

A Parent's Guide to Insect Repellents



Mosquitoes, biting flies, and tick bites can make children miserable. While most children have only mild reactions to insect bites, some children can become very sick. Some insects carry dangerous germs such as West Nile virus, Lyme disease bacteria, and Rocky Mountain spotted fever bacteria.

One way to protect your child from biting insects is to use insect repellents. However, it's important that insect repellents are used safely and correctly.

Read on for more information from the American Academy of Pediatrics (AAP) about types of repellents, DEET, using repellents safely, and other ways to protect your child from insect bites. Also, read about West Nile virus, Lyme disease, and Rocky Mountain spotted fever.

Types of repellents

Insect repellents come in many forms, including aerosols, sprays, liquids, creams, and sticks. Some are made from chemicals and some have natural ingredients. (See "Available Repellents.")

Insect repellents prevent bites from biting insects but not stinging insects. Biting insects include mosquitoes, ticks, fleas, chiggers, and biting flies. Stinging insects include bees, hornets, and wasps.

NOTE: The following types of products are not effective repellents:

- Wristbands soaked in chemical repellents
- Garlic or vitamin B₁ taken by mouth
- Ultrasonic devices that give off sound waves designed to keep insects away
- Bird or bat houses
- Backyard bug zappers (Insects may actually be attracted to your yard.)

About DEET

DEET is a chemical used in insect repellents. The amount of DEET in insect repellents varies from product to product, so it's important to read the label of any product you use. The amount of DEET may range from less than 10% to more than 30%. DEET greater than 30% doesn't offer any additional protection.

Studies show that products with higher amounts of DEET protect people longer. For example, products with amounts around 10% may repel pests for about 2 hours, while products with amounts of about 24% last an average of 5 hours. But studies also show that products with amounts of DEET greater than 30% don't offer any extra protection.

The AAP recommends that repellents should contain *no more than 30% DEET* when used on children. Insect repellents also are not recommended for children younger than 2 months.

Tips for using repellents safely

Dos

- Read the label and follow all directions and precautions.
- Only apply insect repellents on the outside of your child's clothing and on exposed skin. Note: Permethrin-containing products should not be applied to skin.

- Spray repellents in open areas to avoid breathing them in.
- Use just enough repellent to cover your child's clothing and exposed skin. Using more doesn't make the repellent more effective. Avoid reapplying unless needed.
- Help apply insect repellent on young children. Supervise older children when using these products.
- Wash your children's skin with soap and water to remove any repellent when they return indoors, and wash their clothing before they wear it again.

Don'ts

- Never apply insect repellent to children younger than 2 months.
- Never spray insect repellent directly onto your child's face. Instead, spray a little on your hands first and then rub it on your child's face. Avoid the eyes and mouth.
- Do not spray insect repellent on cuts, wounds, or irritated skin.
- Do not use products that combine DEET with sunscreen. The DEET may make the sun protection factor (SPF) less effective. These products can overexpose your child to DEET because the sunscreen needs to be reapplied often.

Reactions to insect repellents

If you suspect that your child is having a reaction, such as a rash, to an insect repellent, stop using the product and wash your child's skin with soap and water. Then call Poison Help at 1-800-222-1222 or your child's doctor for help. If you go to your child's doctor's office, take the repellent container with you.

Other ways to protect your child from insect bites

While you can't prevent *all* insect bites, you can reduce the number your child receives by following these guidelines.

- Tell your child to avoid areas that attract flying insects, such as garbage cans, stagnant pools of water, and flowerbeds or orchards.
- Dress your child in long pants, a lightweight long-sleeved shirt, socks, and closed shoes when you know your child will be exposed to insects. A broad-brimmed hat can help to keep insects away from the face. Mosquito netting may be used over baby carriers or strollers in areas where your baby may be exposed to insects.
- Avoid dressing your child in clothing with bright colors or flowery prints because they seem to attract insects.
- Don't use scented soaps, perfumes, or hair sprays on your child because they may attract insects.
- Keep door and window screens in good repair.
- Check your child's skin at the end of the day if you live in an area where ticks are present and your child has been playing outdoors.
- Remember that the most effective repellent for ticks is permethrin. It should not be applied to skin but on your child's clothing.

