

# INSECT REPELLENTS



People who work or play outdoors are often attacked by numerous species of insects, ticks and mites. Mosquitoes, ticks, chiggers, fleas, biting flies and gnats are just some of the creatures that irritate and annoy people and disrupt their normal activities. These creatures are not just nuisances. Some may inflict painful bites, cause rashes or lesions, or, in some cases, transmit important diseases.

One way in which you might protect yourself is by staying inside during times of peak insect activity. For example, most mosquitoes are often more active during the early morning or late evening. Some horse flies are more active during the bright, sunny hours of the day.

Wearing long pants and long-sleeved shirts will protect you from insects by reducing the exposed areas of the body. Louisiana's hot, humid summers can make outdoor conditions unbearable, however, if you dress too warmly.

If you choose or are required to be outside when insects are active, use a repellent. Repellents are chemical substances that protect people from insect attack by making the body unattractive or offensive to insects. A repellent does not have to kill insects to be effective, although it may. Repellents are usually synthesized chemicals, although some are natural, botanical products.

Commercial repellents come in a variety of forms such as sprays, liquids, creams, lotions, sticks, wristbands and pre-moistened towelettes. Some repellents are applied to exposed skin areas, and others only to clothing.

The effectiveness of a repellent product depends on the concentration and formulation of the active ingredient, the target pest, ambient temperature, the amount of physical activity/perspiration, any water exposure, abrasive removal and other factors.

## Repellents Recommended by the U.S. Centers for Disease Control and Prevention for Application to Skin

### A. DEET

DEET is an abbreviated name for diethyltoluamide. It has been registered for use by the general public since 1957. It is the standard by which all other repellents are compared. DEET is available in formulations ranging from 5% to 100%, with the higher concentrations giving longer-lasting control. Concentrations in the range of 10% to 35% are normally adequate for casual use, but 10%-15% concentrations are normally recommended for children. Several hours of protection can be expected with most formulations in most situations. Special extended, controlled release formulations can provide from six to 12 hours of protection. Some of the commercial repellents that contain DEET include OFF, Sawyer, Cutter, Repel and Ben's Wilderness. Each major brand may have several formulations. Commercial products usually do not say "DEET" on the label. Instead they list the chemical name, "N,N-diethyl-meta-toluamide," under the active ingredients.

### B. Picardin (KBR 3023)

This is a recently labeled repellent in the United States. It is safe with long-lasting repellency to biting flies, mosquitoes, chiggers, ticks and fleas. Recent scientific studies indicate that it is comparable to DEET for mosquito repellency. Commercial repellents with picardin include Autan and Cutter Advanced.

## Alternative Repellents for Application to Skin

### A. p-Menthane-3,8-diol

This is another recently labeled repellent. The chemical occurs naturally in eucalyptus plants, but it is chemically synthesized for commercial formulation. The chemical structure is similar to that of menthol. Commercial products include OFF Botanical and Repel Lemon Eucalyptus. Repellency claims include mosquitoes, biting flies and gnats. Recent research indicates that it is effective on mosquitoes. This repellent, however, has not been as thoroughly investigated as DEET, and it does not have the lengthy use history that DEET has.

### B. Bite Blocker

This plant-based repellent uses soybean oil as one of the active ingredients. The product is relatively new in the United States, but the limited research available indicates that it is effective on mosquitoes. This repellent, however, has not been as thoroughly investigated as DEET, and it does not have the lengthy use history that DEET has.

### C. IR3535

This biochemical was recently labeled for use as a repellent. It has been used safely in Europe for the past 20 years. Repellent activity includes mosquitoes, deer ticks, body lice and biting flies. One commercial repellent with IR3535 is Avon Bug Guard Plus.

