

Insect Repellent Buying Guide

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If you live in an area where mosquitoes or ticks (or both) are common, it's important to protect yourself against the diseases these biting bugs can carry. The list of diseases you can catch from mosquitoes and ticks has grown in recent decades. Zika, transmitted by mosquitoes, and Powassan, transmitted by ticks, are two distressing examples. And even the number of people every year coming down with [more familiar diseases like Lyme](#) is increasing.

Our insect repellent [ratings](#) identify which products work best against mosquitoes and ticks. (We no longer test our products against ticks, but past test results and our research indicate that repellents that work well against mosquitoes also tend to be effective against ticks.)

Choosing the right repellent matters: Our top products provide several hours of protection, and some of our lowest-scoring ones fizzle out in as little as 30 minutes. So arm yourself with one of the high-performing repellents.

We begin our insect repellent tests by applying a standard dose of repellent to a measured area of skin on our test subjects' arms. (The standard dose is determined from the Environmental Protection Agency's product testing guidelines.)

After 30 minutes, these brave volunteers place their arms into the first two of four cages of 200 disease-free mosquitoes for 5 minutes. Our testers watch closely to see what happens inside the cage, and they count up every time a mosquito lands on a subject's arm, uses its proboscis (its long mouth) to probe the skin in an attempt to find a capillary, or bites the subject's arm and begins to feed—which the testers can tell by watching for

the insect's abdomen to turn from gray to red or brown.

After 5 minutes, the subjects withdraw their arms, then repeat the process by placing their arms into a second pair of cages of disease-free mosquitoes of a different species, for another 5 minutes. The subjects then walk around for about 10 minutes, to stimulate sweating—this is to mimic a real-world setting, in which users might be active while wearing repellent.

Half an hour later, this procedure is repeated once, and then again once every hour after that until a repellent fails our test, or until 8 hours have passed since it was applied. We consider a failure to be a “confirmed mosquito bite”—two bites in one 5-minute session inside the cage, or one bite in each of two consecutive 5-minute sessions.