Available Repellents

What's available	How well it works	How long it protects	Special precautions
Chemical repellents with DEET (N,N-diethyl-3-methylbenzamide)	Considered the best defense against biting insects.	About 2 to 5 hours depending on the concentration of DEET in the product.	Caution should be used when applying DEET to children (see "Tips for using repellents safely").
Picaridin	In April 2005 the Centers for Disease Control and Prevention (CDC) recommended other repellents that may work as well as DEET: repellents with picaridin and repellents with oil of lemon eucalyptus or 2% soybean oil. Currently these products have a duration of action that is comparable to that of about 10% DEET.	About 3 to 8 hours depending on the concentration.	Although these products are considered safe when used as recommended, long-term follow-up studies are not available. Also, more studies need to be done to see how well they repel ticks.
Repellents made from essential oils found in plants such as citronella, cedar, eucalyptus, and soybean		Usually less than 2 hours.	Allergic reactions are rare, but can occur when using repellents made from essential oils.
Chemical repellents with permethrin	These repellents kill ticks on contact.	When applied to clothing, it lasts even after several washings.	Should only be applied to clothing, not directly to skin. May be applied to outdoor equipment such as sleeping bags or tents.

Diseases spread by insects

Diseases spread by insects are a major cause of illness to children and adults worldwide. Following is information about West Nile virus, Lyme disease, and Rocky Mountain spotted fever.

West Nile virus. In the United States, West Nile virus and outbreaks of various types of encephalitis get plenty of media coverage. These illnesses are carried by mosquitoes and transmitted to humans when the insects bite.

Symptoms

- Most cases of West Nile virus are mild, with people showing no symptoms or having a fever, headache, and body aches.
- Less commonly and occurring mostly in older adults, the nervous system is affected and symptoms may include a severe headache, high fever, stiff neck, confusion, seizures, sensitivity to light, muscle weakness, and loss of consciousness.

Lyme disease. In some areas of the United States, Lyme disease is an important health concern. Deer ticks are one of the insects that spread the disease. Deer ticks are tiny, black-brown, biting insects about the size of a poppy seed.

Symptoms

- The first and most obvious symptom of Lyme disease is a rash. It is a red spot surrounded by a light red ring that looks like a target and typically enlarges day by day.
- In addition to the ring-like rash, some children have additional symptoms such as fever, fatigue, headache, aches and pain in muscles or joints, and swollen glands.
- Occasionally, children develop a droop of an eyelid and/or the corner of the mouth (facial nerve palsy) or severe headache, vomiting, and stiff neck (meningitis). Weeks to months later (without antibiotic treatment), some children develop swelling of the knee or other joints (arthritis).

Rocky Mountain spotted fever. Despite the name, Rocky Mountain spotted fever currently occurs mostly in other regions of the United States, including North and South Carolina, Oklahoma, and Tennessee. Ticks spread this bacterial infection.

Symptoms

- Fever
- Severe headache
- Confusion
- Nausea
- Vomiting
- Rash—Most also get a rash that starts as flat red spots that become purple over time. It begins on the ankles and wrists and spreads to the palms and soles and then to the arms and legs and the trunk.

If your child has been bitten by an insect and shows any of the above symptoms of West Nile virus infection, Lyme disease, or Rocky Mountain spotted fever, call your child's doctor.

Remember

Children need and love to be outdoors. The chance of your children becoming infected with *West Nile virus*, *Lyme disease*, or *Rocky Mountain spotted fever* is quite low. The best way to protect yourself and your children is to follow the guidelines in this publication for using repellents safely, avoiding areas where there may be a lot of biting insects, and checking yourself and your child for ticks after outdoor activity. If you have any concerns about insect bites, talk with your child's doctor.

The information contained in this publication should not be used as a substitute for the medical care and advice of your pediatrician. There may be variations in treatment that your pediatrician may recommend based on individual facts and circumstances.

