

PREVENTING THE SPREAD OF WEST NILE VIRUS

Use of Larvicides

Many municipalities are preparing to carry out activities to control mosquitoes carrying West Nile Virus as part of their mandate to protect public health. Approaches to mosquito control include promoting personal protection, awareness and education campaigns, reducing the number of mosquito breeding sites, biological control and – if the Medical Officer of Health decides it is necessary – the use of larvicides.

Although eliminating breeding sites is the key measure for reducing mosquito populations, some water bodies such as catch basins, stormwater detention ponds, ditches and wetlands cannot be removed. The Medical Officer of Health may decide to larvicide as a preventive measure if monitoring identifies larvae in stagnant water bodies.

By killing the larvae directly before they mature, larviciding reduces the adult mosquito populations that have the ability to act as carriers of the virus.

Larvicides

The Ministry of the Environment (MOE) is allowing only three larvicides to be used in Ontario under permit for West Nile Virus. These larvicides are safe for the public and safe for the environment when properly applied. They have been extensively reviewed and approved for use by Health Canada.

Methoprene is a chemical that acts by preventing the larvae from maturing into adults. The other two larvicides are *Bti* (*Bacillus thuringiensis israelensis*) and *B. sphaericus* (*Bacillus sphaericus*) and are bacteria that, once in the digestive system of a mosquito, secrete an enzyme that kills the mosquito. This enzyme is activated only by the digestive system of the mosquito. *B. sphaericus* works better than *Bti* in polluted or highly organic water bodies and has the ability to recycle in dead larvae so that it is available if more larvae develop.

Applying Larvicides

Larviciding programs are best conducted through the late spring and through the summer. Larvicides are placed directly in stagnant water containing the mosquito larvae.

The larvicide used depends on the site to be treated. Methoprene is used in the catch basins below grates along the curb as well as in surface water such as temporary pools and ditches. It is a liquid, granular, pellet or briquet formulation and sinks to the bottom of the water and slowly dissolves, releasing small amounts to the surface where it is eaten by the larvae. *Bti* is used in ponds and ditches. It is a liquid or granular formulation that is applied on the surface of stagnant water. *Bti* is very specific to mosquitoes and will not harm any fish or other organisms in the treated water.

B. sphaericus is available in three formulations one of which is a water soluble pouch that is for use in catch basins. The other formulations are granular and are applied to surface waters.

The use of any larvicide in municipal West Nile Virus control programs requires a permit issued by MOE and requires that the public receives advanced notification of the treatment sites. Permits will only be issued if supported by a letter from the local Medical Officer of Health indicating that larviciding is needed to prevent the spread of the West Nile Virus.

Regulating Pesticides Use

The management of pesticides is a joint federal and provincial responsibility. Health Canada's Pest Management Regulatory Agency (PMRA) is responsible for assessing pesticides to determine if they are acceptable in terms of safety, merit and value. Pesticides approved by PMRA are granted registration, which allows them to be sold and used across Canada.

MOE regulates the sale, use, transportation, storage and disposal of federally registered pesticides in Ontario under the *Pesticides Act* and Ontario Regulation 914. MOE classifies pest control products into one of six different schedules. The schedule determines who can sell or use the pesticide product and what restrictions (e.g., licence and/or permit) are placed on its use.

A licence and a permit are required to use these larvicides in municipal control programs for West Nile Virus. In order to use these pesticides and carry out larviciding, the applicator must pass examinations and obtain a licence for mosquitoes and biting flies.

More Information

Information on mosquitoes, *Bti* and methoprene can be found on Health Canada's Pest Management Regulatory Agency Web site at:

<http://www.pmra-arla.gc.ca/english/consum/mosquitos-e.html> and
<http://www.pmra-arla.gc.ca/english/pubs/fact-e.html>

For further information visit the Ministry of the Environment's web site at www.ene.gov.on.ca or contact:

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