

AREA REPELLENTS AND REPELLENTS USED ON CLOTHING are not intended for use on the skin.

PERMETHRIN

- 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 shown to be more effective for longer than when sprayed or dipped
- Different susceptibilities noted for different species of ticks



ALLETHRIN



- Outdoor area-wide repellent
- Repels mosquitoes
- Requires heating - vaporizes from mosquito coils, mats and oil formulations (candles and lanterns)

METOFLUTHRIN

- Outdoor area wide repellent for mosquitoes in strip devices, no heating necessary



Disclaimer: Photos of products are not intended as an endorsement of one brand over another; instead are only intended to demonstrate the variety of products containing that active ingredient that are available on the market.

Before using any insecticide, check the label for an EPA registration number.

The EPA registration number is your assurance that the product has been tested and demonstrated to be effective as indicated on the label.

Because of the risk of disease transmission, the effectiveness of an insecticide as well as its low toxicity to humans and the environment must be proven before receiving an EPA registration number.

- Registration is not required if the ingredient poses minimal health risks in the percentage offered.
- These products have NOT been tested and proven effective. Examples are cedar oil, geranium oil, peppermint, peppermint oil, and soybean oil.

There are seven active ingredients that are currently registered; these include products that repel or kill the target organism. Products may be labeled for use on skin and or clothing OR may be labeled as an area wide repellent or insecticide and are NOT to be used on skin!

READ THE LABEL!

The best repellent is the one you will USE and that works for YOU for the length of time you need. Repellents have varying effectiveness for different people and varying effectiveness against different species of ticks or mosquitoes.

Remember: Higher concentration does not mean better. CONCENTRATION = Length of Time the product is effective. You may need to experiment with active ingredients to find one that works for you. Not all active ingredients will be effective against all species of ticks or mosquitoes.

TIC-NC

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MAKING SENSE OF REPELLENTS AND INSECTICIDES

KNOW THE DEFINITIONS

Repellents are any products used to repel or keep away annoying insects whether applied to skin, clothing or the immediate area. It can include products labeled as “natural.”

Pesticides are any substances intended to prevent, destroy, repel or mitigate any pest. The EPA defines pests as organisms that occur where they are not wanted or cause damage to crops, humans, or other animals. They are typically classified by the type of pest being controlled. Pesticides can also include products that occur naturally.

Insecticides are a type of pesticide and include any products designed to kill insects or other arthropods.

Biopesticides are products derived from natural materials.

PRODUCTS THAT COMBINE THE REPELLENT WITH SUNSCREEN ARE **NOT RECOMMENDED** BY THE CDC OR EPA.

Application rates for the sunscreen and repellent differ and may result in the over-application of repellent.

You can use the two as separate products at the same time, following label directions for each product.

CONVENTIONAL pesticides are chemical compounds that were developed for their repellent or insecticidal properties.

DEET

- Conventional repellent
- N, N-diethyl-m-toluamide
- Developed by US Army in 1946, available to public since 1957
- Concentrations range from 4% to 100%
Babies (10% - 30%) Adults (30% - 40%)
- Effectiveness ranges from 2 to 12 hours for ticks and mosquitoes (depending on concentration)
- Apply to skin or clothing
- Safe for children 2 months and older as long guidelines for use are followed
- 140 products with DEET by 39 companies

PICARIDIN

- Conventional repellent
- AKA KBR 3023, Icaridin, 1-Piperidine carboxylic acid
- Developed in 1980's
- Synthetic of a natural compound (piperine) from black pepper plants
- Available in US in 2005, widely used in Europe since the 80's
- Applied to skin
- Effective for 3-4 hours against mosquitoes for concentrations of 5-20%, not registered for ticks
- 38 products registered from 8 companies (Includes Avon, SC Johnson)

BIOPESTICIDES include products that are distilled from a natural source OR a synthetic duplicate of a naturally found ingredient.

OIL OF LEMON EUCALYPTUS

- Biopesticide
- Oil from eucalyptus leaves and twigs
- P-menthane 3,8-diol (PMD) (chemically synthesized version)
- Registered in 1948 as an insecticide and miticide
- Applied to skin
- Should not be used on children under the age of three
- Registered under both Oil of Lemon Eucalyptus (30-40%) and p-menthane-3, 8-diol (8-10%)
- Oil of Lemon Eucalyptus: effective for 6 hours against mosquitoes and some formulations registered as effective for 6 hours against ticks

IR 3535

- Repellent, biopesticide
- 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 5 companies (mainly Avon)
- Concentrations range from 7.5 to 20%
Effectiveness ranges from 2 to 8 hours for mosquitoes and 2-12 hours for ticks depending on concentration



CATNIP OIL

- Hydrogenated catmint oil (HCO), aka refined oil of *Nepeta cataria*
- First new active ingredient to be registered in recent years
- Currently used as a food ingredient, so no adverse reactions are expected
- Effective for 7 hours (mosquitoes), not registered for ticks
- Concentrations of 7-15%

CITRONELLA

- Repellent, biopesticide
- 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 1 hour
- Concentration 4.2
- 2 products from 2 companies

2-UNDECANONE (BIOUD)

- Repellent, biopesticide
- Compound derived from wild tomato plants
- Formulations for skin and clothing/gear
- Concentrations 6.2-7.75%
- Effective against ticks (2 hours) and mosquitoes (4.5 hours)
- 6 products, 1 company (HOMS LLC located in Pittsboro, NC)



GUIDLINES FOR REPELLENTS APPLIED TO THE SKIN

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

- Apply to exposed skin or external surface of clothing; not to be used under clothing
- Do not apply over cuts, wounds or irritated skin
- Avoid breathing the spray

- Do not apply to eyes or mouth
- Apply sparingly around ears
- When using sprays on the face, spray your hands, then carefully apply to the face
- Do not apply in enclosed areas