

TORONTO STAFF REPORT

March 31, 2003

To: Board of Health
From: Dr Sheela Basrur
Subject: An Update on the Toronto Public Health West Nile Virus Program for 2003

Purpose:

This report provides the Board of Health with an update on Toronto Public Health's West Nile Virus (WNV) Program for 2003 and responds to a number of outstanding issues arising from the Board of Health meetings of November 18, 2002 and January 27, 2003. It also seeks the Board of Health endorsement of the WNV protocol submitted to the January, 2003 Board of Health meeting.

Financial Implications and Impact Statement:

City Council approved one time funding of \$1,376,000 (gross) and \$688,000 (net) within the 2003 Toronto Public Health Operating Budget for the 2003 West Nile Virus Program. For 2003, one full-time West Nile Virus Manager and 32 part-time staff will be hired in this program. In addition, funding is to be directed to other TPH programs to facilitate dead bird pick up, human surveillance and the provision of WNV public information and complaint investigation services.

The WNV Program budget includes funding for staffing, surveillance, larviciding, and approximately \$70,000 for public notification. The budget contains no provision for adulticiding or public education initiatives. A report on the adulticiding protocol with financial implications will be presented to the Board of Health in June, 2003.

The Chief Financial Officer and Treasurer has reviewed this report and concurs with the financial impact statement.

Recommendations:

It is recommended that:

- (1) The Board of Health approve the attached Toronto Public Health WNV Protocol (Appendix A); and
- (2) That the appropriate officials be authorised and directed to take the necessary steps to give effect thereto.

Background:

At the Board of Health meeting of November 18th, 2002, Toronto Public Health presented a report outlining the planned 2003 West Nile Virus program. At that time, the Board of Health requested the Medical Officer of Health to “report back to the April 2003 meeting of the Board of Health on a protocol based on an assessment of health risks and benefits to be used for the consideration and approval of chemical pesticide applications (both larvicide and adulticide applications), whether for stormwater catchbasins or wetlands, for mosquito control to prevent the spread of WNV and to include in such report, comment with respect to the potential content of a standing water removal by-law, in consultation with appropriate City officials”.

The requested protocol (Appendix A) was tabled at the Board of Health meeting on January 27, 2003, and included detailed information on the plan to apply the larvicide methoprene to storm water catch basins. The report did not include a protocol on the use of adulticides.

The Board deferred consideration of the endorsement of the WNV protocol pending further information contained in this report.

The recommendations adopted by the Board of Health at the January 27th, 2003 meeting are listed in Appendix B.

As directed by the Board of Health, the Medical Officer of Health met with key staff at Works and Emergency Services (WES) to review the protocol. The Commissioner of Works and Emergency Services presented a report to the March 26, 2003 Works Committee (Appendix C). At this meeting, the Works Committee recommended that:

- (1) The Province of Ontario be requested to fund and co-ordinate a major television advertising campaign similar to that undertaken for the flu shot, or to send information to all residents door-to-door;
- (2) Catch basin cleaning be implemented in those areas near rivers and creeks and that the use of larvicide not be introduced if possible;
- (3) Funding in the amount of \$100,000 be reinstated in the budget for the West Nile Virus public education program and the Province of Ontario be requested to match this amount; and
- (4) Requested the Commissioner of Works and Emergency Services to submit a report to the Works Committee on any potential retrofit programs for catch basins.

This report provides an update on the status of the WNV Program for 2003 and responds to the requests tabled by the Board of Health at its January meeting. It also resubmits the West Nile Virus protocol for endorsement by the Board of Health and addresses the potential for a standing water by-law as requested by the Board of Health.

Comments:

Launching a City-wide WNV Program involves a great deal of time-sensitive preparatory work and inter-departmental co-operation. Plans have proceeded to strengthen mosquito control measures for the coming mosquito season, in the context of an integrated pest management (IPM) approach.

Mosquito Control Protocol:

The WNV program is based on an integrated pest management (IPM) framework that recommends a stepped response to WNV and includes key elements such as public education, mosquito source reduction, and surveillance, with the possibility of adding larval and adult mosquito controls to mitigate WNV risk. The 2003 program calls for larval mosquito controls to be added to the key elements from the 2002 program, and specifically calls for the use of a larvicide methoprene in City catch basins. The application of a larvicide early in the WNV season is not only considered necessary to reduce human WNV disease, but can also reduce the need for spraying pesticides to kill adult mosquitoes later in the season.

The larvicide methoprene (to be used in pellet form) was chosen because of its effectiveness in preventing mosquito maturation in catch basins, coupled with its minimal toxicity profile.

