Repellent wristbands and ultrasonic devices have not proven to be effective. Additionally, the effectiveness of outdoor candles, and coils is highly variable and depends largely on the active ingredients and specific design. However, product specific precautionary statements include instructions to avoid breathing vapors, washing hands thoroughly after handling and before eating, drinking, chewing gum, or using tobacco, removal and washing of contaminated clothing before reuse. Careful thought is needed before use.

Repellent safety

- Read the entire product label before using a repellent. Even if you have used it before, read the label again - product directions change.
- Follow the use directions carefully. Use only the amount directed, at the time and under the conditions specified, and for the purpose listed.
- The Centers for Disease Control and Prevention considers EPA-registered repellents safe for pregnant and nursing women if all registered product directions and precautions are followed.
- Get specific information about repellents by contacting the National Pesticide Information Center 1-800-858-7378, or npic@ace.orst.edu or visit http://npic.orst.edu/ingred/ptype/repel.html.
- If you, a child, or older dependent develops a rash or other reaction after using a repellent, stop using the repellent, wash the repellent off with mild soap and water.
- Always double check that the product you plan to use is a personal repellent designed for application on your person. Contact-kill pesticide sprays should **never** be used as personal repellents.

If a child or pet eats or drinks a repellent call the poison control immediately

Travel health notices

When traveling to a new location review travel health notices for the area and be prepared before you arrive https://wwwnc.cdc.gov/travel.

For more information on repellents and vectors: https://extension.arizona.edu/pubs/az1761-2018.pdf

Citation

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This information has been reviewed by University faculty.
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Use of Personal Repellents for Protection Against Mosquitoes and Ticks

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This information has been reviewed by university faculty.

Mosquitoes and ticks are medically significant pests, because some transmit disease-causing pathogens. **Using repellents is one of the most effective ways to avoid bites outdoors.**

Personal repellents are substances applied to skin, clothing or other surfaces, or accessories used to repel or discourage biting arthropods, such as mosquitoes and ticks, from feeding on humans. They include spray, lotion, and disposable towelette products and devices that can be worn or placed in an area to repel biting pests.

Repellents can also be used to reduce bites from fleas, chiggers, biting midges (no-see-ums) and other blood-feeding arthropods. Repellents are EPA registered pesticides available in differing concentrations, and are evaluated for their repellency against ticks and/or mosquitoes for specific lengths of time. Check product labels for the specifics before venturing outdoors and use the EPA search tool to find the ideal option for you: https://www.epa.gov/insect-repellents/find-repellent-right-you.

There are many repellents available with bold claims about their effectiveness. EPA registered products using the following active ingredients provide reliable results **when used according to label directions:**

DEET, Picaridin, IR3535, oil of lemon eucalyptus (OLE), para-menthane-diol (PMD), 2-undecanone and nootkatone.

Important considerations when choosing a repellent:

1. What pests are you repelling? Look for the awareness graphic to determine the repellency time for mosquitoes or ticks.

2. Are you looking for a repellent to apply to skin, or to apply to clothing and equipment, such as a tent? Never apply a repellent designed for fabrics to your skin. Using repellent and sunscreen products at the same time is an acceptable practice. When doing so, apply sunscreen first, followed by repellent.

3. Who is using the repellent? Products are suitable for specific age groups. Read the product label carefully. Store repellents out of reach of children. Be aware that **not all repellents are labeled for use on children**. Very young children in carriers and strollers can be protected using mosquito netting. Avoid using products containing OLE or PMD on children under 3 years of age. If your child is 2 months old or older, the repellent you use on them should contain no more than 30% DEET*. **Do not apply insect repellent to a child's hands, mouth, ears, cuts, or irritated skin.**

4. How long will you be outdoors? Products are effective for specific lengths of time. However, extreme heat, sweating and water exposure will reduce the length of time a repellent is effective.

5. How abundant are the biting pests where you will be? If you anticipate being in an area with high populations of ticks or mosquitoes, a repellent with a higher concentration of the active ingredient may be appropriate.

* A Parent's Guide to Insect Repellents. 2012. American Academy of Pediatrics (AAP).

6. How and when should you apply your repellent? Avoid applying repellents in enclosed areas. When outdoors, avoid inhaling repellent spray or applying repellents near food. Follow label recommendations regarding reapplication throughout time outdoors and reapply after swimming or sweating profusely. **Do not apply insect repellent to anyone's eyes, mouth, ears, cuts, or irritated skin.**

7. Bites from triatomine bugs (also known as kissing or conenose bugs) can be reduced. When camping, apply permethrin around sleeping areas and on tents, and consider using bed nets.

8. Working or camping in locations with disease outbreaks involving arthropod vectors. Consider using permethrin-treated clothing and gear, or treat boots, external clothing and tents. Wash treated clothing before wearing them again.

9. Never apply permethrin directly to skin, the active ingredient will break down rapidly and can cause skin irritation.

10. Avoid covering repellent treated skin with clothing or going to bed before washing off the product. Remove repellent using gentle soap and water or cleansing wipes before covering up.

Be aware that most repellents are not very effective against stinging arthropods like honey bees, wasps, ants, or scorpions.

Spatial repellent devices release a repellent into an area to create a "protective zone", but few products have proven to be effective when tested by scientists. A study comparing various wearable devices and other repellents found that a wearable device emitting metofluthrin deterred *Aedes aegypti* mosquitoes (Rodriguez et al. 2017). The EPA does not review repellent devices. **Spatial repellent devices should only be used outdoors.**