

CEAC Report 2004-05

To: Mayor and Members of Council

From: Debbe Crandall, Chair, Caledon Environmental Advisory Committee (CEAC)

Date: July 6, 2004

Subject: West Nile Virus (WNV) Prevention Plan 2004

Recommendations:

1. That Council receive CEAC Report 2004 – 05
2. That members of Council remain aware of the potential implications of the 2004 WNV Prevention Plan on human, non-human and ecosystem health in Peel Region .
3. That Council support further research regarding the release of natural predators of mosquitoes (e.g., dragonflies, bats and minnows) into areas of high WNV concentration as a means of reducing the threat of the disease.
4. That Council support further investigation into the impact and effectiveness of methoprene and other pesticides used for WNV on ground water contamination, as well as human and ecosystem health, through an independent party.

Background:

West Nile Virus is a mosquito-born illness that usually has little effect on humans. However, in rare cases it can cause serious health problems such as encephalitis (swelling of the brain). The virus originated in the Middle East and Africa whereby, over time, many species have developed immunity to the symptoms. The virus first appeared in North America in 1999 in New York and in 2001 locally. By 2002, the virus had spread to 44 states and 5 provinces including the first human case in the Region of Peel. The virus spreads from infected birds to mosquitoes, then to other species including mammals like horses, squirrels, raccoons, humans and one reptile species. The most significant vector is the mosquito species *culex pipiens* which prefers breeding in small ponds of stagnant, dirty water and doesn't travel far from its original larval habitat. The full reproductive cycle is usually 1-3 weeks.

According to the Toronto and Region Conservation Authority (TRCA)¹, "Current studies have shown that very few ponds have significant mosquito breeding sites." Furthermore, of the 57 mosquito species in Ontario, only two are currently thought to warrant concern regarding the

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¹ Toronto and Region Conservation Authority; *West Nile Virus Newsletter* , Spring 2003.

spread of West Nile Virus (WNV). The risk of serious illness in humans remains relatively low. For example, unlike other viruses, WNV rarely can be spread through blood transfusions or organ transplants if the donor was recently infected, or from mother to unborn child or via breast milk.

Although it is not the intention of CEAC to challenge the authority of the Peel Health Department regarding the application of pesticides to help control WNV, the Committee wishes to ensure that there is adequate public awareness of the potential harm that these chemicals may have on human health and the integrity of Peel's natural environment.

Discussion:

1. Overview of the research carried out by CEAC.

In June, 2003, a discussion was held with Dr. David McKeown, Medical officer of Health, Region of Peel Health Department, who holds ultimate responsibility for the WNV prevention program. Please see Appendix A for a write up highlighting the CEAC dialogue with Dr. McKeown. In March, 2004, a telephone discussion took place with Dr. Howard Shapiro, Associate Medical Officer of Health, who is responsible for the implementation of the 2004 WNV Prevention Plan. As a result, a copy of the 2004 WNV Prevention Plan was forwarded to CEAC once it had been approved by Regional Council.

Various articles, newspaper clippings and government reports have supported CEAC's understanding of WNV but only reliable sources have been cited in this report. The WNV Prevention Plan 2004 has been the main source for the data contained within this report, and the executive summary of that report can be found in Appendix B. A copy of the WNV Prevention Plan for 2004 – as well as previous years' reports and other pertinent information regarding WNV – can be located at www.peel-bugbite.ca

2. 2002 WNV statistics compared with those of 2003.

Although “a record number of WNV cases were reported in North America in 2003”, --- “the number of people who died from complications related to the disease decreased in 2003”.² The 2004 WNV Prevention Plan provides further detail regarding the WNV in Peel Region in the following passage:

There were 112 residents of Peel who had laboratory evidence of WNV infection in the 2002 season (55 suspect cases, 20 probable cases, 37 confirmed cases, including two deaths). In addition, 20 crows and 128 batches of mosquitoes from Peel tested positive for WNV. In 2003, only 10 human cases and no deaths were reported in Peel. The number of positive mosquito batches dropped dramatically to 24 and only 12 crows tested positive for the virus. (ref. p.4)

Please see Appendix B for additional details on 2002/03 statistics.