Larviciding for 2003:

The mosquitoes to be targeted for larviciding are the Culex species, which are known to be involved in the amplification of viral activity in the bird-mosquito transmission cycle. Larviciding activity will focus on the City's storm water catch basins because it is known that catch basins are significant sites of Culex mosquito breeding. Methoprene pellets will be dropped into catch basins by hand. It is not expected that significant amounts of the larvicide will enter Toronto's water courses. In his report tabled at the March 26th, 2003, meeting of the Works Committee, the Commissioner of Works and Emergency Services proposes to monitor for methoprene in Toronto streams and rivers before and after the application of methoprene (Appendix C). In addition, WES will be implementing a catch basin cleaning program in those areas near rivers and creeks to avoid the need for larvicide application in these areas if possible.

The application of larvicide to the catch basins is being timed to have the greatest impact in lowering the peak adult population of Culex species mosquitoes. TPH anticipates that methoprene application will occur around late June and then again in late July, when Culex mosquitoes are at their highest rate of reproduction. The exact dates and times when larviciding will occur will depend on the results of larval monitoring in catch basins as well as local weather conditions. In accordance with Ministry of Environment (MOE) permit requirements, TPH will notify the public about where and when the larviciding will occur, at least 48 hours before the

application of larvicide to catch basins. The formulation of methoprene to be used is designed to have residual activity against the larvae for approximately 4 weeks, which is the interval between the two planned applications.

Work on a number of key tasks is currently under way to ensure Toronto Public Health is positioned to conduct the larviciding component of the program. This includes:

- (1) The hiring of a full-time WNV program manager commencing on March 31st, 2003;
- (2) Hiring, training and licensing 24 staff to perform catch basin monitoring and methoprene application;
- (3) The procurement of methoprene;
- (4) The re-convening of the Interdepartmental WNV Coordinating Committee to address City-wide issues such as public education, inventory and surveying of City-maintained land, and interdepartmental cooperation on the implementation of the City's WNV prevention efforts;
- (5) The establishment of a WNV Advisory Committee (comprised of key City staff, the Toronto and Regional Conservation Authority, the Waterfront Regeneration Trusts and other environmental interest groups such as the Toronto Environmental Alliance) to advise on the environmental impacts of pesticide application; and
- (6) The establishment of a pilot project, in partnership with WES, to study the effectiveness of non-chemical larval controls in catch basins.

There are still a number of directives, conditions and details that all health units across the province are awaiting clarification from the Province before plans can be completely crystallized. It is expected that these will be clarified in the coming weeks, as the Province rolls out its plan for WNV. Key conditions and details that have yet to be clarified include:

- (1) The development of a larval monitoring program by Toronto Public Health to monitor mosquito development before and after the larviciding of the catch basins. This plan will have to be circulated to the Ministry of the Environment, The Ministry of Natural Resources (MNR) and the federal Department of Oceans and Fisheries (DOF) for comment and approval. It is unclear what level of monitoring will be considered acceptable to all the agencies;
- (2) Pesticide Management Regulatory Agency (PMRA) advice on the appropriate dose of methoprene required per catch basin;
- (3) The details and scope of the Ministry of Health and Long Term Care (MOHLTC) communication strategy, which may include mass-media advertisement and the provision of printed materials to be used at the local Municipal level;

- (4) The details and scope of the WNV-related laboratory services to be provided to local health units by the MOHLTC in 2003. It is understood that enhancements are being made to the MOHLTC laboratory to ensure quicker turn around times for results of human WNV samples submitted for analysis. A decision still has to be made regarding the provision and funding of laboratory services required for mosquito surveillance; and
- (5) The details and scope of the MOHLTC human surveillance plan, including WNV case definitions.

When the details of the provincial plan become clear, the Board of Health will be informed of the financial and program implications in a timely manner.

Environmental Impact of Larval Control Measures:

Because the larviciding component of TPH's WNV program involves an intervention in the environment, appropriate MOE guidelines must be followed, and an assessment of any environmental impacts must be carried out. The MOE regulates the introduction of all pesticides into the natural environment, and only pesticides that are approved by the federal PMRA may be used in Canada. In the process for permit application, the City of Toronto must present a plan for larviciding that outlines how the product will be applied, what larval surveillance will be done, how the public will be notified of larviciding activity, and other operational details. The MOE then reviews the application and determines whether the City's plan is appropriate. In the case of an application to use an aquatic pesticide such as methoprene in City catch basins, the MOE must consult with the MNR and DOF as a result of the potential impacts of applying this product into water. A key issue that the City and the MOE must agree upon is the specific larval monitoring requirements for a subset of City catch basins in which methoprene will be applied. At this point, the MOE has indicated that it will be up to the local municipality to develop the larval monitoring plan which will then have to be circulated to the MOE, MNR and DOF for comment and approval. Once the MOE is satisfied with the larviciding application plan, it will issue a permit to apply methoprene to catch basins. The permit will outline the conditions with which the City will have to comply.

