



Insect Repellants

Insect Repellents and Common Sense

West Nile Virus is here to stay, and most of us would not think of going camping in the woods or swimming at a nearby lake or pool, let alone sending our children to these areas, without taking care of insect repellent needs! I strongly encourage appropriate use of insect repellants to prevent the transmission of biting insect borne illnesses.

The best measure is exposure prevention! Cover as much skin surface area as possible with long sleeved shirts and pants and use some sort of sun proof head covering, preferably with a large brim to deflect dropping insects.

First, avoid the evening hours close to sunset, and early morning hours when mosquitoes and other pests are looking for their next meal! If these measures are not realistic for your adventure, then cover what is tolerable and only spray exposed skin areas with your repellent of choice.

Well-intentioned "dousing" of your children in high potency repellants and frequent re-application in hopes of discouraging attacks from nature's less desirable guests does not outweigh the risks! You may be inviting some serious health problems so caution is the key word with DEET containing insect repellants! Read on for more information:

WHAT WORKS WELL

1) DEET (N, N-diethyl-meta-toluamide), is the one compound that has been widely studied and has been proven to be effective for **flying insect** (chiggers, mosquitoes, and black fly) assaults. The FDA looked at DEET-based repellents in 1980 and felt that, considering the number of people who use them regularly, there is minimal risk - when used properly. There are many brand names: *Cutter, Off, Repel, Ultrathon*, and others. These are popular, inexpensive healthcare items that are available in most supermarkets and drug stores all over the country. They come in a variety of strengths and formulations, some combined with sunscreens that require caution.

Unfortunately, DEET also presents a potential risk when **over** used. When repellents with high concentrations are applied over several days without washing off, as in a camping situation where regular bathing may not be available, it can accumulate in the skin and

absorption into the body may cause an acute brain inflammation (encephalopathy). Children who absorb high amounts of DEET have developed slurred speech, low blood pressure, low heart rate, and even seizures. Adults who absorbed too much DEET have developed low blood pressure and, at higher doseages, seizures - a few have even slipped into a coma and died. The worst news is that concentrations over 50% work no better than the lower concentration products – they just increase exposure time free from insect bites, but they also increase risk!

While many of these products do not have warning labels, inhaling, ingesting, and sniffing these substances also enhances the possibility of brain penetration and toxicity, for both children and adults. In addition, many DEET compounds packaged in aerosol canisters are flammable. Pregnant women should probably avoid or really limit exposure to DEET repellents in the first trimester of pregnancy, but it has long been safely used in the second and third trimesters.

Having stated all of these warnings, I regularly use DEET for myself and for my children as it works well! I recommend using repellents with lower concentrations of traditional alcohol based DEET product for children - no more than 25 percent. You may use products with lower concentrations though they will provide shorter duration protection. For adults, traditional alcohol based DEET concentrations below 50 percent are safest. Those traditional alcohol based DEET repellents with higher concentrations should probably be applied only to clothing, not directly to the skin. If they are applied to the skin, it should be for short periods only and, the skin areas DEET has been applied to should be washed with soap and water upon coming indoors.

One product I usually recommend for young kids is ***Skintastic*** **without** the combination sunscreen. This is a repellent that has a low concentration (5%) of DEET and is packaged in a pump bottle rather than an aerosol canister, so inhalation of over-spray and flammability are not an issue. Because of the low DEET concentration, it will not last very long in the great outdoors, but it will not easily cause side effects!

Probably the best way to use DEET is in a polymer based time-release product developed for the U.S. Army for extreme use. These products markedly improve safety. The polymer-based DEET repellents are much less likely to be absorbed through the skin and cause side effects. The polymer based products are available to consumers in a 25 or 33% concentration called

Ultrathon (3M). They are now available at Walmart and other large commercial retailers where they were previously only available through specialty distributors such as Amway, Travel Smith, and Magellan catalogues under other names. They are safe to use on children as well due to decreased absorption!

2) Permethrin - For protection from **crawling and dropping critters** like ticks products containing permethrin are the best. Permethrin is much better than DEET as it is an insecticide and therefore kills ticks, etc. on contact, however it is not for direct skin contact. This can be used to treat clothing, especially if kids can tolerate wearing long sleeves and long pants. Just spray the clothes lightly with Permethrin and place them in a plastic bag overnight – this will provide protection through multiple launderings! For overnight campers, it is recommended to spray sleep wear (pajamas/nightshirts, sleeping bags, bedsheets) and place them in a plastic bag overnight for similar benefit - the efficacy of permethrin remains good for many weeks as it is resistant to breakdown by light, heat, or immersion in water!

For the heartiest nature lovers, use the procedure recommended by the U.S. military for its servicemen: spray the inside of clothing with permethrin and allow them to dry before wearing. Then, once dressed, cover only exposed areas of skin with a polymer-based, slow-release DEET insect repellent like **Ultrathon**. This combo method provided more than 95% protection for 6-12 hours – better than conventional 75% DEET in an alcohol base – and much safer!

3) For The Future – tests of picaridin a piperidine derivative are underway in the U.S.. Tests with a 19.2% concentration product provided greater than 95% protection for 8 hours. This product is already available in Europe and Australia.

WHAT DOES NOT WORK SO WELL Other widely advertised insect repellents are not nearly as effective as products containing DEET. 1) Avon *Skin So Soft* may provide only minutes of protection. 2) Products containing Citronella only provide an hour's worth of protection - and they do NOT protect against ticks! 3) Soy Oil containing products may help for less than 2 hours, and 4) eucalyptus containing products work for less than 4 hours. 5) Impregnated arm bands are next to useless, as they may repel insects only within inches of the area on which they are worn!

PRODUCTS TO USE WITH CAUTION

COMBINATION PRODUCTS - Products containing sunscreen as well as a DEET insect repellent pose a potentially serious problem

for children and their parents – I'll simplify it for you - **DO NOT use them!** While you want to keep re-applying sunscreen every 1-2 hours, especially when sweating or swimming, you don't want to re-apply a DEET containing insect repellent as you can quickly get to a dangerous/toxic dose with frequent re-application, especially in kids. Buy two separate products and do it correctly!

FINAL POINTERS

- Always use insect repellants if you are high risk of disease exposure - if you are elderly or have a weak immune system, and exposure prevention is not possible.
- Cover as much exposed skin as possible for the activity.
- Apply traditional alcohol based DEET products lightly, and only to skin surfaces that can't be covered by clothing.
- Don't re-apply traditional alcohol based DEET more than a few times per day if prolonged exposure to insects is necessary.
- Wash DEET off the skin as soon as you are indoors again.
- Use Polymer based DEET products to minimize absorption, especially on children.
- Use DEET in combination with Permethrin applied to clothing and bedding for maximum critter protection.