

Bucks County Department of Health (BCDH) West Nile Disease Control Program Overview

The Goal of our West Nile Disease Control Program is to first educate the public about the virus including how they can protect themselves from mosquitoes as well as to provide tips to control mosquito breeding around their own homes. Mosquito breeding, whether it be around private homes, business or on public property is a serious problem in the spread and propagation of the West Nile Virus. Any type of containers, improperly stored boats, tires, etc., can breed large numbers of mosquitoes which can not only spread the disease but also be a painful nuisance. The last page gives useful tips to help the public avoid being bitten as well as how to eliminate mosquito breeding around their homes. If you'd like to post this Info Sheet on your website, please email me at aecarlson@buckscounty.org and I'll send you a pdf.

Where do mosquitoes breed? Mosquitoes breed in shallow, still water. Examples of this are puddles, floodwater, plastic containers, flower pots, and tire ruts. Depending on the mosquito species, the lifecycle from egg, to larvae, to pupae, to adult takes a few days to a week.

This Department also responds to complaints as well as monitor public properties for mosquito breeding and we responded to over 100 complaints last year. In municipalities which agree to allow us to treat for mosquitoes, we control breeding by using larvicide products which eliminate mosquitoes prior to them becoming adults. Municipalities can help us control mosquito populations by making sure that ditches/streams flow freely by being graded properly and not being blocked by debris. This includes ensuring that dry bottom basins (i.e. basins that are supposed to drain within 72 hours of a rainfall) are free of debris and functioning as designed. It is also very important not to make tire ruts (i.e. mowing grass in swampy soil conditions), as tire ruts provide prime sites for mosquito breeding. Any help your municipality can provide through educational outreach, treatments using pesticide certified staff, or by hiring independent contractors would benefit our effort to control mosquito borne disease as well as aiding your constituents with mosquito problems.

As our program is a **limited** disease surveillance and control program, our Department will be focusing primarily on reducing the spread of West Nile Virus in Bucks County. It is very likely that certain municipalities will be inundated with nuisance mosquito complaints. While these nuisance complaints are not the Department's primary concern, we will do our best to address all complaints with the resources we have available.

There are approximately 60 species of mosquitoes in PA.

The main species that we are concerned with are:

Culex pipien/Culex restuans species: carry West Nile Virus, active at dawn and dusk, brown color



House Mosquito (*Culex* sp.) <http://www.idph.state.il.us/envhealth/pmosquitoes.htm>

How do we treat breeding areas? We treat areas of standing water that are breeding mosquitoes with products called larvicides. The larvicide stops the mosquito larvae from forming to pupae or emerging as adults. Depending on which type of larvicide and the environment it is used in, the larvicide can be effective from 7 days to 180 days. Some of our commonly used Larvicides are:

Altosid XR Briquets <https://www.centralmosquitocontrol.com/all-products/altosid/altosid-xr-briquets>

Natular XRT Briquets <https://www.clarke.com/natular>

Fourstar Granules and Briquets <https://www.centralmosquitocontrol.com/labels>

Spheratax WSP <https://www.arbico-organics.com/product/Spheratax-WSP>

Aquabac <https://www.arbico-organics.com/product/aquabac-bti-mosquito-control-granular-bacillus-thuringiensis-israelensis-bti/pest-solver-guide-mosquitoes>

We take great care and caution in the proper application of these products.

How do we conduct surveillance? Gravid traps: black basin with smelly water attracts adult mosquitoes looking to lay their eggs. The box on top contains a fan and a net that traps the mosquitoes. This is the trap that primarily attracts and catches the species that carries WNV.

BG traps: Black plastic cylinder with a cooler of dry ice above it. The adult mosquitoes are attracted to the CO₂ off of the dry ice and the lure in the trap that mimics human scent. The fan traps the mosquitoes in the net. This trap primarily attracts and catches nuisance mosquitoes such as *Aedes albopictus*.



The picture on the left is a Gravid Trap, and the picture on the right is a BG Trap.

