

20 Hour Effectiveness of Controlled Release 20% DEET Lotion Formula.



On March 28, 2000, Insect Control Research, Inc. (ICR) conducted a repellent efficacy test for Sawyer Products, using the newly proposed EPA Protocols.

- **TEST ORGANISMS: 2,700 Culex Quinquefasciatus mosquitoes.** Since only the females bite, this assures 1,350 biting mosquitoes. Mosquitoes are 3 to 8 days old and denied normal food (10% sucrose) for twenty-four hours prior to the study to ensure their aggressiveness. These mosquitoes have never had a blood meal. The Culex Quinquefasciatus is a species of mosquito native to North America and is a species responsible for transmitting West Nile Virus in the USA. While it is not the most aggressive mosquito in North America, it is representative in aggressiveness among the more than 300 species of mosquito found here. This species of mosquito is often tested by domestic repellent manufacturers as a gauge of formula effectiveness.
- **TEST CAGES: 2x2x2 foot netted aluminum test cages.** Two cages, each having two sleeved entry ports on each of two sides (four entry ports per cage). Temperature and humidity are controlled within the insectary test chamber. To assure qualification of both mosquitoes and human subjects, at least ten landings within 30 seconds are required before applying the repellent.
- **TEST SUBJECTS: Four human volunteers.** (Disclaimer - no humans were hurt in the performance of this study!) Due to human time constraints, the test was discontinued at 20 hours. Testing was carried out in accordance with applicable DHHS Policies and EPA Model Rules when human volunteers are used, overseen by an Independent Institutional Review Board. Testing area was a 250 cm² of skin area on the volunteer's forearm. Forearms are inserted for five minutes every half hour during the nearly 20 hour efficacy test.
- **REPELLENT DOSAGE: Repellent was applied at EPA dosage rates.** EPA's dosage and the applied amount of Controlled Release repellent is equivalent to 1.5 grams per 600 square centimeters of exposed forearm. This is a fairly light application, and a rate which most people would exceed in real life usage, usually accepted as 7gms per body application. Repellent Failure is considered to have been reached at a "confirmed bite," or a second bite either within the same exposure period or in the next exposure period. The Failure Time is considered to have occurred at first bite. Having never had a blood meal, the mosquitoes used in the test are not able to transmit disease.

CONCLUSION: Under these rigorous test conditions Sawyer® Controlled Release formula provided the full 20 hours of protection against Culex Quinquefasciatus mosquitoes - a mosquito which transmits West Nile Virus in the USA!