

Fact Sheet

May 2010

Larviciding

What is larviciding?

The City of Toronto has a comprehensive program to control mosquitoes and reduce the risk of illness from West Nile virus (WNV). Larviciding is one measure to reduce mosquito breeding. It involves the use of products (larvicides) to control mosquito larvae, which are an immature form of mosquitoes that live in water.

The City of Toronto will be placing larvicides in stagnant water where mosquitoes like to breed. There is strict regulation by the Ministry of the Environment controlling the use of larvicides. Larvicides can only be applied by trained and licensed applicators, who must obtain a permit from the Ministry of the Environment. In Toronto, larvicides will be applied to standing water as granules, pellets or ingots. They will not be applied as a spray.

Where will larvicides be used in Toronto?

The City of Toronto will apply larvicides to approximately 200,000 catch basins (roadside storm drains). Catch basins are an artificial environment designed to hold water for long periods of time. The only option to prevent mosquitoes from breeding in catch basins is through the use of larvicides. Larger artificial bodies of water, such as storm water ponds are usually not significant mosquito breeding sites. These and other areas will be monitored for larvae and may be treated with larvicides if necessary.

Natural areas, such as marshes and ponds, will also be monitored for larvae. Larvicides may be applied in those areas if there are large numbers of mosquitoes that can carry West Nile virus (WNV). Not all mosquito breeding sites will be treated with larvicides. Some sites may breed kinds of mosquitoes that are not important carriers of WNV and/or poorly controlled by available larvicides.

Why is the City targeting storm water catch basins?

Storm water catch basins have been identified as important breeding grounds of mosquitoes in many cities across North America. In Toronto, the mosquitoes most likely to carry WNV (*Culex pipiens*, *Culex restuans*) breed in small, stagnant pools of water such as those in catch basins. A 2002 study confirmed the presence of these mosquito larvae in virtually all Toronto catch basins sampled.

When will larviciding begin?

Larviciding begins at the end of June and ends in August. Larvicide is applied during this time period because mosquitoes are at the peak of their reproductive cycle. The exact date for larviciding depends on the results of monitoring of mosquito breeding and weather conditions.

Newspaper advertisements will announce the beginning of the larvicide program. The City's web site and information line will also be updated regularly with information on where and when larviciding will occur.

What larvicides are being used?

The City of Toronto will be using three different larvicides: methoprene, BS (*Bacillus sphaericus*) and Bti (*Bacillus thuringiensis israelensis*). Methoprene and BS will be used to treat catch basins. Bti will be used in other areas to reduce mosquito breeding.

Direct contact with any of these larvicides may cause mild eye and skin irritation. Methoprene interferes with the development of mosquito larvae into adult mosquitoes. Methoprene is highly effective, has low environmental impact and poses no risk to the health of mammals, including humans. Methoprene will be used for roadside catch basins.

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Research has shown that methoprene, when used to reduce mosquito breeding according to its directions, does not pose a risk to human health. Methoprene breaks down quickly in water and soil. It will not remain in the ground and will not leach into ground water.

BS and Bti are biological pesticides derived from naturally occurring soil bacteria. They work by killing mosquito larvae before they develop into adults. They do this by damaging the digestive system of mosquito larvae. They have no impact on other species except for black flies.

What is the human health impact of the larvicides used to reduce WNV?

Methoprene, BS and Bti are not harmful to humans when used to control mosquitoes according to directions. Monitoring of the environment in Toronto has shown that methoprene is not detectable in local waterways or drinking water. Because the larvicides are applied in solid form there is no exposure through the air. Areas of stagnant water (other than catch basins) that are treated with a larvicide will be posted with signs.

Is the City doing anything new?

The City has been using methoprene pellets and ingots in City catch basins to reduce the number of larvae. This year the City will be using *Bacillus sphaericus*. It is easier to apply and lasts slightly longer than methoprene pellets. It can also be used in catch basins adjacent to environmentally sensitive areas.

Will the larvicides harm the natural environment?

The three larvicides used by the City of Toronto break down quickly in the environment. They are also very specific to mosquitoes and in the amounts used, are harmless to plants, mammals, fish, birds and insects other than mosquitoes and black flies.

Does a larvicide program this year mean there will be one every year?

No. This year's larviciding program will be fully evaluated before any recommendations are made to continue next year. The number of human WNV cases, results of monitoring of mosquitoes, consultation with the Ministry of Health and Long-Term Care, and the experiences of other health units will all be considered when assessing options for the next season.