects to bite.

Repelling Mosquitoes

The best of the lot is DEET. It has long been known that the most effective insect repellents are those that contain DEET. DEET is the abbreviation for the chemical N,N-diethyl-meta-toluamide. DEET has been sold in the United States since 1956 and is used by 50-100 million people each year. It repels mosquitoes, biting midges, fleas, ticks, horse flies, deer flies and chiggers. Repellents containing DEET are available as pump sprays, aerosols, lotions, creams, soaps and sticks. There are at least 40 products on the market that contain from 5% to 95% DEET. Products with more than 25% DEET are available, most often through camping and outdoor supply stores. What product do you choose, and why? If a little DEET is good; is a lot of DEET better? Not necessarily. In tests done by the Army, repellents with 30-40% DEET worked twice as well as repellents with 75% DEET.

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Selecting A Repellent With DEET

Read the label! Determine the amount (percent) of DEET the product contains. The label will not usually read DEET, instead it will list N,N-diethyl-meta- toluamide under the ACTIVE INGREDIENTS. The concentration of DEET needed depends on the biting arthropod population and the length of time protection is desired. Just as some people are more attractive to mosquitoes than others; some people need higher concentrations of DEET, or need to apply it more often. Products with 6% to 25% DEET are usually sufficient for 2 to 6 hours of protection. Use the lowest concentration that is effective for you and reapply as needed.

Next, check to see if the product is a micro-encapsulated formulation, in other words, slow-release and in general, longer lasting. Finally, compare the amount of product (ounces) and type of application: lotion, spray, or stick. Lotions provide the most even coverage; sprays are more convenient but require greater care in applying. Before using any product, READ THE ENTIRE LABEL AND FOLLOW INSTRUCTIONS.

Side Effects Of DEET

While DEET is the most effective repellent, high concentrations may feel unpleasantly oily and can melt plastic and paint finishes. It is safe on nylon, cotton and wool; it can, however, damage rayon, acetate and spandex. Test an inside seam of polyester/cotton blends to see if DEET affects them. DEET can also irritate eyes and sensitive skin and will sometimes cause skin to dry. Some people are allergic to DEET.

To minimize adverse reactions to DEET, 1) apply repellent sparingly according to label instructions, 2) apply repellent to clothing to reduce DEET absorption through the skin, 3) avoid continuous use of products with DEET concentrations over 25%, especially on children, 4) do not inhale or ingest repellents or get them into the eyes or on wounds or irritated skin, 5) avoid applying repellent to children's hands, which invariably end up in their mouth, 6) never apply a repellent to an infant.

What If I Am Sensitive Or Allergic To DEET?

There are many topical repellents that do not contain DEET. Products with citronella (an oil extract from a lemon-scented grass) or eucalyptus can be purchased, frequently in health-food or camping/outdoor stores. Most non-DEET products need to be reapplied frequently. All of these products are less effective than DEET-based repellents of equal concentration.

What If I Don't Like To Wear Repellent?

When it is impractical or undesirable to wear repellent, it becomes more difficult to avoid arthropod bites. There are a variety of repellent plants, candles, coils and area repellents (crystals that you spread on the ground) that contain citronella, pyrethrums (extract of chrysanthemum) or a similar synthetic compound, now on the market. These have limited effectiveness. While they SHOULD NOT BE USED INDOORS, they may help in screened-in porches, around pools or patios where there is little air movement.

No-No's

There are some products on the market that we know are not effective as repellents or mosquito control devices. The popular and expensive bug zappers are not effective for controlling biting insects. Yes, they kill some mosquitoes, but they kill many more beneficial insects, often in huge numbers. The light of the zapper attracts more mosquitoes into a yard than would be present if the zapper was absent.

Birds and bats, while desirable for other reasons, will not reduce the number of mosquitoes in your yard. Even the Purple Martin Conservation Association rejects the idea that martins control mosquitoes
<http://www.purplemartin.org/update/MosCont.html>

There is no scientific evidence that eating garlic, vitamins, onions or any other food will make you repellent to mosquitoes. The attractant level of each individual to biting arthropods is based on a complex interaction of many chemical and visual signals.

Certain foods in certain individuals may effect their individual attractiveness to biting arthropods, for better or for worse. If it works for you, or you think it works for you, do it.