



Tri-County Ground Search and Rescue Group, Inc.
P.O. Box 28021, Moncton, NB E1C 9N4

Lessons Learned

Health Canada Guidelines on DEET-Based Insect Repellents

The Pest Management Regulatory Agency of Health Canada has published a Re-evaluation Decision Document on “Personal insect repellents containing DEET”. This new regulatory review of safety and efficacy claims for DEET based repellants was published April 15, 2002.ⁱ

DEET based insect repellants have been registered in Canada since 1957. As of July 2001, there were 127 registered end-use products containing DEET. The review sought to explore the safety issues associated with DEET use in repellants and to evaluate claims of effectiveness.

Although the study found little evidence of toxic effect, and no mutagenic or carcinogenic effects, Health Canada has recommended the discontinuance of those products containing more than 30% DEET and all products that combine sunscreen and DEET.

Health Canada, in line with previously published information, indicates that concentrations of DEET above 30% are no more effective than the lower concentrations. Concentrations of DEET above 30% do provide longer protection from single applications but not in an efficient manner. As an example, an application of 30% DEET will provide protection for an average period of 6.5 hours. An application of 100% DEET, and increase in the amount of chemical used of over 212%, provides protection for only 9.5 hours (an increase in protection time of only 46%).

Health Canada has also found that DEET based repellants are effective in repelling black flies, midges, deer/horse flies and ticks. DEET is not effective in repelling fleas. Very low concentrations of DEET are equally effective in repelling black flies as are higher concentrations. Only in re-

pellings midges do higher concentrations of DEET appear to provide longer protection.

The following table provides the anticipated Complete Protection Time (CPT), and therefore recommended reapplication interval, against mosquitoes for various concentrations of DEET.

% DEET	CPT
5-6%	2 hours
7-10%	3 hours
11-14%	4 hours
15-21%	5 hours
22-30%	6 hours

In an interesting development, Health Canada does register garments designed to be soaked in DEET formulations, indicating that DEET applied to clothing will provide a repellent action against mosquitoes.

Health Canada has also decided to discontinue the registration of sunscreen/DEET products. The requirement that sunscreen be applied often and generously leads to higher than recommended exposure to DEET.

Health Canada is currently examining personal repellent products that do not contain DEET. These products, based on citronella, citronellal, lavender and other blends of natural or artificial essential oils, as currently registered in Canada, providing some indication that they provide some level of protection. Other products, based on extract of lemon eucalyptus leaves or piperidine compounds “show promise as dermally applied mosquito or black fly repellents and are available commercially in other countries, but not registered in Canada.”ⁱⁱ

The revised Health Canada recommendations for the use of DEET is as follows:

Adults and individuals older than 12 year of age

Products containing DEET at concentrations above 30% will no longer be acceptable for registration, based on 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.

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. Do not apply to the face and hands.
- Prolonged use should be avoided.

Children ages 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.
- The product should be applied sparingly and not be applied to the face and hands.
- Prolonged use should be avoided.

Children under 6 months of age.

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

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ⁱ ISBN:0-662-31924-9 Catalogue Number H113-6/2002-2E-IN. Copies of the full technical document are available from the Health Canada Web site at <http://www.hc-sc.gc.ca/pmra-arla/english/pdf/trrd/rrd2002-01-e.pdf>

ⁱⁱ P. 33