



Mosquito Repellent

How does mosquito repellent work?

Mosquitoes are attracted to people by skin odors and carbon dioxide from breath. Repellents contain an active ingredient which repels mosquitoes, making the person unattractive for feeding. It does not kill mosquitoes; it just makes them unable to locate us. 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. A higher percentage of active ingredient in a repellent does not mean that your protection is better—just that it protects you from mosquito bites for a longer period of time.

What are effective active ingredients in mosquito repellent?

- ◆ **DEET**: Considered one of the most effective repellents. DEET-containing repellents offer the longest mosquito protection time compared to all other mosquito repellents. Common brand name examples include: Off!, Cutter, Sawyer, and Ultrathon.
- ◆ **Picaridin**: Also considered one of the most effective repellents. Common brand name examples include: Cutter Advanced, Skin So Soft Bug Guard Plus, and Autan (outside the United States).
- ◆ **Oil of lemon eucalyptus (OLE)**: A plant-based repellent which has been shown to have similar protection to lower concentrations of DEET. This product cannot be used on children less than three years of age.
- ◆ **IR3535**: A newer repellent recently approved that has shown to be an effective active ingredient. Common brand name examples include: Skin So Soft Bug Guard Plus Expedition and SkinSmart.

How should you choose a mosquito repellent?

Consider the following when choosing a repellent:

- ◆ How long you will be outdoors
- ◆ Time of day
- ◆ Temperature
- ◆ Type of activity that you will be doing
- ◆ Location



Repellents offer protection for a limited time. In general you should re-apply repellent if you are being bitten by mosquitoes. Mosquitoes are most active in the early morning when the sun rises and in the late evening when the sun sets. Sweat or water wash repellent off, so if you will be working outdoors or swimming, it may be necessary to re-apply repellent more often.

How do I stay safe when using mosquito repellents?

- ◆ Never use repellents over cuts or wounds on your skin.
- ◆ Only apply to exposed skin; do not apply repellents under your clothing.
- ◆ You only need to use enough repellent to cover exposed skin. Heavy application will not give you better or longer lasting protection.
- ◆ Do not spray directly on your face. Spray on your hands first and then apply to your face.

What products contain approved active ingredients?

There are many products available that provide protection against mosquito bites. The following table offers different options based on the length of time that they offer protection.

Protection Times by Concentration of Various Active Ingredients in Commercial Insect Repellents

Products*	Active Ingredient	Protection Time
3M Ultrathon Lotion	34.3% DEET	12 hours
Sawyer Controlled Release	20% DEET	11 hours
Repel 100% DEET Pump Spray	100% DEET	10 hours
Ben's 100: Insect Repellent Spray	100% DEET	10 hours
Repel Sportsmen Max	40% DEET	10 hours
Cutter Backwoods Aerosol	25% DEET	10 hours
Bite Blocker Organic Spray	3% Soybean Oil	8 hours
Ultrathon Insect Repellent Aerosol	25% DEET	8 hours
Cutter Advanced Sport	15% Picaridin	8 hours
Repel Sportsman	29% DEET	8 hours
Ben's Wilderness Insect Repellent	30% DEET	8 hours
Sawyer Insect Repellent, 30% DEET	30% DEET	7 hours
Repel Lemon Eucalyptus	Oil of lemon eucalyptus	6 hours
Off! Active	15% DEET	6 hours
Burt's Bees Herbal Insect Repellent	40% Rosemary Oil; 3.2% Lemongrass Oil; 0.4% Citronella	6 hours
Off! Deep Woods	23.8% DEET	5 hours
Repel Family	23% DEET	5 hours
Sawyer Controlled Release	20% DEET	4 hours
Off! Skintastic Clean Feel	5% Picaridin	4 hours
Natrapel Plus	5% Citronella Oil	4 hours
Cutter Advanced	7% Picaridin	4 hours
Badger Anti-Bug Balm	5% Citronella	4 hours
Buzz Away Extreme	3% Soybean Oil	3 hours
Jason Quit Bugging Me	3% Soybean Oil	3 hours
Cutter Wipes	7% DEET	2 hours
Off! Skintastic	5% DEET	2 hours
Cutter Family Skinsations	7% DEET	2 hours
Off! Family Care Wipes	5.6% DEET	2 hours
Bite Blocker for Kids	2% Soybean Oil	1.5 hours
Off! Skintastic for Kids	4.75% DEET	1.5 hours
Bite Blocker Repellent Herbal Wipes	2% Soybean Oil	1.5 hours
Skin-So-Soft Bug Guard Plus	7.5% IR3535	23 minutes

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Protection Times by Concentration of Various Active Ingredients in Commercial Insect Repellents

Products*	Active Ingredient	Protection Time
Natrapel	10% Citronella	20 minutes
All Terrain Herbal Armor	12% Citronella; 2.5% peppermint oil; 2% cedar oil; 1% lemongrass oil; 0.05% geranium oil	19 minutes
Green Ban for People	10% Citronella; 2% peppermint oil	14 minutes
Buzz Away	5% Citronella	14 minutes
Skin-So-Soft Bug Guard	0.1% Citronella	10 minutes
Skin-So-Soft Bath Oil	Active Ingredient not known	10 minutes
Skin-So-Soft Moisturizing Suncare	0.05% Citronella	3 minutes
*Protection time listed on the product label.		

Disclaimer: Insect repellent brand names are provided for your information only. The Oklahoma State Department of Health cannot recommend or endorse any name brand products.

- ◆ Please note: higher concentrations of DEET may have a longer repellent effect; however, concentrations over 50% provide no added protection.
- ◆ For detailed information on finding the right insect repellent, please visit the EPA website at: <http://www.epa.gov/insect-repellents/find-insect-repellent-right-you>

What is permethrin?

- ◆ A repellent and insecticide that can treat items like pants, socks, boots, backpacks, tents, and other gear. Permethrin-treated products repel mosquitoes and also kill ticks.
- ◆ Do not apply permethrin-containing products directly to the skin.

Can mosquito repellents be used on children?

- ◆ Yes, DEET products can be used on children older than 2 months of age.
- ◆ Protect infants by using a mosquito net draped over a carrier.
- ◆ Oil of lemon eucalyptus should not be used on children under the age of three years.
- ◆ Do not allow children to handle or spray the product. Apply repellent to your own hands first and then put it on the child. Avoid applying repellent to children's hands because children frequently put their hands in their eyes and mouths.
- ◆ EPA does not recommend any additional precautions for using registered repellents on children other than those listed above.

Is it safe to use mosquito repellent during pregnancy or while breastfeeding?

- ◆ Yes, EPA-registered repellents are safe for use in both pregnant and breastfeeding mothers.