

EBT In-Depth Report: “Integrated Pest Management to Reduce Mosquito Risks”

Integrated pest management (IPM) incorporates scientific information to control pests using safe and effective methods. According to the PSU Extension Service, “IPM methods include pest prevention, exclusion and non-chemical tools first. If chemical pesticides are needed, products are chosen that pose the least risk to human health”¹. As we all know, pesticides kill pests. Unfortunately, as noted by the National Pesticide Information Center (NPIC)*, some pesticides and the other ingredients used in pesticide formulations can harm us and the environment². Also, overuse of pesticides has resulted in pesticide resistance thus potentially decreasing the effectiveness of this method³. IPM uses an ecological approach that takes into consideration the relative risks of the pest vs. the pest mitigation strategy. We need to understand what pests put us at risk, how, when and where we can come in contact with pests, and how we can use this and other information about the pest to prevent contact while protecting our health and the environment.

As the weather gets warmer, most of us look forward to enjoying our outdoor activities. Mosquitoes are pests that can lessen our enjoyment and the mosquitoes found in our area occasionally carry infectious agents such as West Nile Virus (WNV). WNV is the main concern here while Zika virus and other disease agents have been transmitted by mosquitoes in tropical and sub-tropical regions. Mosquitoes bite birds and mammals including humans. About 70-80% of people will have no symptoms after being infected with WNV⁴. About 20% of infected people will have some symptoms including fever and “less than 1% of infected people develop a serious, sometimes fatal, neurological illness”⁴. Generally, mosquitoes are most active at dusk and dawn and when there is minimal wind. As many of us know, mosquitoes breed and lay their eggs in water where the eggs develop into larvae, pupae and eventually into the adult form that can bite us. Only a tiny amount of water is needed and it is a critical component in their life cycle⁵. This is why it is essential to reduce standing water in our yards.

Chester County Health Department (CCHD) has a county-wide surveillance program for mosquitoes. It includes sampling of water bodies for mosquito larvae, targeted trapping of adult mosquitoes, testing these larval and adult mosquitoes for WNV and informing the public through press releases about sites where WNV positive larvae and adults have been identified⁶. The PA Departments of Environmental Protection, Health and Agriculture have a coordinated Dead Bird Surveillance program to monitor WNV in avian populations as an early warning system for potential human risk from mosquitos⁷. Increased numbers of infected birds and/or infected mosquito larvae are indicators of increased risk for human infection. By reporting dead bird sightings to <http://www.ahs.dep.pa.gov/BirdReporting/> we can help the state assess potential risk.

The CCHD advises all of us to reduce mosquito breeding sites by reducing standing water⁸ as explained in the EBT News Brief: “The Mosquitoes Are Coming – What to Do”. The NPIC also recommends frequently scrubbing out the bottom of bird baths and similar items since mosquito eggs can survive there even in dry conditions⁵.

The CCHD website notes that “plants, bug zappers, citronella candles, and mosquito coils have not been proven to repel mosquitoes”⁸. They also recommend: “Limit outdoor activities at dawn and dusk during warmer months since most types of mosquitoes bite most frequently during these times. Be aware though that some types of mosquitoes bite most frequently during the daytime. The CCHD recommends:

- “Wear long-sleeved shirts and long pants, and socks. Choose clothing that is light colored and made of tightly woven material.
- Stay in places with air conditioning and window and door screens to keep mosquitoes outside.
- Sleep under a mosquito bed net if you are overseas or outside⁸.”

For children they recommend that you

- “Dress your child in clothing that covers arms and legs.
- Cover crib, stroller, and baby carrier with mosquito netting⁸.”

All of these strategies are proven non-chemical approaches that protect you from mosquitoes and do not affect your health or harm the environment. *The more effectively we all follow these non-chemical strategies, the less we or the community will need to rely on pesticides.*

The CCHD states the following warnings about using pesticides:

“If you choose to use insect repellents, use Environmental Protection Agency (EPA)-registered repellents with one of the following active ingredients: DEET, picaridin, IR3535, oil of lemon eucalyptus, or para-menthane-diol. Choosing an EPA-registered repellent ensures the EPA has evaluated the product for effectiveness. When used as directed, EPA-registered repellents are proven safe and effective, even for pregnant and breast-feeding women.

- Always read and follow the product label instructions carefully.
- Reapply insect repellent as directed.
- Do NOT spray repellent on the skin under clothing.
- If you are also using sunscreen, apply sunscreen before applying insect repellent.

Clothing and gear treated with permethrin or permethrin spray for clothing is available for purchase. Read and follow product information carefully to determine if this is a solution for you.

- Treated clothing remains protective after multiple washings. See product information to learn how long the protection will last.
- If treating items yourself, follow the product instructions carefully.
- Do NOT use permethrin products directly on skin. They are intended to treat clothing⁸.”

CCHD offers the following guidelines about pesticide use with children and pets:

- “Do NOT use insect repellent on babies younger than 2 months old.
- Do NOT use products containing oil of lemon eucalyptus or para-menthane-diol on children younger than 3 years old.
- Do NOT apply insect repellent onto a child’s hands, eyes, mouth, and cut or irritated skin.
- Adults: Spray insect repellent onto your hands and then apply to a child’s face
- Do NOT use any product on pets unless it is specifically made for pets⁸. “

An additional user’s guide for insect repellents is provided by the NPIC at <http://pi.ace.orst.edu/repellents/>⁹.

All of us using IPM for mosquito control can reduce everyone's risk of mosquito-borne disease while decreasing the need for pesticides and their related potential health effects and environmental consequences.

*The NPIC is a cooperative agreement between Oregon State University & the US Environmental Protection Agency.

References

¹Penn State Extension Penn State College of Agricultural Sciences (2017) Pennsylvania Integrated pest management: Asthma, Pests, and Pesticides [Website]. Retrieved from <http://extension.psu.edu/pests/ipm/manuals-factsheets/factsheets/asthma-pests-pesticides>

²National Pesticide Information Center (NPIC) (11/9/2015). Other/Inert Ingredients in Pesticides[Website]. Retrieved from <http://npic.orst.edu/ingred/inert.html>

³ Centers for Disease Control (CDC) (2/2/2017). Insecticide Resistance [Website]. Retrieved from <https://www.cdc.gov/zika/vector/insecticide-resistance.html>

⁴ Centers for Disease Control (CDC) (2/12/2017). West Nile virus: Symptoms& Treatment [Website]. Retrieved from <https://www.cdc.gov/westnile/index.html>

⁵ National Pesticide Information Center (NPIC) (1/27/2017). Mosquitoes: Keeping Mosquitoes out of Your Yard [Website]. Retrieved from <http://npic.orst.edu/pest/mosquito/index.html#>

⁶ Chester County Health Department (CCHD) (n.d.). West Nile Virus: What is the Chester County Helth Department doing to prevent WNV? [Website]. Retrieved from <http://www.chesco.org/868/West-Nile-Virus>

⁷Pennsylvania's West Nile Virus Control Program (n.d.). Pennsylvania Residents Should Report and Submit Dead Birds [Website]. Retrieved from <http://www.westnile.state.pa.us/deadbird.htm>

⁸ Chester County Health Department (CCHD) (n.d.).Mosquito-Borne Diseases: Make Yourself a Bite-Free Zone. Retrieved from <http://www.chesco.org/mosquitoes>

⁹ National Pesticide Information Center (NPIC) (3/22/2017). Pest Control: Insect Repellent Locator. Retrieved from <http://pi.ace.orst.edu/repellents/>