As mentioned above, the Commissioner of Works and Emergency Services is proposing to monitor for methoprene in Toronto streams and rivers before and after the application of this pesticide (Appendix C). The MOE has also indicated that they will be monitoring the efficacy of methoprene useage and the potential impact on the environment and they are looking to develop partnerships with local authorities in this regard. As recommended in the February 24th, 2003, report of the CAO (Appendix D), TPH will be establishing a West Nile Virus Advisory Committee. This Committee will include representation from the Toronto and Region Conservation Authority and the Water Regeneration Trust and the Toronto Environmental Alliance and will be able to advise TPH on ways to monitor and minimize any adverse impacts of the mosquito control program.

Adulticiding:

Adulticiding involves use of measures to control adult mosquitoes. Chemical insecticides are sprayed or fogged and delivered by backpack sprayers, truck mounted foggers or by aerial means.

Toronto Public Health recognises the importance of a coordinated approach to the response to the WNV. TPH is a member of a working group, composed of local health units in Central East Ontario and the Golden Horseshoe, that has been working together since fall 2002 to plan a common strategy for WNV across the region. The group is about to complete its work on larviciding preparation and will soon embark on developing a protocol for adulticiding. It is anticipated that the adulticiding protocol will be available by June 2003, and will be presented to the Board of Health at this time.

The TPH Protocol for the Control of Mosquito Larvae indicates that the use of pesticides to kill adult mosquitoes is the last step to be considered in a stepped response framework. Every effort to mitigate the risk of WNV through public education, the promotion of personal protective measures, mosquito breeding source reduction and larval mosquito controls will be performed before considering the use of adulticides.

If the level of risk to human health is so great that Toronto Public Health is forced to consider the use of adulticides, it is likely that the application of the chemical will be restricted to clearly identified areas of high risk. These would be areas in which human cases have been detected and/or where positive dead birds and/or positive mosquito pools have been observed in significant numbers (criteria to be identified in Adulticide protocol).

There is currently no provision in the 2003 WNV budget for adulticiding and at this point it would be difficult to provide any information on the likely costs that would be incurred. However, a number of surrounding Health Units have retained stand by services of private pest control operators for this potential eventuality. The costs for such a retainer fee is \$35,000.00 which would secure a dedicated vehicle and staff with sufficient chemical to treat an area of about 4 square kilometers. Once activated, an hourly fee of \$165.00 and costs for additional chemical would be incurred.

Should funds for adulticiding be required in the context of a WNV health emergency, Board of Health and Council authority and approval will be sought.

Education / Communications:

To ensure the optimal use of City resources, TPH will be collaborating with other departments on educational outreach on WNV. Although the budget contains no provision for adulticiding or public education initiatives, TPH will be collaborating with other departments on educational outreach on WNV. Details of this are provided in the March 13th, 2003 report of the Commissioner of Works and Emergency Services to the Works Committee (Appendix C).

Control of Standing Water By-law:

After reviewing legislation in use both in Canada and in the United States for the control of standing water, the City Solicitor is of the opinion that development of a separate by-law is not necessary at this time. The provisions of the Health Protection and Promotion Act pertaining to the elimination and control of Public Health Hazards provides sufficient legislative authority to deal with this issue should standing water and mosquito breeding be deemed to be a public health hazard.

Conclusion:

The TPH Protocol for Larval Mosquito Control was developed after consideration of the experience of local authorities across North America, distribution trends of the disease across the continent and a review of the current research about WNV disease. The protocol should be viewed as part of a well considered stepped approach to the control of the disease and takes an Integrated Pest Management approach.

There is extensive ongoing preparatory work for the 2003 WNV program, particularly with respect to implementation of the larviciding program. Toronto Public Health continues to work with a wide variety of stakeholders as it prepares to launch the program. These stakeholders include other City departments, environmental groups, neighboring health units, the provincial Ministry of Health and Long Term Care and the Ministry of the Environment and Health Canada.

Toronto Public Health is also currently working with a task group of neighboring health units to develop an adulticiding protocol. TPH will report back to the Board of Health on this in June 2003.

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List of Attachments:

- Appendix A: January 23, 2003 Board of Health Report Re: Protocol for the Control of Mosquito Larvae to Prevent and Control West Nile Virus (WNV)
- Appendix B: The specific recommendations made by the Board of Health at the January 27th, 2003 meeting
- Appendix C: March 13th, 2003 report of the Commissioner of Works and Emergency Services to the Works Committee
- Appendix D: February 24th, 2003, report of the CAO to Council