

# The Guide to Insect Repellants

It's that time of year to enjoy the great outdoors, so what are your options for protecting yourself and your family from bothersome, and sometimes dangerous, bug bites?

Since the 1950s, people have been reaching for insect repellants that contain DEET to protect themselves from being bitten by disease-carrying insects. Today there is concern that DEET-containing insect repellants may pose health risks that outweigh the benefits of repelling virus-carrying insects and avoiding itchy bug bites.

Alternatives to DEET-containing insect repellants do exist, a few of which outlined below. While DEET is still considered the best protection against bug bites, it is up to each individual to weigh the risks posed by bug bites and those posed by potentially harmful chemicals, and to choose the safest options for protecting themselves.

## **Option: Prevention and Avoidance**

### **About**

Remove all standing water around your property.  
Wear light coloured clothing that covers the skin (pants and long-sleeved shirts).  
Avoid scented personal care products, bugs are attracted to heavy scents.  
Limit outdoor activities at dawn and dusk when bugs generally feed.

### **Health Hazard**

No associated health hazards.

## **Option: Soybean oil-based repellants**

### **About**

Soybean oil-based insect repellants have recently been registered for use in Canada. These products provide 1-3.5 hours of protections against mosquitoes, and are considered the second best protection against mosquitoes, after DEET-containing products.

### **Health Hazards**

According to Scorecard.org there is no known or suspected health effect associated with soybean oil.  
According to the US EPA, the ingredients in soybean oil-based repellants are food-grade and are listed as minimum risk.  
Health Canada states that these products meet all modern safety standards.

## **Option: Citronella-based repellants**

### **About**

Oil of citronella is derived from dried grasses. It has been used for more than 50 years as a repellant against mosquitoes, black flies, ticks and fleas. Citronella-based repellants repel insects for approximately 30 minutes to 2 hours.

### **Health Hazards**

Oil of citronella has been used since 1948 without any reports of adverse effects of concern.

Pure citronella oil should not be applied directly on the skin, and citronella-based repellants should not be used on infants and toddlers under 2 years of age.

According to Scorecard.org there are no suspected or recognized health effects associated with citronella oil.

The US Environmental Protection Agency (EPA) says there is little or no toxicity in oil of citronella, although there is a concern about skin irritation. If used according to the label instructions, citronella is not expected to pose health risks to sensitive populations, including children.

Health Canada found there is a high degree of uncertainty about the safety of using citronella oil on the skin as an insect repellant, and proposed a phase-out of citronella-based repellants. In its review of citronella, Health Canada found that while no imminent risks were identified with the use of citronella-based repellants, the companies marketing them have not provided adequate safety data to support their continued use. Health

Canada is concerned that repeated applications of citronella-based repellants could lead to high exposures. Also, limited data has revealed several concerns. Citronella oil may contain methyleugenol, which has been shown to cause cancer in laboratory animals. Animal studies have also indicated a potential for reproductive and developmental toxicity, as well as fetal sensitivity at high dose levels.

### **Option: DEET-based repellants**

#### **About**

DEET is designed for direct application to human skin to repel insects, rather than kill them. It was developed by the U.S. Army in 1946, and has been registered for use by the general public in Canada for over 40 years. The length of time DEET-based repellants provide protection against insects varies by the concentration of DEET in a product:

30% DEET = 6 hrs  
15% DEET = 5 hrs  
10% DEET = 3 hrs  
5% DEET = 2 hrs

#### **Health Hazards**

According to Scorecard.org, DEET is a suspected gastrointestinal or liver toxin, neurotoxin, reproductive toxin, respiratory toxin and skin or sense organ toxin.

*From Health Canada:*

#### **Children under 6 months of age**

- DO NOT use personal insect repellents containing DEET on infants.

#### **Children aged 6 months to 2 years**

- In situations where a high risk of complications from insect bites exist, the use of one application per day of DEET may be considered for this age group.
- The least concentrated product (10% DEET or less) should be used.
- As with all insect repellents, the product should be applied sparingly and not be applied to the face and hands.
- Prolonged use should be avoided.

#### **Children between 2-12 years of age**

- The least concentrated product (10% DEET or less) should be used.
- Do not apply more than three times per day.
- Prolonged use should be avoided.

#### **Adults and Individuals 12 Years of Age or Older**

Products containing DEET at concentrations above 30% will no longer be acceptable for registration, based on a human health risk assessment that considered daily application of DEET over a prolonged period of time. Studies show that products with lower concentrations of DEET are as effective as the high concentration products, but they remain so for shorter periods of time. Products containing no more than a 30% concentration of DEET will provide adults with sufficient protection.

**Note:** There is no indication that there is a hazard to the unborn or nursing child associated with the use of DEET by pregnant or lactating women. However, there are non-chemical methods to reduce mosquito bites (e.g., protective clothing, avoiding mosquito habitat and times of peak mosquito activity) which could be considered.

*From the US EPA:*

After completing a comprehensive re-assessment of DEET, EPA concluded that, as long as consumers follow label directions and take proper precautions, insect repellents containing DEET do not present a health concern. Human exposure is expected to be brief, and long-term exposure is not expected.

\*Only products registered for use in Canada are mentioned above. Other non-DEET alternatives that are not available on the Canadian market include eucalyptus, cedar and lavender-based repellants.

More information on the safe use of insect repellants from Health Canada:

### General Use Information for All Personal Insect Repellents

- Always read the entire label carefully before using. Follow all of the label directions, including restrictions for use on young children and the maximum number of applications allowed per day.
- Apply the repellent sparingly, and only on exposed skin surfaces or on top of clothing. Do not use under clothing. Heavy application and saturation are unnecessary for effectiveness. Repeat applications only as necessary.
- Do not get in eyes. If you do get repellent in your eyes, rinse immediately with water.
- Do not use the repellent on open wounds, or if your skin is irritated or sunburned.
- Avoid breathing spray mists and never apply sprays inside a tent. Use only in well-ventilated areas. Do not use near food.
- Wash treated skin with soap and water when you return indoors or when protection is no longer needed.
- Keep all insect repellent containers out of the reach of children.
- Always supervise the application on children.
- Avoid applying repellent to children's hands to reduce the chance of getting the repellent in their eyes and mouths.
- If you suspect that you or your child are reacting to an insect repellent, stop using the product immediately, wash treated skin and seek medical attention. When you go to the doctor, take the product container with you.
- If you are concerned that you are sensitive to a product, apply the product to a small area of skin on your arm and wait 24 hours to see if a reaction occurs.
- If using sunscreen and insect repellants at the same time, follow all instructions on the package for proper application, and apply the sunscreen first, followed by the repellent.

For more information on West Nile virus, please visit the Public Health Agency of Canada's West Nile information page, at [http://www.phac-aspc.gc.ca/wn-no/index\\_e.html](http://www.phac-aspc.gc.ca/wn-no/index_e.html)



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