

West Nile is far more risky than aerial assault

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No one wants to spray for West Nile virus. The key for WNV is managing mosquito larvae. The Sacramento-Yolo Mosquito and Vector Control District has done a masterful job of using larvicides, fish and other methods that are internationally recognized as cost-effective. No one in the world is routinely using larval control tactics that are any better.

Unfortunately, especially in urban areas, the district cannot reach every water source. Once mosquitoes leave the water, there are no practical alternatives to sprays to control them. Research from both Sacramento and Colorado indicates not only that the sprays suppress adult mosquitoes, they also reduce disease transmission to people.

WNV can induce devastating disease, capable of causing neural injury or death, even for people who take all reasonable precautions against getting it. Nancy Foster described this first-hand to the Davis City Council on July 25.

Thousands of people across the United States have suffered serious long-term illness or death from WNV (www.cdc.gov/mmwr/preview/mmwrhtml/mm5449a1.htm). In contrast, no cases of actual poisoning from mosquito sprays have been identified by critics.

In sum, illness from WNV is real; harm from the sprays is still hypothetical.

At the core of the controversy about the risks of WNV spraying is a misunderstanding of two toxicological principles: (1) dose makes the poison and (2) pesticides break down in the environment. Even substances that we need, such as salt, can be toxic or harmful to our health at high doses. We need selenium at about 70 micrograms daily, but it is toxic at high doses, and should not be consumed at more than 400 micrograms daily (ods.od.nih.gov/factsheets/selenium.asp).

While the pesticides used for WNV spraying can cause health effects if misused, the doses required are very high, much higher than selenium.

In discussing risks from pesticides, spray opponents have used information from groups opposed to the continued use of pesticides, such as the Northwest Coalition for Alternatives to Pesticides and Beyond Pesticides (e.g., www.beyondpesticides.org/about/mission.htm). However, even these sources are unable to make a case for human toxicity from pesticide sprays as used locally for WNV, including pyrethrins and piperonyl butoxide.

For example, www.StopWestNileSprayingNow includes sources that show adverse health effects from PBO and pyrethrins, but from exposures of at least 20 milligrams of toxicant per kilogram of body weight per day, usually over several weeks or months (review the original scientific papers).

However, to put this in context, assuming you weigh 110 pounds (50 kg), this would be 1 gram per day, the equivalent of a fish oil pill every day for weeks! This is more than 2,500 times the safe dose for selenium and is vastly higher exposure than anyone would get from a mosquito spray.

The aerial sprays are being applied at 0.64 ounces per acre, which includes the PBO, pyrethrins and all other ingredients. This is about 20 grams for a whole acre, 43,560 square feet, which is less than 0.0005 grams per square foot even if all of the pesticide reaches the ground.

This is far less than 1 gram per day, and provides a wide margin of safety even for the most pesticide-sensitive members of the community. Further, experiments by the California Department of Pesticide Regulation suggest that only about 14 percent of the spray reaches the ground.

Researchers have also looked directly for health effects from mosquito sprays. For example, a study of asthma in New York found more cases three days before spraying pyrethroids than three days after (Environmental Health Perspectives, 2004, volume 112, Page 1,183).

These pesticides also break down in a few days. Even the Northwest Coalition for Alternatives to Pesticides accepts that PBO residues are cut in half every four days in soil, for example. Other scientific sources show even faster breakdown on exposed surfaces, water and in the air.

In terms of environmental impacts, sprays may benefit birds such as yellow-billed magpies, which are killed by West Nile virus. Recent research by Don Weston in Berkeley has confirmed results from the mosquito district that residues of the sprays break down rapidly in creeks, but has also shown that PBO may ephemerally exacerbate the effects of existing pyrethroids in waterways on tiny crustaceans.

Still, Weston told the Sacramento Bee on July 29 that PBO use should not be restricted based on his research. More importantly, Weston's research shows that trivial urban uses of pyrethroids on lawns and for ant control should be stopped. There are safer alternatives (e.g., www.ipm.ucdavis.edu/TOOLS/TURF/, www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7411.html).

Spraying for WNV is a last resort that on balance is much less risky to people than WNV. It's too bad more public energy is not being directed toward organizing the community to drain standing water and control larvae, rather than engage in debates over the sprays.

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