

ADULT MOSQUITO REDUCTION

Objective:

To reduce the abundance of adult mosquitoes in areas of elevated risk to human health from WNV through the judicious use of pesticides.

Background:

The application of chemicals to kill adult mosquitoes by ground or aerial application is called adulticiding. Adulticiding would only be considered in Peel if there was a significant risk to human health. Adulticides are typically applied as an Ultra-Low-Volume (ULV) spray, where small amounts of insecticide are dispersed either by truck-mounted equipment or from fixed-wing or rotary aircraft. For effective adult mosquito reduction, the fine ULV droplets must drift through the habitat and come in contact with flying mosquitoes. Adulticiding is usually the least efficient mosquito control technique - adult mosquitoes are widely dispersed and the pesticide has to make contact with the mosquito in order to kill it. Nevertheless, adulticiding, based on surveillance data, is an extremely important part of any Integrated Mosquito Management (IMM) program. If an outbreak of WNV in people is occurring or imminent, it means that large numbers of WNV infected adult mosquitoes are likely present. This risk can only be mitigated in the short term through adult mosquito reduction.

During the WNV season, Peel Public Health's West Nile Virus Working Group will conduct a weekly risk assessment based on surveillance information to identify the relative risk of human infection in Peel. Prior to any decision to apply adulticides, this working group will consider a number of factors in the context of mosquito and WNV biology to assess the level of risk to human health:

- Dead bird distribution and density – this helps to assess the amount of WNV in an area and its location. A large die-off of crows from WNV suggests that human cases may occur in the next few weeks.
- Mosquito species distribution, density and trends – to see if mosquito populations are those known to transmit WNV and if they are present at a high or low level.
- The level of WNV present in mosquitoes – the presence of WNV in a high proportion of mosquitoes, especially those known to bite humans is of greatest concern.
- Density and proximity of human populations to positive findings of WNV.
- The time of year – human cases of WNV typically are greatest in the last two weeks of August and the first two weeks of September. Therefore, indications of high WNV activity prior to this time are of much greater concern than those after it.

- Weather – certain conditions are necessary in order for adulticides to be applied effectively. Some forecasts may predict conditions that would result in a rapid decline in mosquito numbers making adulticiding unnecessary.
- The distribution of human cases in Peel and in other jurisdictions in the current year compared to past experience.

Because of the large number of factors, the decision to adulticide will be made on a case by case basis. This decision is made more difficult by having only two years experience in which human cases of WNV occurred in Peel. However, every effort will be made to target this intervention to specific areas of risk and not an entire city or the entire Region and only when deemed necessary.

Adulticiding would be conducted using a truck-mounted unit. Aerial application is not being considered at this time. The adulticiding agent of choice will be malathion.

Planned Activities:

- Adulticiding decisions will be made on a case by case basis according to the level of human risk of WNV.
- Peel Public Health is planning to use malathion if necessary for adult mosquito control. Peel Public Health will annually review the availability, health impact and effectiveness information of pesticides. Any product will be applied in compliance with local, Provincial and Federal laws and regulations.
- The public will be notified of adulticide locations and schedules in advance, which will allow sufficient time to take any necessary precautions to reduce pesticide exposure (see Public Education and Community Outreach).
- Information will be released at least 48 hours in advance through the media, the Peel Public Health Web site, Health Line Peel and pertinent municipal and community organizations and the Ontario Regional Poison Control Centre in accordance with MOE requirements.
- Hospitals and the Ontario Regional Poison Control Centre will be notified regarding the adulticiding schedule. Information on the pesticide that will be used will be provided to the public, physicians and other health care providers.
- Elected officials will be notified immediately once the Medical Officer of Health has made the decision to adulticide.

- Adult mosquito reduction measures will be scheduled when mosquitoes are active and when weather conditions are conducive to its success.
- Peel Public Health will monitor and assess control activities for any potential environmental and health effects through several measures which may include pre- and post-spray environmental sampling and addressing pesticide exposure complaints received by Peel Public Health.