

# Managing Mosquitoes Without Pesticides

As the impact of climate change worsens—longer warm and wet seasons—we must prepare to deal with an increase in mosquitoes and mosquito-borne diseases that affect people, wildlife and our waterways. Peer-reviewed studies show that pesticide spray programs are **largely ineffective** in targeting adult mosquito populations and they **pose health and environmental risks**—especially to children, pets, pollinators, wildlife—even when they are used as directed.

- Exposure to mosquito control pesticides containing **synthetic pyrethroids**, used in ground applications, can cause and worsen respiratory symptoms, especially for those at-risk including people with ragweed allergies and asthma (<https://bit.ly/2XMwqUo>) and may contain PBO and PFOS, possible carcinogens. Sumithrin both suppresses the immune system (<https://rb.gy/r7iou6>) and is a respiratory irritant (<https://rb.gy/sxcru9>).
- **Pyrethroid** exposure in children is linked to brain damage (<https://rb.gy/9iwig4>), ADD/ ADHD (<https://rb.gy/2uch3c>), autism (<https://rb.gy/1fnwau>), childhood cough and asthma (<bit.ly/3uQPKgz>).
- **Organophosphates** are often used in aerial applications and are linked to Parkinson's disease and other neurodegenerative diseases.
- Both pyrethroids and organophosphate have endocrine disrupting effects, with links to breast cancer and infertility (<bit.ly/2PPhseA>).
- Toxic to bees, pollinators, beneficial insects, birds, fish, amphibians, **these pesticides kill off the natural predators of mosquitoes, creating a dependence on spraying.** Example: Over a period of eleven years, Cicero Swamp in central New York was sprayed fifteen times with the insecticide Dibrom/Naled (organophosphate). **The mosquito population grew fifteen-fold during this period.**

## COVID-19 and Pesticides

Synthetic pyrethroid exposures are found to exacerbate respiratory illnesses, asthma, and cause asthmatic symptoms. (<https://bit.ly/3etZS7z>)

## 'Forever chemical' PFAS found in mosquito pesticide widely used in Maryland and in the State's mosquito control program in 2100 communities.

PFAS are not supposed to be in mosquito control products but it was found in testing Permanone 30-30. PFAS pose significant risk to public health and environment. PFAS are associated with liver damage, thyroid disease, developmental issues, reduced fertility, obesity, hormone suppression, and cancer. (<bit.ly/PFAS-mosquito>)

Has your community contracted for Md. State routine mosquito control?

Concerned? **You and/or your community can opt out.** (Exemption form: <https://bit.ly/3fP2jVg>)

**The Good News:** There are effective ways to minimize mosquito bites while also eliminating exposure to toxic pesticides. Think of it as a four-part plan:

1. Around home: prevent breeding sites by eliminating standing water.
2. In yard: discourage mosquitoes by planting fragrant plants that repel them.
3. On person: use organic and non-toxic repellants, increase vitamin B1.
4. Out & about: consider what you wear, where you go, time of day you're out.



## Step #1: Protect decks, backyards and outdoor areas around your home or business

- ✓ **Eliminate breeding sites with BT:** Bacillus thuringiensis (Bt) is a natural non-toxic mosquito-killing biocontrol that's available as sustained-release larvicide disks and granules. It is highly effective for use in larger moist areas and breeding sites i.e. birdbaths, rain barrels, unused swimming pools, tree

holes, roof gutters, flower pots, animal water troughs, basements that flood, any indoor or outdoor drainage areas—anywhere moisture or water collects. Granules can be dissolved in water and sprayed on larger areas requiring treatment. A popular brand is Mosquito Dunks granules or disks (at hardware/garden stores).



- ✓ "Standing water left alone keeps mosquitoes close to home." Eliminate pooled water from leaky faucets, containers, gutters, drains, flowerpots and saucers, trash cans, puddles, and any places that collect water—even a bottle cap can become a breeding site. Get poster: <https://bit.ly/2Vk59ab>
- ✓ Kill adult mosquitos and larve in standing water with garlic-based Mosquito Barrier [www.mosquitobarrier.com](http://www.mosquitobarrier.com) for use on grassy areas, turf, yards, parks, athletic fields, and golf courses, used by City Governments ([study on efficacy](#)). Make your own with dry granulated garlic or garlic-pepper tea for problem areas such as garbage cans.
- ✓ Use window screens, fans and screens over outdoor areas. An electric fan outside near you is effective and adds to your comfort. Place nets over strollers and baby carriers.
- ✓ Mosquito traps give off carbon dioxide, which mimic a breathing person or animal and attract and trap mosquitos.

### Step #2: Plant a wide range of plants that are natural mosquito repellents

Combinations of these plants in and around your home are beautiful and fragrant, many are culinary herbs and/or are perennial plants that come back and increase each spring.

- |            |                    |              |               |
|------------|--------------------|--------------|---------------|
| ✓ Basil    | ✓ Eucalyptus       | ✓ Lavender   | ✓ Rosemary    |
| ✓ Catnip   | ✓ Horse mint       | ✓ Lemongrass | ✓ Thyme       |
| ✓ Cedar    | ✓ Scented geranium | ✓ Marigolds  | ✓ Witch Hazel |
| ✓ Cinnamon |                    | ✓ Pennyroyal | ✓ Clove       |

### Step #3: Use non-toxic and organic mosquito repellents

The CDC reports that the essential oil Lemon Eucalyptus is as effective as DEET. Google retail and online stores carry Lemon Eucalyptus and other non-toxic products, as well as DIY recipes. Products may have varying durations of effect, so experiment.

- ✓ Oil of Lemon Eucalyptus (OLE)
- ✓ PMD (p-menthane-3,8-diol), which is the extract from OLE that shows superior repellent activity. Here is a detailed fact sheet on OLE and PMD: <http://bit.ly/2pjFEpy>
- ✓ Badger Anti-Bug Balm
- ✓ Bubble & Bee Organic Insect Repellent
- ✓ Brittanie's Thyme Organic Bug Spray
- ✓ Homemade natural roll-ons and sprays using essential oils of citronella, lemon, basic, thyme, lemongrass, geranium, peppermint, lemon balm, Neem, bergamot, clove.
- ✓ Studies on effectiveness here: [www.medicalnewstoday.com/articles/325337](http://www.medicalnewstoday.com/articles/325337)
- ✓ Vitamin B1 at 50-100mg emits an odor only mosquitoes detect and avoid, not humans
- ✓ Burn citronella candles around outdoor activity and seating areas.
- ✓ Zoe Organic Insect Repellent
- ✓ Sofia BugSafe
- ✓ Burt's Bees Herbal Insect Repellent

### Step #4: Other ways to protect against mosquitoes

- ✓ Be aware of peak exposure times and places, especially dawn and dusk.
- ✓ Wear appropriate clothing to minimize exposed skin such as long-sleeved shirts, long pants, boots and hats. Tuck in shirts. Choose light colored clothing. Wear closed shoes instead of sandals.

Learn more at Maryland Pesticide Education Network: [www.mdpestnet.org](http://www.mdpestnet.org)

- ✓ Pesticides, Managing Mosquitos and Safety: [bit.ly/mosquito-safety](http://bit.ly/mosquito-safety)
- ✓ Mosquito Management and Insect-Borne Diseases <http://bit.ly/2oNoj9J>