

Larvicide debate marks start of another West Nile virus summer

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As Canada prepares for what is becoming an annual battle against the West Nile virus (WNV, see page 1427), another battle is developing over the best way to respond to the emerging threat.

For instance, Toronto and other Ontario municipalities plan to employ a larvicide — methoprene — that New York City (NYC) is wary of using. The New York Environmental Protection Agency is limiting use of the synthetic growth hormone, which prevents mosquitoes from becoming adults, because of concerns it may affect other species. The agency allows its use only in water that eventually flows into purification plants; Ontario permits its use in storm sewers, many of which flow into natural waterways without the water being treated.

New York's concerns are shared by some Toronto politicians. Michael D'Andrea, Toronto's manager of infrastructure asset management, told city council that when it rains, water from storm sewers and catch basins is flushed directly into streams and creeks, where methoprene "may have adverse impacts on other insects and aquatic organisms."

However, the US Environmental Protection Agency reports that methoprene "does not pose unreasonable risks" to human health and that it presents "minimal acute and chronic risk" to freshwater fish and invertebrates."

In Canada, the Pest Management Regulatory Agency (PMRA) says methoprene is "practically nontoxic to mallard ducks and only slightly toxic to fish." Although it is "very highly toxic to freshwater invertebrates," it has no last-

ing adverse effects when used properly.

Councillor Joe Mihevc, chair of Toronto's Public Health Committee, says the city is concerned about the larvicide's spread to urban wetlands. That's one reason why New York City, which has coped with WNV since 1999, uses bacterial larvicides that target only mosquitoes. (The bacteria secrete an enzyme that kills the insect.) But not all bacterial larvicides are available here. The PMRA says no one has applied to license *Bacillus sphaericus*, the larvicide NYC is using.

In April, Quebec used another bacterial larvicide that has been approved for use, *Bacillus thuringiensis* var *israelensis* (Bti). "We are trying to contain the outbreak without harming the environment," says government spokesperson Collette Gaulin. Methoprene will be used "if absolutely necessary." Bti is effective only in water that contains organic materials, such as plants. *Bacillus sphaericus* can be used in any water.

Ontario has accounted for 17 of 18 of Canada's WNV-related deaths and 307 of its 325 confirmed cases. There have been 16 cases in Quebec and 2 travel-related cases in Alberta.

Ontario has asked every municipality to consider using a larvicide, says provincial spokesman Paul Kilbertus, but "we don't tell them when and where to do things."

In February, Toronto city council earmarked \$688 000 for WNV control, including \$360 000 for the methoprene pellets that will be used in 175 000 catch basins.

Health Canada expects WNV to reach British Columbia and the Yukon



Prevention is the key

by the fall. "Educating the public on avoiding mosquito bites is the most important thing," says epidemiologist Peter Buck, and education accounted for a large part of the WNV strategy that Health Canada announced in April.

"Public education has been quite successful and will continue," says James Gibson, NYC's assistant commissioner for veterinarian and pest control services. "Prevention is the primary goal."

The US Centers for Disease Control and Prevention (CDC) says that less than half of Americans surveyed last year took any precautions against mosquito bites, and only about a third used a repellent containing N,N-diethyl-3-methylbenzamide (DEET), which is considered to offer the best protection.

Last year, more than 4000 Americans became ill because of WNV and 274 died. There were human cases in all but 11 states. WNV specialist Lyle Petersen of the CDC says tackling the virus is "unbelievably complex." The one certainty is that "where West Nile has been, it stays." — *Barbara Sibbald, CMAJ*