With warm weather approaching and mosquito season right around the corner, news of the Zika virus has people quite worried. We'll also see the return of old common concerns like West Nile and other mosquito-carried ailments with the arrival of the warmer weather.

Lower Makefield Township maintains regular communication with the Bucks County Health Department monitoring/treating mosquito concerns to prevent vector-related diseases. According to health professionals, at present there are no Zika virus carrying mosquito populations (aedes aegypti) presently “known” in the contiguous 48 states. The only known cases of Zika virus in the United States are in southern territories such as Puerto Rico or cases where people became infected while travelling to southern territories. It is not presently certain whether the Asian tiger mosquito (aedes albopictus) which is commonly found in Pennsylvania and a cousin to the mosquito known to carry Zika virus, is capable of carrying the Zika virus.

**Background and general info:**

There are two types of mosquitoes in our area to protect against, the *Culex* genus mosquito and the day-flying Asian tiger mosquito *aedes albopictus*. The tiger mosquito has a very different life cycle than the *Culex* mosquitoes we generally think of as biting mosquitoes.

The *Culex* mosquitoes mostly bite in the evening. The last females of summer hibernate in sheds, garages and other protected areas, emerge on the first nice day looking for a blood meal and then seek out standing water in which to lay their eggs. Eggs take about two weeks to develop in warm weather. The female lays eggs in groups of as many as 300 on a water surface. Suitable habitats for egg-laying are small bodies of standing fresh water like puddles, pools, ditches, tin cans, buckets, bottles, and water storage tanks. The tiny cigar-shaped dark brown eggs hatch only in the presence of water.

During the larval stage, the insect lives submerged in water and feeds on particles of organic matter. As it matures the comma-shaped pupa does not feed, but can swim in rapid jerking motions to avoid potential predators. It must remain in regular contact with the water surface in order to breathe, and after 24-48 hours the pupa ruptures and the adult emerges.

The Asian tiger mosquito are aggressive daytime biters that overwinter in the egg stage, but their eggs aren't found floating on the surface of standing water. They are attached to the insides of water holding objects like wheelbarrows, ready to be activated when the weather warms and the water level raises enough to reach them after a rainfall. Note: dumping out wheelbarrows, recycling bins, children's toys and the like isn't enough to stop these terrors. They can go from egg to adult using the amount of water in a bottle cap! You have to scrub the eggs off of the inside of any items that can hold water to destroy them.

To make things even more interesting, male mosquitoes are actually pollinators. They don't take blood meals, so they get all of their energy from the nectar and maybe the pollen of flowers. Biting females, who were thought of only as blood suckers, also feed on the nectar of small-flowered plants for energy.
Ironic how these mosquitoes feed on the exact same kinds of plants gardeners use to lure pollinators and beneficial insects to their backyards, especially in the spring.

**Mosquito Controls:**

If you knock down the numbers of the first couple of generations of mosquitoes, you'll get the math on your side. The mosquito population will still grow, but if that first number is ten as opposed to ten thousand, you're on your way to a relatively bite-free summer. Take action now to greatly diminish the number of mosquitoes that would otherwise plague your backyard this summer.

The old advice was to dump any water on your property to deny those mosquitoes a breeding ground. Unfortunately that isn’t enough to protect your family. You need to scrub plant saucers, outdoor children's toys, recycling bins and anything that can hold water, and then don't let those containers fill up with water again! Clean up any small trash in the yard including bottle caps and plastic bags and look at other areas you might not routinely expect larvae to be hiding. If you have gutters on your home, clean them out as well. They are the great unseen breeding ground. They don't even have to be clogged to be dangerous, as a low spot that doesn't drain completely can breed the little devils.

Another solution is the use of BT, (Bacillus thuringiensis). By lacing standing water with BT dunks or granules this ‘minimal labor option’ gives you control for about a month. Female mosquitoes will lay their eggs in the water but the BT will kill the larvae.

Bacillus thuringiensis is a naturally occurring soil-dwelling organism which is toxic only to creatures in the fly family. This control is deemed safe for people, pets, and wildlife. Mosquito larvae however don’t fare so well. It is very effective and one application can last 30 days or more. These controls are available to the general public at lawn and garden supply stores. As with any pesticide product, residents are encouraged to wear gloves when handling.

For flower gardeners, deliberately put out small containers of water near your earliest-blooming flowers and treat the water with BT. You’ll stand a better chance to break the breeding cycle giving females who visit the flowers this convenient water source to lay their eggs. Do the same thing in the fall when day-fliers are laying their over-wintering eggs.

For the best outcome in 2016, the best defense is a strong offense. For personal protection while cleaning up your yard, covering up is still the best option. When this is not practical, turn to the many repellent products that are available over-the-counter. Natural options like lemon eucalyptus work as a bug repellent and are believed as effective as DEET based products.

If you observe mosquito activity on public property in your neighborhood, please call Lower Makefield Township Public Works Department at 267-274-1130. Thank you in advance for your help keeping our community mosquito free.