



West Nile Virus

July 18, 2005

Background

West Nile is a mosquito-borne virus that can cause mild flu-like symptoms, and in a few cases, results in encephalitis (inflammation of the brain) or meningitis (inflammation of the spinal cord). It first appeared in the U.S. in 1999 in New York City, and is spread to humans by the bite of an infected mosquito. A mosquito becomes infected by biting a bird that carries the virus. The *Culex pipiens* species of mosquito, which prefers to feed on birds, is believed to carry the virus in Oakland County. The life cycle of the *Culex pipiens* species of mosquito is attached.

In 2004, Oakland County experienced an extremely mild outbreak of illness caused by WNV. There was 1 confirmed case and one probable case reported by the Michigan Department of Community Health. Compared to 2 confirmed cases 1 possible death associated with WNV in 2003 and 219 confirmed cases and 20 deaths in the summer of 2002. According to the Centers for disease Control and Prevention (CDC), 2004 data indicates the risk of WNV still exists in the United States.

Although WNV is a serious illness, the CDC wants to reassure the public that while this is cause for concern, it is **not** a cause for panic. They stress that individuals can protect themselves from this disease. They have provided the following statistics regarding the likelihood of being bitten by an infected mosquito, and then whether or not someone will contract one of the two forms of the disease.

- Of all mosquito bites, only one in one hundred will be from an infected mosquito.
- Of all mosquito bites, only one in 500 will be a bite from an infected mosquito and will then result in a mild illness with “flu-like” symptoms.
- Of all mosquito bites, only one in 15,000 will be a bite from an infected mosquito and will then result in someone contracting the serious form of the disease.

The CDC is recommending that the public follow the three “Rs” for tackling the WNV problem:

Repel—wear long-sleeved shirts and long pants, use insect repellent with deet, and avoid the outdoors during peak mosquito activity hours (i.e. dusk and dawn).

Reduce—the mosquito population by eliminating stagnant standing water such as in old tarps, old buckets, neglected bird baths, etc. Attached is a poster regarding eliminating breeding areas in and around your home.

Report—dead birds to your local health department. In Oakland County, the Health Division has a special hotline for reporting dead crows and blue jays - (877) 377-3641.

Even though there is no evidence to support that the disease can be spread from dead birds, they should never be handled with bare hands. Use disposable gloves to put the dead bird in a double plastic bag. If gloves are not available, turn a plastic shopping bag inside-out and

scoop up the bird with the bag. If the dead bird has been reported and will not be tested, then place the bagged carcass in an outdoor garbage can for disposal. If the dead bird will be tested, you will be instructed to transport the bird to an appropriate local agency, where it can be packaged appropriately and submitted for testing.

There has been concern over the effect of WNV on pets. In general, the disease does not affect *most* household pets, including cats and dogs; however pet birds are just as apt to contract the illness as their wild counterparts. To date, only one case of a dog dying from WNV has been reported. The animal was 8 years old and had a compromised immune system. Studies in New York have shown that up to 11% of dogs tested showed exposure to the virus, but none showed signs of illness, and WNV is not passed to other animals from cats or dogs. Horses are perhaps a bit more susceptible than humans, but a vaccine has been approved for use on horses, and it appears to be effective, although no formal studies on this have been published yet.

The National Institutes for Health (NIH) are in charge of disease prevention, treatment, diagnostics, and basic research. They are working on a vaccine for humans, and they do have some promising research. Officials have stated that if all goes well, a vaccine is expected to be available in the next 1-2 years. The NIH is optimistic that one will be developed, but they are not able to confirm for certain that this will be the case.

WNV Control Program

As part of a mosquito suppression plan for this season, the following information has been compiled:

By far the most effective management program involves a combination of education regarding how to avoid being bitten, eliminating breeding sites, and controlling the larval mosquitoes. The breed *Culex pipiens*, mentioned earlier, prefers stagnant water such as that found in catch basins and other nutrient-rich, even polluted, standing pools of water. **Please note that streams and healthy ponds and wetlands do not fall into this category.** The mosquito control industry has developed products that are safe for handling, are non-toxic to humans and most other animals, and specifically target mosquito larvae. Many are even available in pre-packaged amounts that are designed specifically for catch basins. A “certified applicator” is not needed to use pre-packaged larvicide.

