

LivingWithBugs Guide

identification, life cycles and management

Insect Repellents

updated: 4/06

Deet (N,N-diethyl-3-methylbenzamide) is still the most effective and widely used mosquito repellent. It is a broad-spectrum repellent effective against mosquitoes, biting flies, chiggers, fleas, and ticks.

DEET is an oily liquid generally formulated as a lotion, creme, gel, aerosol or pump spray in concentrations of 5% to 100%.

As a general rule, higher concentrations of DEET provide longer-lasting protection but also increase the risk of overexposure especially in children. Increasing the concentration past about 50% provides only a small additional effect. Extended-release formulations of DEET have made it possible to reduce the repellent concentration without sacrificing duration of activity. DEET-based repellents that are used on children (12 years old or younger) should contain about 10% DEET, or less.

DEET-containing repellents may be applied directly to skin or clothing, window screens, insect nets, tents, or sleeping bags. They can damage plastics (for example eyeglass frames), rayon, spandex, other synthetic fabrics, leather, and painted or varnished surfaces. DEET does not

damage natural fibers, such as cotton or wool, and has no effect on nylon.

DEET has an excellent safety profile but there are reports of potential DEET toxicity. The reports of greatest concern involve cases of encephalopathy in children younger than 8 years of age. In many of these cases there was a history of long-term, excessive, or inappropriate use of DEET repellents, and

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the details of exposure are poorly documented. Careful product choice and application of the repellent according to product directions will greatly reduce the possibility of

toxicity. Conservative use of low-concentration DEET products is most appropriate for children.

Other Repellents

Avon Skin-So-Soft bath oil has received considerable media attention. However, when tested under laboratory conditions this product was significantly less effective than even low concentration DEET-based products.

Some essential oils have been reported to have repellent activity. These include citronella, cedar, verbena, pennyroyal, geranium, lavender, pine, cajuput, cinnamon, rosemary, basil, thyme, allspice, garlic, and peppermint. Unlike synthetic insect repellents, plant-derived repellents have been relatively poorly studied. When tested, most of these essential oils tended to give short-lasting protection,

usually less than 2 hours.

Citronella is the active ingredient most commonly found in “natural” or “herbal” insect repellents marketed in the US. Studies show that citronella can be an effective repellent, but it provides shorter complete protection time than most DEET-based products. Frequent reapplication of the repellent can partially compensate for this. Citronella candles are only marginally more effective than burning ordinary candles.

Bite Blocker (www.homs.com) is a plant-based repellent. Bite Blocker combines soybean oil, geranium oil, and coconut oil. Studies conducted in Canada, showed that this product gave more than 97% protection from bites for up to 3.5 hours after application.

Permethrin is a synthetic pyrethroid. It does not repel insects but works as a contact insecticide, causing nervous system toxicity of the insect. It is effective against mosquitoes, flies, ticks, and chiggers. Permethrin has low toxicity in mammals but should only be applied to clothing or other fabrics (such as tent walls or mosquito nets), not to skin. Sprays are nonstaining, nearly odorless, and resistant to degradation by heat or sun and maintains its potency for at least 2 weeks, even after several launderings. The combination of permethrin-treated clothing and skin application of a DEET-based repellent creates a formidable barrier against mosquito bites.

See www.LivingWithBugs.com for additional information.