



Use and Application of DEET Repellent¹

P. G. Koehler²

DEET or diethyltoluamide is an effective repellent of mosquitoes, gnats, ticks, mites, and blood-sucking flies. It has been used effectively for the past 45 years to prevent insect bites and disease transmission. Recently, DEET has been extensively used to protect humans from bites of arthropods that transmit Lyme disease and encephalitis. Along with the increased use of DEET, there is concern about the adverse effects of DEET on humans. For instance, six cases of DEET poisoning in small children have been reported after the repeated use or ingestion of DEET.

Selection of Products Containing DEET

DEET is formulated in products containing 5 to 100% DEET. Usually products containing 15 to 40% DEET work best for adults. Products containing no more than 8 to 10% DEET are recommended for children. In general, the higher percentages provide longer and better protection than those with lower percentages.

DEET usually provides 1 to 3 hours of protection in typical situations. When an individual is swimming or sweating extensively, protection will

be much less. Therefore, DEET must be reapplied, as needed, to provide continuing protection.

Application of DEET Products

DEET products are available as liquids, lotions, and aerosols. They should be applied as directed on the label. Before using any DEET product, read the entire label. Even if you have used the product before, read it again before application.

Liquids and lotions should be poured or squeezed directly onto the hands and spread evenly and completely on exposed skin in a thin layer. Contact with the eyes and lips should be avoided. Use just enough repellent to cover the exposed skin. Wipe or wash hands after completion of application.

Aerosols should be directed at the area to be treated from the appropriate distance, usually about 6 to 8 inches from the exposed skin. Do not apply aerosols directly to the face; first spray it onto hands. Then rub it onto the face and neck, avoiding contact with eyes and lips.

Reapply DEET formulations as necessary, but avoid overexposure. Frequent reapplication and saturation are unnecessary. Also, do not apply DEET to the hands of small children.

1. This document is ENY-260, one of a series of the Entomology and Nematology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Publication date: March 1994. Revised: September 2000. Please visit the EDIS Website at <http://edis.ifas.ufl.edu>. Additional information on these organisms, including many color photographs, is available at the Entomology and Nematology Department WWW site located at <http://www.ifas.ufl.edu/~entweb/entomolo.htm>.

2. P. G. Koehler, professor/extension entomologist, Entomology and Nematology Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611.

Only apply DEET formulations to exposed skin; do not apply to areas underneath clothing. Do not apply DEET formulations on or near plastics, acetate, rayon, Spandex, synthetic fabrics (other than nylon), furniture finishes, leather, watch crystals, and painted or varnished surfaces. Plastic glass frames and goggles should be protected from DEET applications. Car finishes and interiors also may be damaged by DEET. It will not damage nylon, cotton, or wool fabrics.

Precautionary Statements for DEET

DEET may cause eye injury or irritate mucous membranes. Therefore, do not apply to eyes or lips. Warning, it may also be harmful if swallowed. In rare cases, it can cause skin reaction. Do not apply to sunburned or damaged skin.

If DEET gets in eyes, flush with plenty of water. If eye irritation persists, get medical treatment. If swallowed, call a physician or contact a poison control center. If a child or adult reacts to the dermal application DEET, wash treated skin and call a doctor.

Many older DEET products contained an R-11 additive to enhance activity. Due to concerns about the additive, all current products do not contain it. Do not use DEET products that were manufactured prior to 1993 to avoid exposure to the additive.

Minimizing DEET Exposure

Due to the concern about the health effects of using DEET, DEET use and exposure should be minimized. The most obvious way to minimize use and exposure is to avoid bloodsucking arthropods. This may be accomplished by staying on walkways to avoid ticks and remaining indoors during early morning and evening hours when mosquitoes and gnats are most prevalent. Screening of doors and windows or use of mosquito netting will also avoid the use of DEET.

When exposure to bloodsucking arthropods is unavoidable, DEET use can be minimized by covering most of the body with clothing. Long sleeved shirts, buttoned collars, and long trousers will cover most of the body and protect skin from

insect attack. Therefore, only the face, neck, hands, and wrists must be treated with DEET repellent. Do not apply to sunburned or damaged skin. Removal of DEET from hands after application will also minimize exposure from wiping eyes or contacting food. Of course, keep DEET in its original container so it is not accidentally ingested.

After returning indoors, wash treated skin with soap and water or bathe. This is especially important when repellents are used repeatedly or on consecutive days.

DEET and Children

Three-fourths of all DEET poisonings occur with children under six years of age. Small children are more vulnerable because they are more likely to accidentally ingest DEET and have lower body weights. To prevent accidental poisoning of small children, store containers of DEET out of the reach of children.

Also, use common sense in the application of DEET to small children. Do not apply to the hands of children because they may rub their eyes or ingest DEET from their hands or fingers. Do not allow small children to apply the product. An adult should apply the product or closely supervise the application. Use DEET sparingly on small children.