What do we do with adult mosquitoes, specifically ones that test positive for WNV?: When we set a trap, we send the adult mosquitoes to the Department of Environmental Protection lab in Harrisburg where they are counted, identified, and tested for West Nile Virus. If we get a high number of mosquitoes in a trap, we first try and find if there is any standing water to treat, which is where the adults would be breeding. If the mosquitoes from a trap test positive for WNV, we will consider doing a ULV (ultra-low volume) truck spray. This Department only conducts adult mosquito sprays when the risk of the West Nile Virus reaches a threshold whereby a substantial threat to the public health exists. Our Clarke Cougar ULV mosquito sprayer is calibrated yearly to insure the proper application rate of the adult mosquito product is dispensed by the sprayer. We currently use Clarke Biomist product (<https://www.clarke.com/biomist>) at an application rate of 0.75oz of product sprayed per acre of land. **The BCDH always gives at least two days' notice to all municipalities prior to conducting any sprays on public property, and also contacts hypersensitive individuals and beekeepers in the spray area.**

Lyme Disease Overview

Lyme disease as well as other tick-borne diseases are a very serious problem not only in Bucks County, but throughout the state. Bucks County averages about 400 cases per year. However, tick populations are extremely difficult to control because they are live and breed throughout nature and unlike mosquitoes, do not breed in standing water. Therefore, the best tactic to avoid contracting Lyme disease is to avoid getting bit.

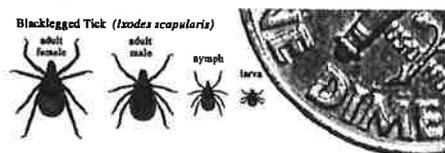
The blacklegged tick, also known as deer tick, transmits the Lyme disease bacterium through its bite. Certain precautions can be taken to prevent tick bites along with being aware of what areas and conditions ticks are most likely to be found.

Tick Info:

The blacklegged tick, or deer tick, are often found in wooded and grassy areas.

Most humans are infected with the Lyme disease bacterium through the bites of immature ticks, called nymphs, which feed in the spring and summer months

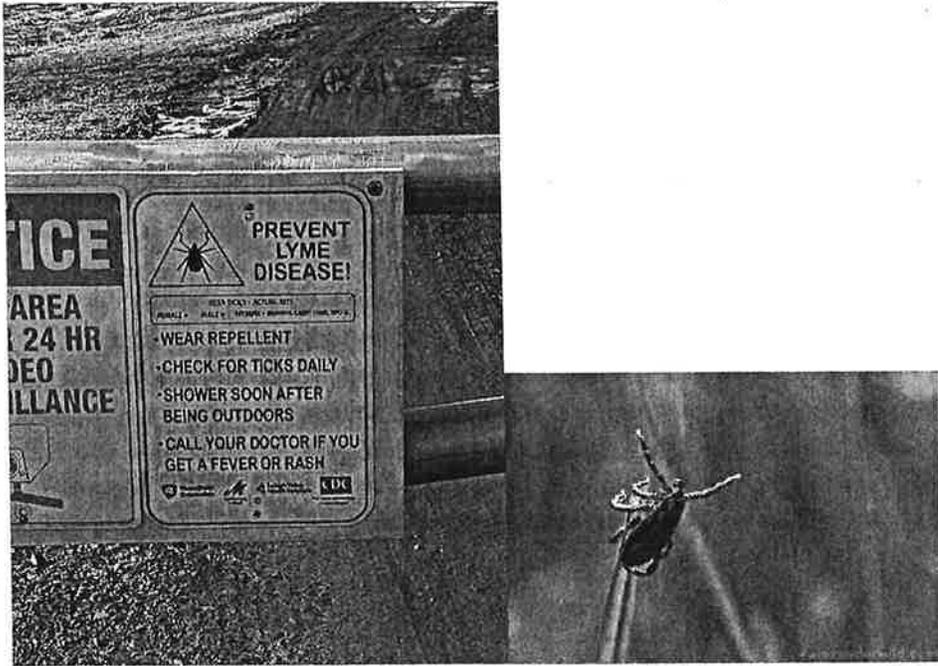
Ticks are often found attached to humans in the groin, armpits, and scalp areas, however they are able to attach anywhere on the body. In most cases the tick must be attached 36-48 hours or more before the Lyme disease bacterium can be transmitted.



Picture and info from <https://www.cdc.gov/lyme/transmission/index.html>

Ticks can be avoided by wearing long sleeve light colored clothing, pants tucked in to socks, and using insect repellent. Clothing can be treated with 0.5% permethrin which is effective in repelling ticks. See the web sites listed on the bottom of the following page to find the best repellent(s) for you.

The Trexler Game Preserve in Lehigh County has an informational sign at their trail entrances which is an excellent example of the measures that can be taken to educate the community. Other measures that can be taken by local agencies to prevent tick bites are cutting back foliage on paths and maintaining wider trails. This is important as ticks primarily attach onto people by using a questing technique, as shown in the picture below, whereby ticks climb to the top of foliage and attached to people or animals as they brush past. Having wide trails that are well maintained to keep brush back from the trails can safeguard the public against ticks!



