

Why should I use insect repellent?

Insect repellents can help reduce the exposure to mosquito and tick bites that may cause serious illness and even death. Using insect repellent allows you to continue to play and work outdoors with a reduced risk of insect bites.

How does mosquito repellent work?

Repellents contain an active ingredient which repels mosquitoes, making the person unattractive for feeding. It does not kill mosquitoes. Repellents are effective only at short distances from the treated surface, so you may still see mosquitoes flying nearby. As long as you are not getting bitten, there is no reason to apply more.

What time of day should I wear mosquito repellent?

Many mosquitoes that carry disease especially like to feed during the evening and early morning hours. If you are outdoors during these times of day, it is important to apply repellent. In many parts of the country, there are mosquitoes that also bite during the day, and these mosquitoes have also been found to carry some diseases. The safest decision is to apply repellent whenever you are outdoors.

What are effective active ingredients in insect repellent?

The most effective repellents contain active ingredients of DEET or Picaridin (KBR 3020), which repel pests like mosquitoes and ticks. Oil of eucalyptus (PMD), a plant based repellent, has been shown to provide similar protection to lower concentrations of DEET. Recently, IR3535 was approved as an effective active ingredient. Repellents containing these ingredients have been tested against a variety of biting insects and have been shown to be very effective.

How should you choose an insect repellent?

When choosing repellent, you should consider how long you will be outdoors, the time of day, the temperature, the type of activity that you will be doing, the location, and the type of insects you wish to repel. There are many products available that provide protection against insect bites. You can use the following website to find a repellent that is right for you: <http://cfpub.epa.gov/oppref/insect/index.cfm#searchform>. Regardless of what product is used, if you start getting bitten by insects you should reapply the repellent according to the label instructions, try a different product, or, if possible, leave the area with biting insects.

How does the percentage of active ingredient in a product relate to the amount of protection it gives?

In general, the more active ingredient a product contains the longer it provides protection from insects. The concentration of different active ingredients cannot be directly compared (that is, 10% concentration of one product doesn't mean it works exactly the same as 10% concentration of another product). Products with <10% active ingredient may offer only limited protection, often 1–2 hours. Also, studies suggest that concentrations of DEET above approximately 50% do not offer a marked increase in protection time against insects.

Is it safe to use an insect repellent and a product containing sunscreen at the same time?

Yes. People can, and should, use both a sunscreen and an insect repellent when they are outdoors. Follow the instructions on the product label for proper application of each product. In general, the recommendation is to apply sunscreen first, followed by the repellent.

Is it safe to use a combination sunscreen/insect repellent product?

It is recommended NOT to use a single product that combines insect repellent containing DEET and sunscreen, because the instruction for use of insect repellents and the use of sunscreen are different. In most situations, insect repellent does not need to be reapplied as frequently as sunscreen. While no recommendations are available at this time regarding products that combine other active ingredients and sunscreen, it is important to always follow the label on whatever product you are using.

How can insect repellent be combined with clothing for added protection?

Clothing, hats, shoes, bed nets, mesh jackets, and camping gear can be treated with permethrin for added protection. Permethrin-treated clothing repels and kills ticks, mosquitoes, and other biting and nuisance insects. Clothing and other items must be treated 24–48 hours in advance of use to allow them to dry. As with all pesticides, follow the label instructions when using permethrin clothing treatments. Alternatively, clothing pretreated with permethrin is commercially available. Permethrin-treated materials retain repellent activity even after repeated laundering but should be retreated, as described on the product label, to provide continued protection. Permethrin should **never** be applied to skin but only to clothing, bed nets, or other fabrics as directed on the product label. Clothing treated with the other repellent products described above (such as DEET) provides protection from biting arthropods but will not last through washing and will require more frequent reapplications. Repellents should **never** be applied to the skin under clothing.

Are insect repellents safe to use on children?

Repellent products must state any age restriction. If there is none, EPA has not required a restriction on the use of the product. Most repellents can be used on children aged ≥ 2 months. Protect infants aged < 2 months from mosquitoes by using an infant carrier draped with mosquito netting with an elastic edge for a tight fit. Products containing OLE specify that they should not be used on children aged < 3 years. Other than the safety tips listed above, EPA does not recommend any additional precautions for using registered repellents on children. In addition to EPA's decisions about use of products on children, many consumers also look to the opinion of the American Academy of Pediatrics (AAP). The AAP has updated their recommendation for use of DEET products on children in 2003, citing: "Insect repellents containing DEET with a concentration of 10% appear to be as safe as products with a concentration of 30% when used according to the directions on the product labels." AAP recommends that repellents with DEET should not be used on infants less than 2 months old. AAP has not yet issued specific recommendations or opinion concerning the use of picaridin or oil of lemon eucalyptus for children.

Are insect repellents safe for pregnant or nursing women to use?

Other than taking routine precautions, the EPA does not recommend any additional precautions for using registered repellents on pregnant or nursing women. Consult your health care provider if you have questions.

Routine precautions that should be taken when using insect repellents?

- Apply repellents only to exposed skin or clothing, as directed on the product label.
- Do NOT use repellents under clothing.
- Avoid applying repellents on cuts, wounds, or irritated skin.
- Avoid applying repellents to eyes or mouth, and apply sparingly around ears.
- When using sprays, avoid spraying directly on the face; spray on hands first and then apply to face.
- Do not spray in enclosed areas, avoid breathing a spray product, and do not use it near food.
- Wash hands after application to avoid accidental exposure to eyes. Children should not handle repellents. Instead, adults should apply repellents to their own hands, then gently spread on the child's exposed skin. Avoid applying directly to a child's hands.
- Use just enough repellent to cover exposed skin or clothing. Heavy application and saturation are generally unnecessary for effectiveness. If biting insects do not respond to a thin film of repellent, apply a bit more.
- After returning indoors, wash treated skin with soap and water or bathe. This is important when repellents are used repeatedly in a day or on consecutive days.
- Wash treated clothing before wearing it again. This precaution may vary with different repellents, so check the product label.