### D. Citronella

This plant extract serves as a natural or herbal repellent. Citronella products usually provide moderate, short-term protection. They can be effective, but they provide shorter complete

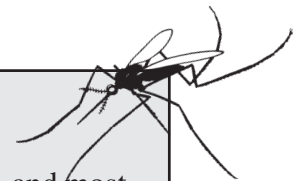
protection time for mosquitoes than DEET and most of the other repellents listed above. Citronella products provide a safe alternative to people who may be allergic to DEET or to those who prefer natural, organic repellents. Numerous commercial repellents contain citronella as the active ingredient.

## General Precautions for Repellents Applied to the Skin

1. Always read and follow the label directions. The label is the law for any commercial repellent.
2. Do not apply to the eyes or mouth. When using a spray, do not spray the face area. Spray your hands and then rub it on the face and neck area.
3. Do not apply to cuts, wounds, abrasions and sunburned or irritated skin.
4. Do not apply to infants. Refer to the product label for the minimum age for use on children.
5. Do not apply to the hands of young children, because they will often rub their eyes and put their fingers in their mouths.
6. Apply only to the exposed skin surfaces, and apply only enough to cover the skin with a light layer. Do not apply under clothing.
7. Frequent application and saturated use are not necessary for effectiveness. Reapply when the presence of insects indicates the need for additional protection.
8. After returning indoors, wash the repellent off with soap and water or bathe.
9. If a rash or bad reaction occurs, wash off the repellent, discontinue usage and refer the problem to a physician.

## Special Precautions for the Use of DEET

1. DEET has been used safely by millions of people since its introduction, and most problems have resulted from improper use as described above. There have been, however, a few cases of suspected reaction to this chemical. Individual sensitivity varies, and anyone who suspects a reaction to DEET should consult a physician.
2. People should be aware that applying DEET, together with a sunscreen product, will reduce the sun protection factor of the sun screen. However, the use of a product formulated with both DEET and a sunscreen is currently NOT recommended. This is because the sunscreen generally requires more frequent application than the DEET.
3. DEET can damage plastics, rayon, spandex, other synthetic fibers and leather. Avoid these materials when applying the repellent.



## Other Precautions

1. Never use pet flea and tick collars as repellent bands around the wrist and ankles or in any other manner. These products contain chemicals that can be toxic or result in serious skin reactions.
2. In recent years regular Avon Skin-So-Soft lotion has been a popular “folk medicine” for insect repellency. Although this product may have some repellent activity, laboratory studies have shown that the protection is very short-lived.

## Repellents Registered with EPA for Application to Clothing

### 1. Permethrin:

This chemical can be applied to outer clothing, shoes, camping gear, etc., but permethrin repellents CANNOT be applied to the skin. Also, do not apply permethrin to underwear and T-shirts. Permethrin is actually an insecticide that kills and/or repels insects, ticks and mites. The material has rapid “knock-down” activity, but it has low mammalian toxicity and is poorly absorbed by human skin. Permethrin also has good residual effectiveness and has been reported to provide protection for up to two weeks in clothing. Commercial formulations of permethrin that can be used in this manner include Permanone, Permethrin Tick Repellent, Duranon and Cutter Outdoorsman Gear Guard. Carefully follow label instructions when applying these products to clothing.

### 2. DEET:

Some DEET products can be applied to clothing and camping gear. DEET does not damage natural fibers, such as wool and cotton, and it is also safe on nylon. However, DEET can damage other fabrics as listed in “Special Precautions for the Use of DEET.”

The use of a good skin repellent, such as DEET, and a permethrin clothing repellent may be necessary in situations where people are exposed to intense insect pressure for an extended period.



## References

U.S. Centers for Disease Control and Prevention web page <http://www.cdc.gov/ncidod/dvbid/westnile/RepellentUpdates.htm>

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## Author

Dr. Jack Baldwin, Professor (Entomology)

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Pub. 2871 (online only) 10/05 Rev.

Issued in furtherance of Cooperative Extension work, Acts of Congress of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. The Louisiana Cooperative Extension Service provides equal opportunities in programs and employment.