

## Deet bug repellent 'toxic worry'

**Scientists have expressed safety concerns about insect repellents that contain Deet after observing the chemical's toxic effects in mammals.**

Deet has been in use for decades and is found in most of the commonly used repellents to ward off mosquitoes.

Others dismissed the concerns saying deet posed no risk when used correctly.

The study in the open access journal BioMed Central Biology shows deet works in the same way as paralysing nerve gases used in warfare.

However, experts cautioned that the findings in animals could not be translated to humans.

**" The incidence of exposures resulting in neurotoxic effects is very low, when considered in the context of the millions of people around the world who have used insect repellents containing deet "**

Dr Daniel Sudakin US National Pesticide Information Center

Deet (N,N-diethyl-meta-toluamide) was developed by the US Army in 1946 following its experience of jungle warfare during the second world war, then registered for use by the general public in 1957.

About 200 million people use deet-based repellents every year and over 8 billion doses have been applied over the past 50 years.

Products containing deet are available in a variety of liquids, lotions and sprays that are applied to the skin to repel insects rather than kill them.

As a precaution, experts advise people to only use enough repellent to cover exposed skin or clothing and caution that repellent should not be applied to cuts, wounds or irritated skin.

### Need for research

But French researchers, from the University of Angers and the Institute of Research and Development in Montpellier, say more investigations are needed to discover any potential neurotoxicity to humans.

In work on rodents at the cellular level, deet blocked an enzyme called acetylcholinesterase, whose job is to control one of the main chemical messengers used by the nervous system.

**" The findings of animal studies do not always match what happens in humans "**

Professor Brian Greenwood London School of Hygiene and Tropical Medicine

The researchers also found that deet interacts with carbamate insecticides, used in agriculture, increasing their toxicity.

Researcher Vincent Corbel said: "These findings question the safety of deet, particularly in combination with other chemicals, and they highlight the importance of a multidisciplinary approach to the development of safer insect repellents for use in public health."

But Dr Daniel Sudakin of the US National Pesticide Information Center said: "The experiments that were conducted were mainly done on insects or on individual cells in test tubes, and generally not under conditions that accurately reflect how deet is used as an insect repellent in the real world.

"This makes it very difficult if not impossible to interpret the relevance of their findings to humans.

"There have been several recent studies exploring the safety and risks of deet in humans.

"The incidence of exposures resulting in neurotoxic effects is very low, when considered in the context of the millions of people around the world who have used insect repellents containing deet."

The US Environmental Protection Agency said it would evaluate the study and incorporate it into its future review of deet planned in 2012.

The EPA said it was committed to addressing any urgent pesticide issues immediately to protect human health, but added: "The information we have related to deet has been determined to be adequate to show that deet does not pose any unreasonable risk."

Professor Brian Greenwood, a malaria expert from the London School of Hygiene and Tropical Medicine, said: "Deet has been used for decades with few reported side effects.

"And the findings of animal studies do not always match what happens in humans."

Professor Greenwood said most people tended to use deet infrequently and, therefore, were exposed to low doses.

He said more research may be warranted to investigate the researchers concerns further.

Story from BBC NEWS:  
<http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/8182052.stm>

Published: 2009/08/05 07:56:40 GMT

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