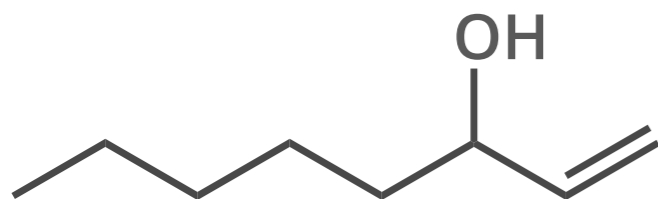


THE CHEMISTRY OF INSECT REPELLENTS



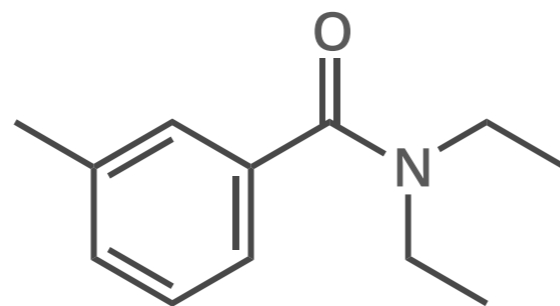
WHAT ATTRACTS INSECTS? 1-OCTEN-3-OL



This chemical is contained in human sweat and breath, and is thought to attract biting insects such as mosquitos. It is often used in combination with CO₂ in mosquito traps. It is also found in mushrooms, and sometimes called 'mushroom alcohol'.

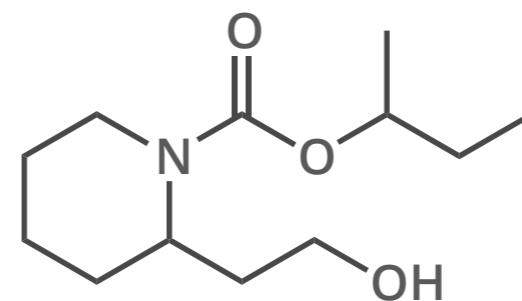
COMMON COMPOUNDS IN INSECT REPELLENTS

DEET N,N-DIETHYL-M-TOLUAMIDE



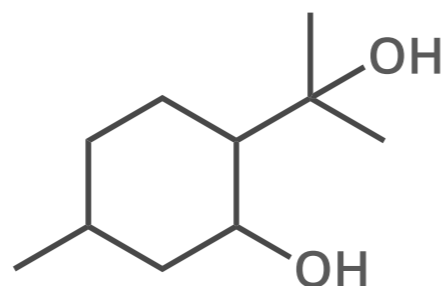
- Most common active ingredient.
- 2-8 hours protection (20-30% solution).
- 10-30% solution safe for adults. <10% recommended for children up to 12.
- Effective vs. mosquitos, ticks, fleas & other biting insects.

ICARIDIN A.K.A PICARIDIN



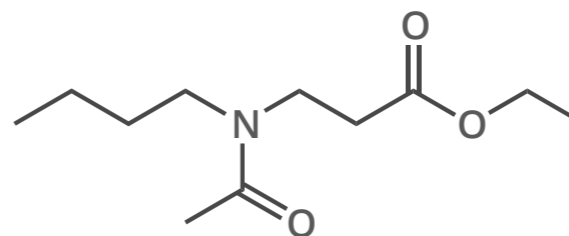
- Odourless & doesn't damage plastics.
- 2-8 hours protection (20% solution).
- Not a skin irritant, but can cause mild eye irritation on contact.
- Effective vs. mosquitos, ticks, fleas, biting fleas & chiggers.

CITRIODIOL P-MENTHANE-3,8-DIOL



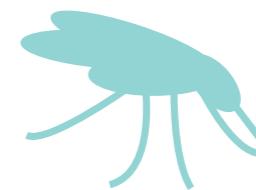
- From oil of the Lemon Eucalyptus tree.
- ~6 hours protection (10-20% solution).
- No adverse effects - irritation possible if contact with eyes occurs.
- Mosquito, fly & gnat repellent; also a miticide, killing insects and mites.

IR3535 ETHYL 3-[ACETYL(BUTYLAMINO)] PROPANOATE



- No negative effects reported.
- 2-6 hours protection (10-20% solution).
- Not harmful when ingested or inhaled, though can irritate eyes on contact.
- Effective vs. mosquitos, ticks, body lice and biting flies.

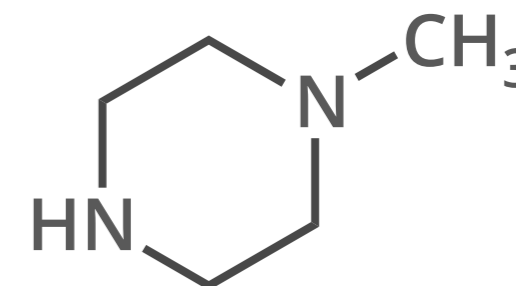
HOW DO REPELLENTS WORK?



UNPLEASANT ODOUR
BIND TO OLFACATORY RECEPTORS
PRODUCE REPELLENT EFFECT

Recent studies suggest that, after initially being exposed to the repellent DEET, insects can temporarily overcome or adapt to its repellent effect. This could have future implications for how the efficacy of repellents is determined.

A BUILT IN DEFENCE? 1-METHYLPYPERAZINE



Researchers have found that compounds found naturally on the skin, either as a result of secretions, or surface bacterial activity, are able to render humans 'invisible' to mosquito senses. One of these compounds is 1-methylpiperazine.

