

BUSTING PESTICIDE MYTHS AND OTHER TALL TALES

Luke Goembel, Ph.D.

Legislative Vice Chair, Central Maryland Beekeepers Association

Sierra Club 2017 Maryland Jamboree Oct. 14, 9:15 am

PRE-QUIZ: LOOK FOR ANSWERS

- Please do not yell out answers during the presentation. Allow others to find them on their own.
- What do you say to the authorities when you are caught spraying bees with insecticide?
- What does oil of lemon eucalyptus do to mosquitos?

MYTH #1:
WE NEED TO SPRAY TO PREVENT DISEASE

- That's a sales pitch. The reality is different:
- Spraying is **ineffective** at reducing disease, **harms the environment**, and **causes brain damage** in humans – especially to the most vulnerable: young children and those in the womb.



TRUTH: SPRAYING IS INEFFECTIVE



- JUNE 14, 2017: “Miami Wasted Thousands on Untested Pesticide That Didn't Kill Zika Mosquitos” spent \$20,000 on worthless spraying.
- No peer-review studies prove the effectiveness of spraying in reducing mosquito transmitted disease.
- Studies prove the ineffectiveness :
- Harvard: Spraying “had little or no impact on the Culex vectors of WNV, even at maximum permitted rates of application.
- Cornell: Spraying “for control of mosquitoes and West Nile virus is relatively ineffective, costly, and has been associated with environmental and public health risks.”

TRUTH:
SPRAYING IS INEFFECTIVE
(PARADOX OF PESTICIDES)

- Pesticides kill or sicken natural predators of mosquitos which creates a **dependence on frequent spraying** to keep mosquito populations low.
- Example: Over a period of eleven years, Cicero Swamp in central New York State was sprayed fifteen times with the insecticide Dibrom (naled). The mosquito population **grew fifteen-fold** during this period.



TRUTH: SPRAYING HARMS THE ENVIRONMENT



0.001 % hits
Target pest,
99.999%
Pollutes
Environment

- “Aimed at Zika Mosquitoes, Spray Kills Millions of Honeybees,” NYT, 9/1/16.
- Dr. VanEnglesdorp of U. of Md comments: “If you’re killing honeybees, you’re killing a lot of other non-honeybee pollinators, too, and those populations could take a long time to recover.”
- Mosquito sprays are also toxic to aquatic life.
- The poison travels up the food chain.
- For instance: “pesticides were responsible for the significant mortality of several bat species ...” Environmental Toxicology and Chemistry, 2012.



TRUTH: SPRAYING CAUSES BRAIN DAMAGE

- “Behavioral disorders in 6-year-old children and pyrethroid insecticide exposure: the PELAGIE mother–child cohort”
- “Association of pyrethroid pesticide exposure with ADHD in a nationally representative sample of U.S. children”
- “Pesticides exposure as etiological factors of Parkinson’s disease and other neurodegenerative diseases—A mechanistic approach”
- “Urinary Metabolites of Organophosphate and Pyrethroid Pesticides and Behavioral Problems in Canadian Children”
- “Aerial Spraying to Combat Mosquitos Linked to Increased Risk of Autism in Children”



This is just a fraction of peer-reviewed research published in the last 5 years.

MYTH #2:
IF YOU BAN ONE PESTICIDE, EVEN WORSE
ONES WILL BE USED



- Goofy “False Dilemma.”
- How about the use of **safer insecticides**?
- How about **non-chemical methods** to reduce the mosquito populations?
- How about a **re-examining** of the urgency to kill mosquitos in the first place?
- This myth is a threat: “TREEHUGGERS! SHUT UP OR YOU ARE GOING TO REGRET IT!”



MYTH #3: THE EPA WILL PROTECT THE ENVIRONMENT

- The industry's arguments on safety rest largely on an “**appeal to authority**.”
- The EPA uses **industry-produced studies of dubious validity** to prove safety. They do not perform their own laboratory or field research.
- In my experience, **EPA scientists** are **ignorant of peer-reviewed science** that is common knowledge amongst those from other institutions.

The EPA serves industry: e.g. , The POTUS gets \$1M from DOW Chemical, reverses proposed EPA ban.



Dow C.E.O. and POTUS, 2016

MYTH #4: THE LABEL IS THE LAW

- EPA labels offer little protection to the environment.
- For instance: bees are frequently slaughtered by labeled use of pesticides.
- Peer-reviewed science overwhelmingly indicates that everyday, lawful use of pesticides, such as mosquito spraying, is doing great harm to our environment.



