

Bti for Mosquito Control

1. What is Bti?

Bti is a biological or a naturally occurring bacterium found in soils. (Bti is short for *Bacillus thuringiensis* subspecies *israelensis*.) It contains spores that produce toxins that specifically target and only affect the larvae of the mosquito, blackfly and fungus gnat. EPA has registered five different strains of Bti found in 48 pesticide products that are approved for use in residential, commercial and agricultural settings primarily for control of mosquito larvae.

2. Does Bti pose health risks to humans?

No. Bti has no toxicity to people and is approved for use for pest control in organic farming operations. It has been well tested by many studies on acute toxicity and pathogenicity (ability to cause disease) for *Bacillus thuringiensis* including studies specifically on Bti. Based on these studies, EPA has concluded that Bti does not pose a risk to humans.

3. Where has Bti been used for mosquito control?

Bti is used across the United States for mosquito control. Bti is approved for aerial spraying, which has taken place in Massachusetts, Pennsylvania, Maryland and Michigan, among other states. Bti can be sprayed over waterbodies such as ponds, lakes, rivers and streams. Bti is used to kill developing mosquito larvae by being applied to standing water where those larvae are found. Bti can be used around homes in areas and containers where water can collect, such as flower pots, tires, and bird baths. Bti can also be used to treat larger bodies of water like ponds, lakes and irrigation ditches.

4. Will Bti work to control mosquito larvae?

Yes, Bti has been shown to be effective in reducing mosquito larval populations and could be effective in controlling mosquitos carrying Zika, dengue and chikungunya in places like Puerto Rico and other areas where these diseases have been identified.

5. Are insects becoming resistant to Bti?

No. There is no documented resistance to Bti as a larvicide. A [recent study \(Tetreau et al. 2013\) confirmed previous research showing a lack of Bti resistance](#) in mosquito populations that had been treated for decades with Bti.

6. Are there special precautions to be taken during Bti spraying?

No special precautions are needed for applying Bti. A number of Bti products are sold as “homeowner” products and are easy and safe to use. People do not need to leave areas being treated. However, as is the case with many microbial pesticides, some commercial use Bti products may require applicators to wear a dust/mist filtering mask.

7. How will I know if aerial spraying is going to take place?

Decisions about where and when to spray will be made by local officials. Listen for announcements in your community with the dates, times and locations of upcoming sprayings on social media sites, newspapers or radios.

8. Does Bti pose risk to crops or water supplies?

No. Bti has no toxicity to people, so it can be applied safely to mosquito habitat without a detrimental impact on food crops or water supplies. In fact, Bti can be used for pest control in organic farming operations. It is important to follow the label for any Bti product to ensure that the product is being used correctly. There are multiple Bti products and some are allowed to be used on certain drinking water (e.g., cisterns) while others are not intended for that use.

9. Is Bti harmful to wildlife including honey bees?

Studies indicate Bti has minimal toxicity to honey bees. Bti produces toxins that specifically affect the larvae of only mosquitoes, black flies and fungus gnats. These toxins do not affect other types of insects including honey bees.

10. Is there a medical test to show whether I've been exposed to Bti?

Since Bti has no toxicity to humans, a medical test to show exposure to the active ingredient has not been developed.

11. What other measures should be taken to control mosquitoes besides aerial spraying?

- Eliminate any standing water (even tiny amounts) to prevent infected mosquitoes from laying their eggs (breeding) in standing water.
- Use window and door screens to block infected mosquitoes from entering your home, workplace or children's schools.
- Use EPA-registered insect repellents to prevent getting bitten. EPA-registered means the product works and is safe when you follow the directions.
- Dress in light-colored clothing, long pants, and long sleeves and try to avoid areas where mosquitoes are present.