Frequently Asked Questions about Spraying and Mosquito Control

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How can the risk of West Nile virus disease be reduced?

The risk of West Nile virus infection and disease can be decreased by reducing individuals' exposure to mosquitoes and by taking special precautions during periods of higher risk of infection, including reducing mosquito populations. A comprehensive mosquito control program will include several of the following activities:

- **Surveillance** – regular testing of mosquitoes for the virus
- **Education and Outreach** – education of the public about what steps they can take to prevent mosquitoes from breeding around their home (e.g., source reduction), and how to avoid being bitten by mosquitoes (e.g., repair window screens in your home, wear clothing that covers your skin when outside, use effective mosquito repellent, etc.)
- **Source reduction** - elimination of potential breeding sites by emptying water from containers such as garbage cans, flower pots, birdbaths, and discarded auto tires
- **Larviciding** - the application of chemicals or bacterial products (or larvicides) to mosquito breeding areas to kill or inhibit the growth of mosquito larvae (the early stage of the mosquito) from developing into the adult form
- **Adulticiding** - the application of pesticide chemicals to kill the adult form of the mosquito. These are applied by truck-mounted sprayers or aerially when the risk of an outbreak is apparent, as indicated by increasing numbers of mosquitoes carrying virus and/or human cases of disease.

How effective is adulticiding at reducing the number of adult mosquitoes?

The effectiveness of adulticiding depends on a number of variables that include: which kinds of mosquitoes are present; what chemicals are used; when and how often they are applied; current weather conditions; and the density of homes and streets in a community. It is generally considered an effective means of temporarily reducing adult mosquito populations and has been used in the U.S. and other countries for many years for nuisance control and more importantly, as a means of reducing and preventing mosquito-borne disease. The other activities listed above – elimination of breeding sites, education and outreach, and larviciding –precede adulticide spraying.

Is all pesticide spraying in Massachusetts in response to West Nile virus?

No. Spraying to reduce adult mosquito populations has been done for many years in Massachusetts communities primarily to reduce nuisance mosquitoes. In addition, there have been occasional years when the risk of human eastern equine encephalitis (EEE) has been significant and adulticide spraying has been used to control mosquitoes to reduce the risk of EEE. EEE is of concern mainly in the southeastern part of Massachusetts, in Plymouth, Bristol, and some portions of Norfolk Counties.

What pesticides are used for adulticide spraying in Massachusetts? Have they ever been used in the Commonwealth before?

Synthetic pyrethroid pesticides are the main pesticides used in ground spraying operations for adult mosquito control in Massachusetts. These pesticides (or adulticides) have been used in Massachusetts for many years. They are chemically similar to pyrethrums, a natural pesticide produced by chrysanthemum flowers. For ground spraying operations, resmethrin is usually used. In addition to resmethrin, adulticide contains another active ingredient called piperonyl butoxide (PBO), which increases the ability of resmethrin to kill mosquitoes upon contact and at lower application rates. Other pesticide products sold in Massachusetts contain pyrethroid ingredients and are generally used to treat head lice on children, and fleas and ticks on pets.

How are the pesticide products typically applied?

Adulticides are typically applied from truck-mounted sprayers as a fine mist. Most of each droplet is composed of the soybean oil or mineral oil carrier used to dilute the pesticide product. Mosquitoes die after they come in contact with the tiny droplets of the pesticide. Pesticide products that deposit on surfaces as part of a mosquito control program (e.g., grass, outdoor toys and furniture, etc.) degrade quickly, particularly once exposed to sunlight. Adulticiding for West Nile virus is generally performed at night to target the particular species of mosquitoes that are known to carry the virus.

Why do I see mosquitoes on my street the day after adulticide spraying was done?

There are several reasons why you might see mosquitoes the day after adulticide spraying. The mist of pesticide cannot reach all mosquitoes, so you could be seeing ones that were active at the time of spraying, but did not come in contact with the droplets of pesticide. Some of the mosquitoes you see may have just emerged from their breeding sites. Also, different kinds of mosquitoes are active at different times of the day. Since adulticide spraying for West Nile virus is usually done late in the evening, those species of mosquitoes not active at that time would not be affected by the spraying.

Who decides where to spray adulticides and when? How is this decision made?

Decisions about whether to spray to reduce WNV risk are made at the city or town level. Decisions about where and when to spray are usually made by the local health department or board of health.

Does the State recommend spraying to communities?

MDPH convened meetings of local officials, academic experts, and other interested people to develop a plan for reducing the risk of West Nile virus infections. This plan emphasizes prevention and methods of reducing mosquito numbers that avoid the use of adulticides. In situations of high risk of an outbreak of human disease, the MDPH plan recommends consideration of the use of adulticide spraying to reduce mosquito numbers in those specific areas of high risk.

Who does the spraying of adulticides?

Most pesticide application for mosquito control is done by Regional Mosquito Control Projects under the management of the State Reclamation and Mosquito Control Board. The Projects have full-time professional staff to advise and assist member cities and towns on mosquito control strategies. Most types of larvicides and adulticides can only be applied in Massachusetts by the Projects. Cities and towns that do not belong to a Project and wish to begin mosquito control activities can either join or contract with a Project, or hire commercially licensed pesticide applicators.

Are pesticide applicators licensed?

Pesticide applicators must be licensed or certified by the Massachusetts Department of Food and Agriculture Pesticide Bureau. Training for certification emphasizes integrated pest management and includes training on the proper use of pesticides, identification of the specific pest, and knowledge of pest life cycles.

Can some people experience health effects from adulticide spraying?

