

This fact sheet answers the most frequently asked health questions about DEET. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present. For more information, call the ATSDR Information Center at 1-888-422-8737.

HIGHLIGHTS: When used properly, products containing DEET repel insects. Using insect repellents containing DEET should not present a health concern if label directions are followed and proper precautions are taken. Use DEET sparingly, and only on intact, exposed skin. Wash skin with soap and water when you return indoors. Check the label to find the percentage of DEET in the product. The concentration indicates how long the product will be effective. It may be necessary to reapply the product.

What is DEET?

DEET is a chemical (N,N-diethyl-meta-toluamide) used as the active ingredient in many insect repellent products. DEET was developed by the U.S. Army in 1946 and was registered for use by the general public in 1957. It is now widely used, with approximately 30% of the U.S. population using DEET repellents each year. DEET products are currently available in a variety of forms: liquids, lotions, sprays, and even impregnated materials, such as wristbands. Formulations registered for direct application to human skin contain from 4% to 100% DEET. Approximately 230 products containing DEET are currently registered with the U.S. Environmental Protection Agency (EPA).

What does the DEET concentration mean?

The concentration of DEET in a product indicates how long the product will be effective. A higher concentration does not mean that the product will work better. It means that it will be effective for a longer period of time. For example, a product containing 10% or less DEET may last for 2 hours, whereas a product with a higher percentage may last twice as long. Therefore, products containing lower concentrations of DEET may need to be reapplied, depending on the length of time a person remains outdoors. Certain types of outdoor activities may require individuals to reapply

DEET. For example, DEET may be washed off the skin during swimming or during vigorous outdoor activities that produce excessive perspiration.

What is DEET used for?

DEET is used to repel biting insects and pests such as mosquitoes and ticks. DEET is designed for direct application to human skin to repel insects, rather than kill them.

What are potential health effects?

Using insect repellents containing DEET should not present a health concern if label directions are followed and proper precautions are taken. In rare cases, using DEET products may cause skin rashes. Some persons who used products containing a high concentration (e.g., 50% or 75%) of DEET or who were exposed to excessive amounts of DEET experienced rashes, blisters, and skin and mucous membrane irritation. In a few cases of overdose and misuse, brain effects (encephalopathy) and seizures occurred in children.

What are susceptible populations?

A susceptible population will exhibit a different or greater response to DEET than will most persons exposed to the same level. Reasons include genetic make-up, age, and health and nutritional status. Persons with preexisting

The ATSDR Internet address is <http://www.atsdr.cdc.gov>

chronic skin conditions such as acne, psoriasis, or a tendency to skin allergies (atopic predisposition), pregnant women, and young children (especially infants under the age of 2) may be more susceptible to the adverse health effects of DEET.

Are there special considerations for children and pregnant women?

As with all chemicals, it is important to avoid unnecessary exposure to children. Questions remain as to what amount of DEET is safe for children. A prudent approach for use on children is to use products containing 10% or less DEET, as recommended by the American Academy of Pediatrics. As with chemical exposure in general, pregnant women should try to avoid exposures to repellents when practical.

How do you use DEET products safely?

DO

- Read and follow all directions and precautions on the product label.
- Store DEET out of reach of children.
- Avoid applying repellent to children less than 2 years old.
- Avoid over-application of this product.
- Use just enough repellent to cover exposed skin and/or clothing.
- Wash treated skin with soap and water after returning indoors.
- Wash treated clothing before wearing it again.
- Spray on hands and rub on the face to apply to face.

DON'T

- Spray directly onto face.
- Apply over cuts, wounds, or irritated skin.
- Apply to hands or near eyes and mouth of young children.
- Allow young children to apply this product.
- Spray aerosol or pump products in enclosed areas.
- Use on children's bedding or bedclothes.

What do you do in the event of a potential reaction?

A small percentage of children and adults may be sensitive to chemicals such as DEET. If you suspect that you or your child is having an adverse reaction to this product, discontinue use of the product, wash treated skin, and call your local poison control center or physician for help. If you go to a doctor, take the repellent container with you.

What are the benefits of DEET?

The most significant benefit of DEET is its ability to repel potentially disease-carrying insects and ticks. The Centers for Disease Control and Prevention (CDC) recommends use of insect repellents containing DEET when you are outdoors.

Where can I get more information on insect repellents?

You can find information on insect repellents at

- The Environmental Protection Agency (EPA); phone 703-305-5017 or visit www.epa.gov/opp00001/citizens/deet.htm and www.epa.gov/pesticides/citizens/insectrtp.htm.
- The National Pesticide Information Center; phone 1-800-858-7378 or visit the web site <http://npic.orst.edu>.
- The American Academy of Pediatrics; phone 847-434-4000 or visit the web site at www.aap.org.
- The American College of Physicians website has the article "Mosquitoes and mosquito repellents: A clinician's guide" by Mark S. Fradin, MD. (Annals of Internal Medicine. June 1, 1998;128:931-940) at <http://www.acponline.org/journals/annals/01jun98/mosquito.htm>.

Where can I get more information? For more information you may contact the Agency for Toxic Substances and Disease Registry, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178.