First, the City would educate citizens and staff on bite avoidance, and how to eliminate breeding areas on their property through cable PSAs, newsletters, mailings and future web site information. The City will also provide information to owners of detention ponds on maintenance and possible treatment of these detention ponds for WNV.

Second, the City would treat all catch basins with larvicides that will last approximately 150 days. The estimated material cost for the catch basin larvicide treatment is \$16,878.40.

Third, the City will treat City qualified detention ponds and or areas on City property that have standing stagnant water with a granular larvicide on an as needed basis. The estimated material cost for this larvicide is approximately \$ 1,815.00.

Fourth, the City will focus spray adult mosquitoes at Beechwoods Golf Course, Evergreen Hills Golf Course and some City parks when necessary. The City will not spray residential streets.

A breakdown of this cost estimate is attached. The County has indicated that the City will be entitled to receive a reimbursement in the amount of \$28,199.47 to help implement our plan.

Products that would be used for catch basin treatment are described below:

- Altosid XR—a growth hormone inhibitor that targets mosquitoes and black flies. It is available in briquettes that can easily be dropped into a catch basin through the grating and lasts for 150 days. Its shelf life is approximately 18 months to 2 years.

Products that would be used for detention pond treatment and standing stagnant water treatment:

- Vectolex—bacteria that dissolves the gut of the larvae, it is a granular product that is also very specific to mosquitoes and black flies. This product kills larvae within 1-2 hours and needs to be reapplied every 21 days during the breeding season. It is available in packets to treat catch basins, and as a loose product that can be broadcast over areas of open water. This would be the product used for areas of nutrient-rich stagnant water. The shelf life for this product is also 18 months to 2 years.

Both of the above larvacides are biological, not chemical inhibitors and according to the Environmental Protection Agency and Center for Disease Control, do not harm the environment, including animals, fish, aquatic insects, and plants.

Products that will be used for focus spraying on City property.

- Anvil 2+2 ULV (Ultra Low Volume) – Adulticide that uses Sumithrin, for use around inlet, creeks, swamps and recreational areas where adult mosquitoes are present in annoying numbers. Anvil 2+2 ULV is an adulticide that only affects mosquitoes and will not affect other insects and wildlife.

It may be prudent to “focus spray” City parks prior to events that will be occurring during peak hours of mosquito activity, especially when participants are expected to fall into the categories of most susceptible to WNV. City staff would develop a standard operating procedure to address these instances. To date, some Parks and Forestry staff have received certification to apply these adulticides. Products and equipment needed for a successful focus spray program:

- Clark Mosquito Control Company recommends using the chemical, Anvil 2+2 ULV (Ultra Low Volume), which has a caution rating. This is the lowest rating on the scale of signal words, which indicates the level of toxicity. The sprayer used for this product was purchased last year and will be used again for this years program. The product itself is \$55.00 per gallon. Each application requires less than 2oz of product per acre. The

sprayer could be used at both City Golf Courses and any Parks we choose to use adulticides.

Some of the issues involved in creating and maintaining an effective program concern outside agencies, such as the Oakland County Road Commission, subdivisions, school districts, and commercial sites that own catch basins in the City. City staff will be working with these groups in order to ensure an effective program. During the winter following the initial WNV control program, staff will analyze the program to determine its effectiveness and to map out future actions.

Recommendation

The City should implement the program outlined above to address the WNV problem. In addition to the treatment of City catch basins with larvacides, and other areas as necessary, the City will implement public education activities that would educate citizens and staff on bite avoidance, and how to eliminate breeding areas on their property through cable PSAs, newsletters, mailings and future web site information. The City will also provide information to owners of detention ponds on maintenance and possible treatment of these detention ponds for WNV. To date the City has ordered and received materials for larviciding and adulticiding and has implemented a schedule for application of these products.

Web Resources:

Michigan Department of Agriculture - www.michigan.gov/mda

Centers for Disease Control and Prevention - www.cdc.gov

National Institutes of Health - www.nih.gov

Oakland County Health Division - www.co.oakland.mi.us/health