

## Mosquito Repellent Products Provided by Butte County Public Health – 2008

Repellent	Brand Name	How to Apply	How Often	Use on Children
<b>DEET</b>	Bug X 30 Wipes (30% DEET)	Unfold towelette and wipe on a thin uniform film over all exposed skin except eyes and mouth. Wash hands thoroughly with soap and water after handling.	Provides over 7 hours of protection.	The American Academy of Pediatrics recommends that repellents with DEET should not be used on infants less than 2 months old. The Food and Drug Administration recommends that repellent used on children contain no more than 10% DEET.
<b>Picaridin</b>	Avon Skin-So-Soft Bug Guard (10% picaridan)	Hold container 6 to 8 inches from skin and spray in a slow, sweeping motion, liberally and evenly. To apply to face, spray palm of hand and rub on, avoiding the eye and lip area. Wash hands thoroughly with soap and water after handling.	Re-apply after 8 hours. Do not exceed 2 applications per day.	Do not allow children to handle this product. When applying to children, apply to your own hands and then put it on the child.
	Cutter Wipes (12% picaridan)	Unfold towelette and wipe evenly over exposed skin. Take care to avoid mouth and eyes. Wash hands thoroughly with soap and water after handling.	Do not apply more than once per day.	Do not allow children to handle this product. When applying to children, apply to your own hands and then put it on the child.
<b>Oil of Lemon Eucalyptus</b>	Repel (40% oil of lemon eucalyptus)	Apply to exposed skin and clothing. Spread evenly with hand to all exposed skin. Do not spray directly on face. To apply to face, disperse on palm of hand and spread on face and neck. Wash hands thoroughly with soap and water after handling.	Protects for up to 6 hours. Do not apply more than twice per day.	Do not apply to children under the age of 3 years.

The Centers for Disease Control's evaluation of information contained in peer-reviewed scientific literature and data available from the Environmental Protection Agency (EPA) has identified several EPA registered products that provide repellent activity sufficient to help people avoid the bites of disease carrying mosquitoes. Products containing these active ingredients typically provide reasonably long-lasting protection:

- **DEET** (Chemical Name: N,N-diethyl-m-toluamide or N,N-diethyl-3-methyl-benzamide)
- **Picaridin** (KBR 3023, Chemical Name: 2-(2-hydroxyethyl)-1-piperidinecarboxylic acid 1-methylpropyl ester )
- **Oil of Lemon Eucalyptus\*** or **PMD** (Chemical Name: para-Menthane-3,8-diol) the synthesized version of oil of lemon eucalyptus
- **IR3535** (Chemical Name: 3-[N-Butyl-N-acetyl]-aminopropionic acid, ethyl ester) (active ingredient in some Avon Skin-So-Soft Bug Guard products)

EPA characterizes the active ingredients DEET and Picaridin as “conventional repellents” and Oil of Lemon Eucalyptus, PMD, and IR3535 as “biopesticide repellents”, which are derived from natural materials. For more information on repellent active ingredients see ([http://www.epa.gov/pesticides/health/mosquitoes/ai\\_insectrp.htm](http://www.epa.gov/pesticides/health/mosquitoes/ai_insectrp.htm)).

Studies show that how well a repellent works, and how long it lasts, varies considerably among products and among mosquito species and is markedly affected by ambient temperature, amount of perspiration, exposure to water, abrasive removal, and other factors. In general, higher concentrations of active ingredient provide longer duration of protection, regardless of the active ingredient, although concentrations above ~50% do not offer a marked increase in protection time. Products with <10% active ingredient may offer only limited protection, often from 1-2 hours. Products that offer sustained release or controlled release (micro-encapsulated) formulations, even with lower active ingredient concentrations, may provide longer protection times. Regardless of what product you use, if you start to get mosquito bites reapply the repellent according to the label instructions or remove yourself from the area with biting insects if possible.

The EPA recommends the following precautions when using insect repellents:

- Apply repellents only to exposed skins and/or clothing (as directed on the product label.) Do not use repellents under clothing.
- Never use repellents over cuts, wounds or irritated skin.
- Do not apply to eyes or mouth, and apply sparingly around ears. When using sprays, do not spray directly on face—spray on hands first and then apply to face.
- Do not allow children to handle the product. When using on children, apply to your own hands first and then put it on the child.
- Use just enough repellent to cover exposed skin and/or clothing. Heavy application and saturation are generally unnecessary for effectiveness. If biting insects do not respond to a thin film of repellent, then apply a bit more.
- After returning indoors, wash treated skin with soap and water or bathe. This is particularly important when repellents are used repeatedly in a day or on consecutive days. Also, wash treated clothing before wearing it again. (This precaution may vary with different repellents— check the product label.)
- If you or your child gets a rash or other bad reaction from an insect repellent, stop using the repellent, wash the repellent off with mild soap and water, and call a local poison control center for further guidance. If you go to a doctor because of the repellent, take the repellent with you to show the doctor.