Is DEET Bad For You? A Very Good Time to Know.

By Josh Bloom — July 20, 2016

Mosquito season + Zika = good time to own stock in DEET manufacturers. Or maybe not (1).

The reason is obvious—the concern about contracting Zika from mosquitoes. Most Americans are going to be slathering ourselves in DEET this summer. Given that, it is inevitable that many out there will try to scaremonger it. So, here is quick primer about its properties, with special emphasis on safety (2).

Before I get to the science, you can see why it's needed. Take a look at the following screed [1] from famous supplement huckster Joe Mercola's website: (3)

"Most insect repellants out there are loaded with toxic chemicals, including the pesticide DEET, which is so poisonous that even the Environmental Protection Agency says you should wash it off your skin when you return indoors, avoid breathing it in and not spray it directly on your face. Think about it—if this chemical can kill mosquitoes (4), it can likely do some harm to other life forms too."

You may not be familiar with Mercola, so I want to note that I may seem to be "playing the man rather than the ball" here but that is because he is a very successful scaremonger. He has made a fortune being a Merchant of Doubt. Should any of the Four Horsemen of the Alternative (Oz, Chopra, Weil, Gupta) ever pass on, Mercola could arguably be in the running to replace them.

The public just wants to know if anything he claims is true, as unlikely as this may be. Should we not let our kids go out and play? Should we carpet bomb parks with DDT instead, or is DEET okay?

How toxic is it? The short answer is: not too bad. Since I am a scientist and not a salesman like Mercola, I will note there are a few exceptions.
In at least three animal models of toxicity, DEET has a very good safety profile. A lethal dose has been established, but the dose that is required to cause death or severe symptoms in animals is extremely high. At quantities that are lower than the lethal dose, adverse effects are rarely seen (5). The acute toxicity of DEET is significantly lower than most of the chemicals and drugs that we routinely encounter.

If the above verbiage sounds like scientific waffling, and cautious use of language, it is. That is what science is all about—evaluating both the positive and negative aspects of a given product, chemical, etc., and making a well-informed decision. There are no absolutes—only risks and benefits.

Hopefully this article will help you weigh the two in a rational way—exactly what Mercola and other science Deniers for Hire want you to avoid. But, if there is any take home message here, it is that you are going to be fine.

Here’s why.

Although DEET is readily absorbed through the skin, whatever blood levels that result following application decline quickly. The elimination half-life of DEET in blood is 2.5 hours. This means that after 15 hours, only 1.5 percent of the DEET that was absorbed will remain in your blood. The lethal dose of DEET in humans is 10-14 teaspoons taken orally. So assuming you do not take a good slug of the stuff (why would you?), you will not get enough to poison yourself.

Legitimate medical and scientific literature does not even hint at carcinogenicity of DEET in animals or humans, but there are plenty of data that show just the opposite.

DEET has been used since 1957. Its safety record is very good, but the scientist in me notes that it is not (cannot be) perfect. Nor are the alternatives that environmentalists and hucksters tout. And most of these don't even repel the bugs.

There have been reports of severe reactions, especially neurotoxicity, but they are quite rare. The
most common problem is skin irritation, especially in the folds of the elbow. This is temporary.

No, DEET is not perfect (nothing is), but it is very far from being the "toxic chemical" that the Mercolas of the world claim that it is. It is a lot better than getting Zika, or maybe just better than being bitten (6).

Sorry Joe, we keep hoping you are going to be right one of these times, yet you continue to disappoint. It's getting to a point where we should just create an award to "honor" you.

Notes:

(1) It is far from clear exactly how Zika will play out in the US. See: Zika: What the Hell is Going On? [2]

(2) The Bloom Correlation: the accuracy of the information on the Internet is inversely proportional to the price of the "natural alternatives" that are being sold on that site.

(3) It should come as no surprise that Mercola sells a "botanical" mosquito repellant on his site. Only $14.97 for one ounce of rosemary oil, which doesn't work [3], but, at least you will smell good while you're being bitten. Or you could buy six ounces of DEET at Walmart [4] for $3.86.

(4) This is dead wrong. DEET does not kill mosquitoes. It repels them. Mercola is either ignorant or lying.

(5) The relationship between dose and toxicity varies from species to species, however, the trend was the same in the animals that were tested.

(6) Mosquitoes, even in the absence of Zika, are more than a nuisance. They are known to carry a variety of infections, such as malaria, West Nile virus, dengue, yellow fever, and Eastern Equine Encephalitis. Although rare in the US, EEE has a 50 percent mortality rate.