EXAMPLE: EPA LABEL = BEE KILL

- Spring, 2015: **all of my foraging bees were killed.**
- The bee-kill corresponds to commercial **mosquito spraying campaign** in my neighborhood.
- EPA label: “**Highly toxic to bees...**Do not apply if bees are visiting the treatment area.”
- Maryland Department of Agriculture investigation concludes: **licensed applicators were working within the law.**
- Applicator need only say: “**I didn't see any bees.**”



ALTERNATIVES TO SPRAYING

- “We should no longer accept the counsel of those who tell us that we must fill our world with poisonous chemicals; we should look about and see what other course is open to us.”

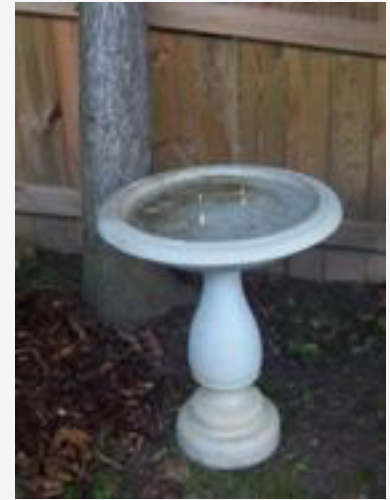
Rachel Carson, *Silent Spring*, 1962



ELIMINATE OR REDUCE MOSQUITO BREEDING GROUNDS

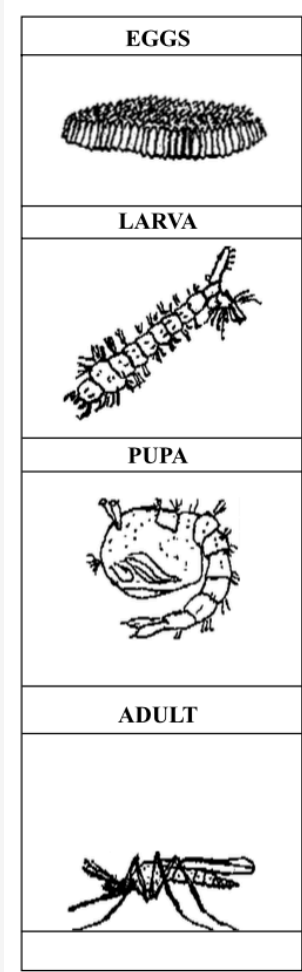


- **Most effective mosquito control!**
- **Remove or drain all** tin cans, pet dishes, buckets, holes in trees, clogged gutters and down spouts, old tires, flower pots, and other water-retaining objects.
- **Fix dripping** outside water faucets.
- If standing water wanted: **hose it out weekly** to break the life cycle.



Hose out weekly

BIOLOGICAL LARVACIDE



- When breeding grounds cannot be eliminated, use *Bacillus thuringiensis var. israelensis* (“Bti”) It kills only a narrow range of insect larva. E.g., in Mosquito Dunks and Bits.
- Larvaciding is much more effective at killing the target pest than spraying adulticide over a much larger volume.



AVOID CONTACT WITH MOSQUITOS



- Use screens to keep mosquitos out of your house.
- Use clothing or netting to keep them off your skin.
- Oil of lemon eucalyptus, is as effective as DEET for repelling mosquitos [CDC].
- Use citronella or geraniol candles or diffusers to repel mosquitoes.
- Electric fans are proven repellents. "... no mosquitoes flew into the vicinity of the simulated wind; nobody was bitten." [NYT]



USE NATURAL PREDATORS

- Stock **mosquito larvae-eating fish**, such as goldfish or minnows.
- **Dragonfly larvae** eat mosquito larva. (Don't introduce non-native dragonflies.)
- **Bats** were responsible for 32% reduction in egg-laying activity. [J. Med. Entomol.]
- **Purple Martins** eat a variety of insects **mainly mosquitoes and grasshoppers**. Download <https://extension.umd.edu/learn/attracting-purple-martins> for how to attract purple martins in Maryland.



COMING SOLUTIONS...

- Wolbachia-infected mosquitoes produce offspring that do not survive.
- Scientists develop safer Zika vaccine, August 9, 2017.
- **“Brazil now has doubts that Zika alone causes birth defects”** !?!?!?!?!
(Reported by PRI and *Nature*, 2016).



QUIZ

- What do you say to the authorities when you are caught spraying bees with insecticide?
- **“I didn’t see any bees.”**
- What does oil of lemon eucalyptus do to mosquitos?
- **It repels mosquitos as effectively as DEET.**

CONCLUSIONS

- Spraying is ineffective, harms the environment, and causes brain damage.
- We should no longer accept the counsel of those who tell us that we must fill our world with poisonous chemicals; we should look about and see what other course is open to us. [Rachael Carson, 1962]
- There are many, less harmful alternatives to spraying for mosquitos.