



White Paper

Don't Spray Bug Repellent on Your Arc Flash Clothing

In light of the ongoing concerns about West Nile Virus, a disease that grows in birds and is spread from bird to bird by infected mosquitoes, people who work outdoors and want to protect themselves from mosquito bites often turn to bug repellent spray. Electrical workers who must wear fire resistant clothing should be careful spraying bug repellent on their protective clothing because that could be dangerous.

“DEET is the active ingredient in the most widely used insect repellents applied to the skin. It disrupts the ability of biting insects to detect the source of carbon dioxide - the gas naturally given off by our skin and in our breath - which is what attracts mosquitoes and other insects to us. Insects aren't killed, they just can't locate their prey for a period of hours.” Says Consumer Specialty Products Association in a press release dated August 9, 2002.



There has been a high level of interest in DEET because of concerns about the West Nile Virus. Although DEET is the active ingredient in the most effective and popular insect repellents like Deep Woods and Off, it is HIGHLY flammable, especially in concentrated form. Over the counter products contain up to 26% DEET, but it has been possible to purchase 100% DEET spray on the Internet.

The following information regarding DEET testing was reported to the ASTM F18.65 Subcommittee:

- a) Flame resistant (FR) clothing fabrics will burn immediately after being sprayed with a concentrated DEET product.
- b) FR clothing fabrics sprayed with a liberal quantity of a 12% solution of DEET exhibited a 7X increase in afterflame time in arc testing.
- c) In both of these cases, these FR fabrics treated with DEET do not pass the flammability requirements for ASTM F1506.

Conclusion on DEET:

If a worker sprayed his or her FR clothing with DEET, the FR clothing could ignite and continue to burn during an electric arc flash incident or during an exposure to any other clothing ignition source. In this scenario the DEET is serving as a fuel source, and the DEET burning on the FR clothing could cause a significant increase in burn injury to the worker.

Recommendations on DEET:

1. Do not spray or apply DEET to FR clothing.
2. Spray or apply DEET containing insect repellents only on the skin.
3. Use only over the counter DEET containing insect repellents with DEET concentrations of 26% or less.
4. Do not use 100% DEET since it is highly flammable.

Permethrin:

There is limited information available suggesting that a mosquito spray based on permethrin (the active ingredient in most lice shampoos) can also be washed into or applied to clothing. These products may not add any significant flammability to FR clothing. When using permethrin in a spray form, use the WATER-BASED formulas only since propellants are typically flammable. For laundering, the powder form of permethrin is used. There is no available testing information on the use of permethrin with FR clothing. A source for more information on Permethrin is:

sawyerproducts.com