

DEET

N,N-Diethyl-3-methylbenzamide, also called DEET, is the most common active ingredient in insect repellents. It could be applied to the skin or to clothing, and provides protection against mosquitoes, chigger mites, ticks, and other biting insects.

History

In 1946, The United States Department of Agriculture developed DEET for use by the U.S. Army. DEET became available for civilians in 1957. Today, DEET is commonly used as an insect repellent for direct application to the skin and can be used on both adults and children.

Mechanism

DEET was historically believed to work by blocking insect olfactory receptors for 1-octen-3-ol, a volatile substance that is contained in human sweat and breath.

However, recent evidence shows that DEET serves as a true repellent in that mosquitoes intensely dislike the smell of the chemical repellent.

Concentrations

There is a direct correlation between DEET concentration and hours of protection against insect bites. 100% DEET was found to offer up to 12 hours of protection while several lower concentration DEET formulations (20%-34%) offered 3-6 hours of protection.

Effects on health

The normal use of DEET meets safety standards based on current scientific knowledge. However, in rare cases, DEET can act as an irritant and may cause epidermal reactions. As a precaution, manufacturers sometimes advise that DEET products should not be applied on

damaged skin. Considering human health reasons, Health Canada barred the sale of insect repellents for human use that contained more than 30% DEET in Canada. The agency recommended that DEET-based products be used on children between the ages of two and 12 only if the concentration of DEET is 10% or less and that repellents be applied no more than three times a day. Children under two should not receive more than one application of repellent in a day and DEET-based products of any concentration should not be used on infants under six months.

Recommendations

DEET containing insect repellents could be applied to exposed parts of the body and clothing if required. Consumers are advised to read and follow label instructions and precautions, and be aware of the duration of protection it offers. Children should use only if the concentration of DEET is 10% or less. Infants under six months of age should use alternative measures to prevent biting insects, avoid using any DEET-based insect repellents.

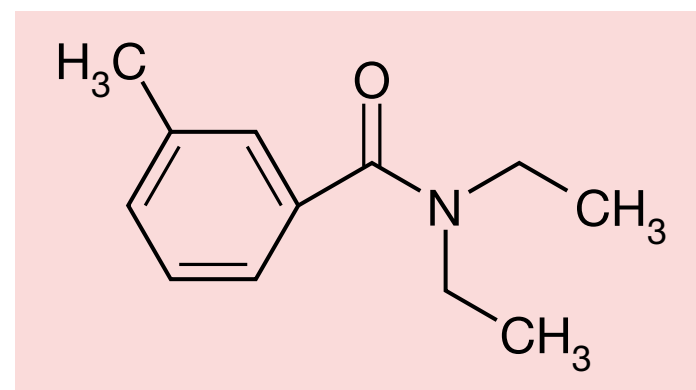


Figure 1. Chemical structure of N,N-Diethyl-3-methylbenzamide, DEET.

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Rodent Traps and Other Non-chemical Tools

Non-chemical tools such as trapping devices constitute a significant part of recent rodent management. It is believed that the non-chemical approach will continue as the public and part of the commercial sector such as the food industry and child care facilities prefer the use of non-toxic approach in prevention of rodent infestations. During the past decade, new designed snap traps (Figure 1), multiple catch traps, sticky traps, and various trapping and pest monitoring devices have been introduced. This new technology provides pest control operators with many choices and facilitates a wide range of tools to be matched to site-specific rodent infestations. For each non-chemical approach, however, the tools and techniques must be deployed with careful management of the specific environment to maximize results.

Mechanical traps for rodents include many different styles and models nowadays. The following three types of rodent traps are most commonly used in the pest management industry:

- 1) snap traps (Figure 2);
- 2) multiple catch traps (MCT); and
- 3) glue traps.

Mechanical traps offer some advantages over the use of rodenticides including:

- 1) they provide visual confirmation of the effectiveness of treatment;
- 2) as captured rodents would be immediately disposed of, trapping will help avoid the occurrence of foul odor of rotting carcasses hidden in places difficult to find and reach;
- 3) they can provide the right tool for unique situations and provide a quick solution to an urgent rodent infestation;
- 4) trapping is appropriate where the use of poisons might pose a baiting hazard or where the use of poisons is unacceptable to a client, such as schools; and
- 5) they can be reused with proper maintenance.

However, disadvantages of using traps include:

- 1) trapping programmes may require more service time and effort than baiting programmes;

- 2) traps cannot be placed where there are children, pets, or other non-target animals;
- 3) the use of some traps (e.g. glue traps) are opposed by animal welfare concerned groups as the traps may cause undue suffering to rodents;
- 4) traps once activated accidentally are no longer effective until they are replaced or reset;
- 5) traps must be checked for every 24 hours.

In fact, there is a growing trend towards using non-toxic approach in rodent disinfestations. This is partly due to the public's preference for non-chemical pest management options and partly due to the fact that traps are the most cost-effective approach for the daily monitoring/control of minor rodent infestation which is needed by most commercial and residential clients.



Figure 1. A new designed snap trap for mouse



Figure 2. A sample of snap trap

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