² *West Nile Virus (WNV) Prevention Plan 2004*, dated March 11, 2004

3. Summary of the efficacy of the 2003 program:

Based on the available statistics stating that no human deaths were recorded in Peel Region in 2003 from WNV, the prevention program can, at least in part, be regarded as effective. While the avoidance of human fatality due to WNV is a sign that adequate steps were taken with the prevention program, the extent of any negative impacts derived from the draining of wetlands and the impact of pesticide application on non-human species and ecosystem health is uncertain. These factors thereby limit the perceivable effectiveness of the prevention program from a perspective that is not only concerned with human health, but also the wellbeing of the natural environment.

As a component of the 2003 program, the Region of Peel plan encouraged local citizens to participate in bird surveys by reporting dead crows to Peel's Health Line. The Region also provided public education in local newspapers regarding ways to reduce the risk from mosquitoes and deter local breeding habitats. Local advertisements addressed the virus' definition, symptoms, cycle, risks and how to minimize breeding grounds in backyards as well as informing individuals of personal protective measures. Regular updates from Peel Health encouraged detection of human illness more quickly through local hospitals and physicians. The multi faceted approach to the 2003 WNV Prevention Plan is deemed to be an appropriate approach to controlling WNV in Peel Region.

It should be noted that the Ontario Ministry of the Environment (MOE) stated that there was monitoring of the impact of pesticide application on ecosystem health and non-target species. No results regarding the impact of pesticide use for WNV on non-human species of the ecosystem could be located at the time of this report. Peel Health has stated that no impact on ground water was discovered. Over the course of the 2003 mosquito season, a total of 221,342 treatments of the larvicide methoprene (larviciding) were made in roadside, backyard or other types of catch basins. The statement made in the 2003 report³ that "A collaborative study done by the MOE and a number of Ontario health departments showed that methoprene had no impacts on surface water quality, including drinking water" is disconcerting because some level of impact, if only minuscule, would be expected. As a result, **CEAC recommends that Council support further investigation into the environmental impact of methoprene and all other pesticides used for WNV via an independent consultant.**

The 2004 WNV Prevention Plan:

The following is excerpted from the 2004 WNV Prevention Plan:

The goal of the West Nile Virus Prevention Plan for 2004 is to minimize [the] impact of WNV through region-wide surveillance that directs integrated pest management based mosquito control activities at a level commensurate with the risk of human illness. This means an emphasis on public education, source reduction and larviciding. If the level of WNV in Peel increases then surveillance, education and control will be intensified.

³ *The 2003 West Nile Virus (WNV) Prevention and Control Plan*, released February 28, 2003

Adult mosquito control will only be considered should surveillance findings indicate a significant risk to human health despite the implementation of other measures.

In 2004, Peel Health will continue surveillance and education activities (education for the public and medical providers). Peel Health will also continue the region wide effort to reduce mosquito breeding through source reduction and larviciding in the urban, suburban and settlement areas of Peel. Mosquito habitats will be priority targets for elimination through improved maintenance, and for larviciding where stagnant water cannot be removed. Other mosquito habitats will only be treated if they are found to be important to local WNV transmission.

The West Nile Virus Prevention Plan 2004 includes the following components:
(Please note that the Executive Summary of the 2004 WNV Prevention Plan can be found in Appendix B.)

Public Education and Community Outreach:

Peel Health will increase public awareness of mosquito-borne disease, risk, surveillance and prevention through the media, a Web site (www.peel-bugbite.ca), advertising in local publication and other methods as appropriate. Accurate and timely information of these mosquito control activities will be provided to the public including application schedules, location of the interventions, type of pesticides being used and how to reduce exposure.

Host (Dead Crow) Surveillance:

Reported bird deaths from the public will be received by [the Peel] Health Line. Testing of a limited number of crows will be performed by the Canadian Co-operative Wildlife Health Center in Guelph.

Human Surveillance and Provider Education:

Health care providers play a critical role in the detection, prevention and clinical management of mosquito-borne diseases. A late spring edition of Peel Health's medical information letter, *Health Professionals Update*, focusing on WNV, will be distributed to health care providers in the Region of Peel with subsequent updates as needed.

Mosquito Surveillance:

Peel Health will monitor mosquitoes across the region by collecting larval and adult mosquitoes to determine the distribution, density and species. Mosquito surveillance data will be used in decision-making about public education and mosquito reduction activities.