HOW TO PREVENT TICK BITES

Wear insect repellent or protective clothing (long pants and shirt).

Always check for ticks immediately after activity and again at bedtime. Check your groin, neck, ears, and back of knees.

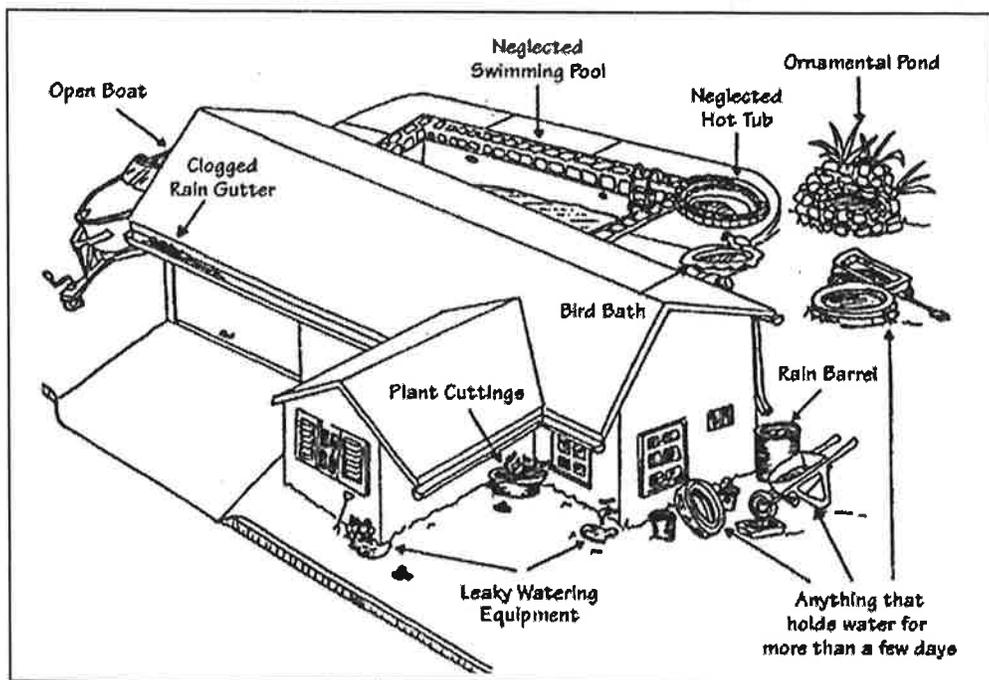
Stay on trails and paths, not in high grass.

A woman in a long-sleeved shirt and pants is walking on a trail. Three callout boxes with arrows point to her clothing, her body, and the trail surface.

Bucks County Department of Health West Nile Disease Control Guidance (including Tick Information)

In the year 2000, the West Nile Virus first appeared in Pennsylvania and it was found that people and animals were contracting the disease after being bitten by a mosquito carrying the virus. Most people infected with the virus have no symptoms, or mild ones such as a fever, body aches, mild skin rash, or swollen lymph glands. However, some people will experience much more severe symptoms, which may lead to encephalitis and occasionally death. In 2018, 128 people were infected with the disease across Pennsylvania, many seriously, and eight people died from the virus.

One of the best ways to keep clear of the disease is to avoid going outside early in the morning or at dusk, or to apply a mosquito repellent if you must go outside. You can find the list of approved repellents on the CDC web link below, many of which are also effective against ticks. In addition, make sure screens in your home are in good condition so as to keep mosquitoes outside! Another very important way to avoid the disease is to eliminate mosquito breeding areas around your home. Mosquitoes can breed in as little as a cupful of water, and many people have unattended bird baths, tires, and other containers filled with stagnant water, which are breeding large numbers of mosquitoes. See the diagram below for common mosquito breeding areas around the home. The web sites below give additional information on how to best avoid the West Nile Disease and also tick related diseases (i.e. Lyme disease).



Penn State's West Nile Virus Web Site: <https://extension.psu.edu/west-nile-virus>

Bucks County Department of Health Web Site and Contact Information:
<http://www.buckscounty.org/government/healthservices/HealthDepartment/Environmental/WestNile>

Pennsylvania Department of Health West Nile Site: <http://www.westnile.state.pa.us/>

CDC West Nile Web Site - <https://www.cdc.gov/westnile/prevention/index.html>

CDC Tick Disease Prevention Web Site: https://www.cdc.gov/ticks/avoid/on_people.html

Dare to 2B Aware Tick Prevention Program - <https://palyme.org/dare-2b-tick-aware/>