

Many products are designed to protect people from being bitten by mosquitoes and ticks.

There are generally two types of products available today:

REPELLENTS are products that are used to repel or keep annoying insects away from a person. They will not work when applied to screens, doorways, etc., and should never be applied to domestic animals, like dogs or cats.

INSECTICIDES are products designed to kill insects on contact. They may also repel some insects, depending on the active ingredient.

Always READ THE LABEL for instructions on where and how to use the product!

Concentration = Length of TIME the product is effective!

Products that combine repellents with a sunscreen are **NOT RECOMMENDED**. Application rates differ for repellents and sunscreen, and may result in the over-application of the repellent ingredient. Instead, you can use separate sunscreen and repellent products at the same time, following the label directions for each.



*The best repellent is the one you will USE and that works for YOU for the length of time you need.
(James Gathany photo, courtesy of CDC)*

NOT ALL PRODUCTS ARE EFFECTIVE AGAINST TICKS.

PERSONAL REPELLENTS – for use on exposed skin and clothing

Read the label! Especially note precautions for children and pregnant women.

- Apply to exposed skin or external surface of clothing; do not use under clothing.
- Do not apply over cuts, wounds or irritated skin.
- Do not apply in enclosed areas – avoid breathing the spray.
- Don't apply to eyes or mouth; apply sparingly around ears. When using sprays, spray the product on your hands and then carefully apply the product to your face.

DEET

- N, N-diethyl-m-toluamide
- Developed by U.S. Army in 1946, available to public since 1957
- Apply to skin or clothing
- Percentage of active ingredient in products ranges from 4 percent to 100 percent. Higher concentrations protect for a longer time and can range from two to 12 hours.
- Effective against ticks if concentration is 20 percent or higher
- Concentrations of 30 percent and below are safe for children 2 months and up and pregnant women. Do not use on infants under 2 months old.
- 140 different products by 39 companies are available.

PICARIDIN

- AKA KBR 3023, Icaridin, 1-Piperidine carboxylic acid
- Developed in 1980s
- Synthetic of a natural compound (piperine) from plants that are used to produce black pepper
- Available in United States in 2005, widely used in Europe since the 1980s
- Applied to skin
- Effective for three to four hours against mosquitoes for concentrations of 5 percent to 20 percent; not effective against ticks
- 38 products registered from eight companies

<p>OIL OF LEMON EUCALYPTUS</p> <ul style="list-style-type: none"> Oil from eucalyptus leaves and twigs Listed on product label as Oil of Lemon Eucalyptus or P-menthane 3,8-diol (PMD)(chemically synthesized version) Registered in 1948 Applied to skin Should not be used on children under 3 years old Oil of Lemon Eucalyptus: effective for six hours against mosquitoes and some formulations registered as effective for six hours against ticks (synthetic version is registered as effective for two hours for ticks and mosquitoes) 	<p>IR 3535</p> <ul style="list-style-type: none"> 3-[N-Butyl-N-acetyl]-aminopropionic acid, ethyl ester Applied to skin Used in Europe for 20 years with no substantial adverse effects 31 products by five companies Concentrations range from 7.5 percent to 20 percent Effectiveness ranges from two to eight hours for mosquitoes and two to 12 hours for ticks, depending on concentration 	<p>CITRONELLA</p> <ul style="list-style-type: none"> Oil from species of <i>Cymbopogon</i> (lemongrass) plants. Used for 50+ years as an insect/animal repellent Found in many products (candles, lotions, gels, sprays) with varying effectiveness As a repellent, tested effective time for mosquitoes and ticks is one hour Concentration 4.2 percent Two products from two companies
<p>2-UNDECANONE</p> <ul style="list-style-type: none"> Repellent, biopesticide Compound derived from wild tomato plants Formulations for skin and clothing/gear Concentrations 6.2 to 7.75 percent Effective against ticks (two hours) and mosquitoes (four and a half hours) Six products, one company 	<p>CATNIP OIL</p> <ul style="list-style-type: none"> New product, should be on the market soon Hydrogenated catmint oil (HCO), aka refined oil of <i>Nepeta cataria</i> First new active ingredient to be registered in eight years Effective against mosquitoes for seven hours; not registered for ticks Four formulations, one company NOT THE SAME AS RUBBING CATNIP LEAVES ON YOUR SKIN! 	
<p>AREA INSECTICIDES and INSECTICIDES USED ON CLOTHING <i>Not to be used on skin.</i></p>		
<p>PERMETHRIN</p> <ul style="list-style-type: none"> Insecticide and repellent Available as an area-wide spray Also available in formulations that are applied to clothing and gear; stays on clothing through several washings Pre-treated manufactured clothing is also available 	<p>ALLETHRIN</p> <ul style="list-style-type: none"> Outdoor area-wide repellent Repels mosquitoes Requires heating - vaporizes from mosquito coils, mats and oil formulations (candles and lanterns) 	<p>METOFLUTHRIN</p> <ul style="list-style-type: none"> Outdoor area-wide repellent for mosquitoes In strip devices, no heating necessary (small wearable battery-powered fans may be used to create personal protection zone)
<p>ALWAYS READ AND FOLLOW LABEL DIRECTIONS!</p>		

For more information:

N.C. Division of Public Health, Vectorborne Diseases (<http://epi.publichealth.nc.gov/cd/diseases/vector.html>)

U.S. Centers for Disease Control and Prevention, Insect Repellents (www.cdc.gov/ncidod/dvbid/westnile/repellentupdates.htm)