Most people are not expected to experience any adverse health effects after pesticide spraying for adult mosquito control. Some individuals may be particularly sensitive to ingredients within the product and experience short-term adverse health effects such as eye, skin, nose and/or throat irritation, breathing problems, and nausea. You should call your doctor if you believe that you are experiencing any symptoms that may be related to pesticide exposure.

What about health effects related to exposure for pregnant women?

A number of laboratory studies have been conducted that have specifically addressed the question of whether or not these pesticides are linked to any developmental or health effects in unborn children. From these studies, it has been determined that unless a unique and unpredicted exposure occurred, the spraying of these pesticides for mosquito control should pose no added risk to pregnant women and unborn children.

Can these targeted ground sprays with adulticides harm other insects or wildlife?

The US Environmental Protection Agency (EPA) has evaluated these pesticides for their safety and has determined that they do not pose an unreasonable risk to birds or mammals if used according to the product label directions. However, the pyrethroid adulticides are considered highly toxic to fish and bees. Therefore, these products are not permitted to be applied to or near open water bodies or in sensitive environments such as wetlands.

What kinds of precautions should I take when adulticide spraying is scheduled for my street?

You can reduce your exposure to the insecticide by staying indoors during spraying. There are otherwise no special precautions that should be taken. The active ingredients of the pesticide product generally break down quickly and do not leave a toxic residue.

If individuals want to take extra steps to minimize or avoid exposure, what steps can be taken?

Common sense steps that can be followed in areas where adulticide spraying is scheduled to take place include:

- People with asthma and/or other respiratory conditions may wish to stay indoors, since it is possible that if exposure to pesticide spray occurred, it could aggravate those conditions. These individuals may want to consult their physician or local health department for further advice.
- If the immediate area of your home is being sprayed, keep windows closed and fans off. Shut off air conditioners unless they have a setting for recirculating indoor air. If it is very hot weather, make sure you open the windows and/or turn fans and air conditioners back on soon after the truck passes your home.

- Rinse any homegrown fruits and vegetables with water as is typically done before cooking or eating them.
- Keep pets indoors during spraying to minimize their risk of exposure.
- If skin and/or clothes or other items are exposed to the sprayed pesticide, wash with soap and water.
- If the spray gets in your eyes, immediately rinse them with water or eye drops, and call your doctor.

Homeowners can ask to exclude their property from public area-wide pesticide applications under the Department of Agricultural Resources' regulation, 333 CMR 13.03, titled Pesticide Board, Exclusions for Application. To request the exclusion, residents should send a certified letter to their town or city clerk by March 1st of each year.

After March 1st, Mosquito Control Projects will still try to accommodate requests. Specific questions regarding the regulation can be answered by calling the local health department, the city or town clerk, or the appropriate Regional Mosquito Control Project. The Department of Agricultural Resources, Pesticide Bureau can also be reached by calling 617-626-1700.

If you think that you are experiencing any health effects from pesticides, call your doctor or the Massachusetts Poison Control Center (800) 222-1222. The MDPH, Bureau of Environmental Health Assessment may also be consulted by calling (617) 624-5757.

Should I be concerned about covering the swimming pool in my yard?

All types of pesticides used in spraying operations for adult mosquito control break down quickly in sunlight and water. Therefore, no special precautions or waiting periods are recommended for outdoor swimming pools. However, if a pool is not being used during the summer months (e.g., if it not being chlorinated or filtered), it should be covered or drained. Any standing body of water is a potential breeding ground for mosquitoes.

How do I find out if spraying for mosquitoes will occur in my neighborhood and when?

Your local health department or board of health will know best if spraying for mosquitoes is likely to occur in your community. The MDPH State Laboratory Institute tests mosquitoes for the virus on a regular basis. A community's decision to spray may depend on a number of factors including the results of mosquito surveillance efforts. During the summer, this information can change from one week to the next; therefore, it is possible that the decision to spray will be made only a few days before it will occur. For this reason, check your local newspaper, radio station, cable television station, the Mosquito Control Project website at www.state.ma.us/dfa/mosquito/districts.htm, or your community's website for updates.

If I work or spend time in other communities where I do not live, how do I find out if those communities are scheduled for spraying?

Each community's health department or board of health or the office of the Mosquito Control Project to which that community belongs would have the most accurate information. However, not all Massachusetts communities belong to a Project. The telephone numbers for each Project are listed below. Information on the Projects may also be found on the Massachusetts Department of Agricultural Resources' website at www.state.ma.us/dfa/mosquito/districts.htm.

Who can I call if I have more questions?

Call your local health department or board of health if you have any questions about West Nile virus or mosquito control. This document and fact sheets about the virus are available on the Massachusetts Department of Public Health website (http://www.state.ma.us/dph) or you can call the MDPH Public Health Information line at 1-866-MASS-WNV or 1-866-627-7968.

What are some other sources of information on West Nile virus and pesticides?

You may find additional information at your local library or by searching the following websites.

For more information about pesticides:

- U.S. Environmental Protection Agency, www.epa.gov/pesticides/factsheets
- National Pesticides Telecommunications Network (NTPN), http://ace.orst.edu/info/nptn/wnv/
- Mosquito Control Districts, www.state.ma.us/dfa/mosquito/districts.htm
    - Berkshire at (413) 447-9808
    - Bristol at (508) 823-5253
    - Cape Cod at (508) 775-1510
    - Central Massachusetts at (508) 393-3055
    - East Middlesex at (781) 899-5730
    - Plymouth at (781) 585-5450
    - Norfolk at (781) 762-3681
    - Suffolk County at (617) 361-0550
    - North East Management (Essex County) at (978) 463-6630

For more information about West Nile virus:

- Massachusetts Department of Public Health, http://www.state.ma.us/dph
- Centers for Disease Control, www.cdc.gov/ncidod/dvbid/westnile

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