

Can Pesticides Have Public Health Benefits?

Control of West Nile Virus Sparks Debate on Widespread Pesticide Use

This issue of *Pesticides and You* focuses on mosquito management and West Nile virus (WNV) because these are issues that may soon confront you and your community, if they haven't already. WNV has now been found, either in infected mosquitoes or birds, in 27 states and the District of Columbia. It has been found up and down the east coast, in the South, Midwest, and is expected to reach the west coast within a year or two. WNV first appeared in the U.S. in September 1999 in New York City and was identified by public health officials as the cause of 7 deaths that summer. Symptoms of WNV include mild flu-like effects, but can be deadly to older people and those with compromised immune systems. The source of WNV in the U.S. is not known. Some believe it hitchhiked in through transcontinental travel, while others say it was released from a research lab at Plum Island Animal Disease Center off of New York City, where their motto is, "Not once in our more than 40 years of operation has an animal pathogen escaped from Plum Island."

Do Pesticide Benefits Outweigh Disease Risks?

The arrival of WNV has sparked a debate that has been brewing for some time on the widespread use of pesticides for public health protection. Certainly, pesticide promoters and many public health professionals see the widespread use of pesticides in the face of an insect-borne disease as a no-brainer. Concerned citizens put pressure on public officials to spray their communities against the threat of disease. With the presumption that pesticides present no- to low-risk, or that their "benefits outweigh the risks," spray programs go forward, mostly without any public notice or debate.

The reality is that pesticides are harmful to human health and the environment and present a set of real risks of their own, which are discussed in this issue. Many argue, in the case of WNV, that the risks of harm caused by pesticides are greater than those caused by the disease. Ironically, the very same people who are at risk from WNV, because of compromised immune systems, are also in the highest risk group for pesticide poisoning.

The problem with the debate on public health uses of pesticides is the flawed assumption that conventional pesticides are effective tools. With this assumption, less of our community, state and federal resources are put into prevention, or source reduction, through the management of breeding areas, which is discussed extensively in this issue. In fact, the Centers for Disease Control (CDC), despite a lack of attention to the public health threat associated with pesticide exposure, does say, "The underlying philosophy of mosquito control is based on the fact that the greatest control impact on mosquito populations will occur when they are concentrated, immobile and accessible. This emphasis focuses on habitat management

and controlling the immature stages before the mosquitoes emerge as adults. This policy reduces the need for widespread pesticide application in urban areas." One of the problems that New York City reportedly ran into when WNV made its surprise debut was the lack of a sound mosquito management program that focused on prevention.

Prevention is the Best Strategy

The lack of a prevention program leads to a heavy reliance on pesticide spray programs that target adult mosquitoes. Experts estimate that these spray programs hit less than 10 percent of the targeted spray area, actually increase the number of mosquitoes by destroying their natural predators, and result in mosquitoes that are pesticide-resistant, longer-lived, more aggressive and carry more of the virus in their bodies. If managers do not focus on the behavior of the specific mosquito species (how far does it fly from its breeding area) and the behavior of disease hosts (such as migratory birds), spraying may occur in areas that do not contain infected mosquitoes that are a threat. It is widely agreed that by the time a human illness is diagnosed, spray programs are essentially worthless. Therefore, with information on the biology of the insect, monitoring of infected mosquito pools is essential.

In addition, this issue highlights research by Mohammed Abou-Donia, Ph.D., of Duke University Medical Center, that identifies the harmful synergistic effects of mixing exposures to a widely used adult mosquito insecticide, permethrin (as one example), with insect repellents containing the widely used ingredient DEET. Finally, there are serious issues associated with worker exposure and lack of training and protective equipment provided to those who conduct spray programs.

Take Action

With an understanding of all the complexities involved, as discussed in the centerpiece of this issue, the *Public Health Mosquito Management Strategy*, communities can embrace meaningful practices that reduce reliance on pesticides, utilize effective education, prevention and monitoring, and only engage in narrow, targeted spray programs as a last resort. Some states, like Connecticut, and communities, like Nassau County, NY, have operated

effective programs that may serve as models. This issue is intended to serve as a tool to support local and state action. Use the information to contact your local public health official and help set in motion a strategy that avoids widespread pesticide use in your town.



—Jay Feldman executive director of Beyond Pesticides/NCAM