Larval Mosquito Reduction:

Peel Health will reduce mosquito breeding through the remediation of priority stagnant water sites and the application of larvicide to priority sites that cannot be emptied or drained. Through a public information campaign, Peel Health will urge residents and businesses to reduce breeding sites around their homes and commercial properties.

Adult Mosquito Reduction:

A contingency plan for the reduction of adult mosquitoes by the application of the

pesticide malathion through ground spraying was developed in 2003 (adulticiding). In the event that a significant risk to human health occurs due to WNV despite the successful implementation of the other components of this plan, adult mosquito reduction may be implemented. If application of adulticides becomes necessary, Peel Health will provide advance notice to the public and to health care providers.

Monitoring Adverse Effects from Pesticide Use:

Peel Health does not anticipate adverse human health effects from the mosquito reduction measures in this plan. However, health care professionals will be informed about potential health effects of pesticide exposure and the need to report pesticide-related illness to Peel Health. Peel Health will carry out surveillance for any adverse effects of pesticide exposure due to either larviciding or adulticiding. In addition Peel Health will work with other agencies to monitor possible ecosystem effects from pesticide use.

Research and Evaluation:

Peel Health will continue to collect data to better understand mosquito breeding in the Region of Peel and how WNV and other mosquito-borne viruses are maintained in our environment. Furthermore, Peel Health will evaluate the effectiveness of larval and adult mosquito reduction measures.

Conclusion:

It is CEAC's hope that responsible management and protection of Ontario's biodiversity, watersheds, and woodlands remains a priority by fostering strategies that reflect this belief in conjunction with a program that aims to prevent human deaths from WNV. The desire to prioritize responsible ecological management stems from the understanding that human health is inextricably linked to the health of the surrounding ecosystem, not to mention the significant intrinsic value that many believe non-human life upholds. Careful, methodological steps are being taken with the 2004 WNV prevention plan, and need to be continued to monitor and adjust the prevention plan so it continues to evolve with the complex nature of WNV. The 2004 WNV Prevention Plan is established with a feedback mechanism that will enhance various components of the program, such as larviciding and public education, if WNV is located in Peel Region.

The 2004 Prevention Plan will continue to use pesticides to help control WNV in Peel Region. Ontario Nature (formerly Federation of Ontario Naturalists), a respected non-government organization operating since 1931, notes ⁴ that there are serious concerns with pesticide application on biodiversity at all trophic levels of life, not to mention unknown human impacts. Ontario Nature states that adulticide pesticides, such as malathion, are toxic sprays that are known to have significant environmental impacts and are harmful to human and ecological health. As a result, the use of malathion or other adulticides are not supported by Ontario Nature. Dr. Mckeown notes that malathion is licensed to use because of its effective control of insects, and he also adds that it is known to persist longer in the environment than desired. These adulticides will not be used in Peel Region unless high levels of WNV are located. In addition, according to the Toronto Region Conservation Authority, pesticide use "may in fact create new problems or have serious, long-term impacts on the environment and on human health." Pesticides can kill or impact beneficial insects, amphibians and other wildlife that eat mosquito larvae.

⁴ *West Nile Virus – Federation of Ontario Naturalists Factsheet*, June 4, 2003

The Region of Peel's draining of storm retention ponds and home owners eliminating wetlands to reduce mosquito breeding grounds also come with their setbacks. Unfortunately, draining storm ponds often leaves a small stagnant puddle which is more prone to becoming a breeding habitat for mosquitoes than the initial pond. Improving the ponds' diversity by creating a more natural environment would actually encourage mosquitoes' predators. To address this issue, **CEAC recommends further research regarding the release of natural predators of mosquitoes (e.g., dragonflies, bats and minnows) into areas of high WNV concentration.**

In attempting to balance varying perspectives regarding WNV in Peel Region, CEAC will continue to remain informed concerning the progress of the WNV prevention program. Items of particular interest will include levels of pesticides used and their potential impacts. Although not supportive of the use of pesticides, CEAC feels that the 2004 WNV Prevention Plan is a suitable approach to dealing with WNV based on the current level of knowledge regarding the longer term implications for human health and the environment.

Debbe Crandall
Chair, Caledon Environmental Advisory Committee