

BED BUGS & DDT

TOPIC FACT SHEET

Could bed bug outbreaks be solved with DDT?

DDT cannot be used to control bed bugs. Because DDT was once used this way, some people have suggested that bringing back DDT could solve bed bug problems today. This is not true. Although the insecticide DDT helped to get rid of bed bugs in the 1950s, it is not effective to use today and has risks. By the 1950s, many populations of bed bugs around the world were resistant to DDT.¹ In 1956 pest control specialists started recommending that people stop using DDT for bed bugs and use different insecticides instead.¹ DDT was banned in the United States in 1972 for health and environmental reasons.²



Photo credit: Mike Talbot, flickr

How long have bed bugs been a problem for people?

Bed bugs were once common in homes in the United States and around the world.³ They have even been found in Egyptian tombs.⁴ In London in the 1930s about one out of three homes had bed bugs.¹ Because they have lived with humans for so long, populations of bed bugs have learned how to survive in human environments. This is one reason why they are so difficult to control.

Was DDT effective against bed bugs?

DDT is a synthetic (man-made) chemical that was first used as a pesticide in 1939.⁵ It is an **insecticide** that kills insects by disrupting their nervous systems.³ DDT was effective and popular for several reasons. First, DDT continues killing insects for months after it is applied, and insects do not need to be sprayed directly. If an insect crawls on a surface with DDT, it will die.⁶ Also, DDT was cheap to manufacture.¹



Photo credit: National Museum of Health and Medicine, flickr

How did bed bugs become resistant to DDT?

DDT was used by the US military in World War II to kill insects in soldiers' housing.³ Increased DDT use outside of the military helped control bed bug populations and kept bed bugs scarce for many years.⁶

Even though DDT started out as an effective way to control bed bugs, bed bugs became resistant to DDT soon after people began using it. Some bed bugs were resistant to DDT by the 1940s.^{1,3} This happened because some bed bugs have a mutation that allows them to survive being sprayed with DDT. They then pass this mutation to their offspring. Bed bugs became resistant to DDT because it was the main pesticide used on them, and because people used large amounts frequently.³

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Is DDT used today?

The United States banned DDT in 1972. In 2004 most of the world's countries adopted a greement called the Stockholm Convention that banned or restricted DDT. Today, DDT is only used in certain countries, mainly to kill **mosquitoes** that cause malaria.²

DDT poses a risk to people and wildlife because it takes many years to **break down in the environment**. The insecticide also builds up in animals' bodies. It is sometimes found in human breast milk.² DDT became famous when scientists found it was harming bald eagles and several other birds, and almost made them go extinct.⁵ Some research shows that DDT exposure increases the risk of certain cancers.²

Are bed bugs still resistant to DDT or other insecticides?

After DDT was banned, people started using pyrethroid pesticides, like **deltamethrin** and lambda-cyhalothrin, for bed bugs.¹ Pyrethroids kill insects in a similar way as DDT. Both pyrethroids and DDT target the same part of an insect's nervous system.^{1,7} Because of this, some bed bugs that were resistant to DDT were also resistant to pyrethroids, even if they had never been around pyrethroids before. This is called cross-resistance.^{3,6,7}

Some experts believe that cross-resistance is one of the reasons why bed bug populations have increased recently.^{1,3} Another reason why bed bugs are increasing could be that people today are less aware of how to avoid spreading bed bugs and because people travel often between different cities and countries.⁴

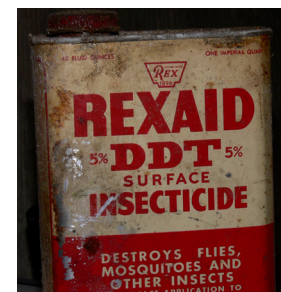


Photo credit: Brad Smith, flickr

Recent tests show that many bed bugs are still resistant to DDT, years after DDT was banned.^{3,7} This may be because of cross-resistance between DDT and other pesticides. Scientists studying bed bug resistance to insecticides in 2010 found that almost 90 percent of bed bugs across the United States had a mutation that would help them survive the use of insecticides like DDT and pyrethroids.⁷

How can we prevent insecticide resistance today?

- Relying on only one type of pesticide to control an insect, using pesticides too often, or using different pesticides that kill insects in the same way, can all make insects become resistant to pesticides.
- Because bed bugs are now resistant to some pesticides, some pesticides sold as bed bug killers may not be effective. Use a variety of **control methods** instead of, or in addition to pesticides.^{1,4}
- Using more pesticides to kill a resistant pest may be ineffective and will increase health risks to both people and pets.
- If you use pesticides, always **follow the label** instructions.
- If you have old pesticides like DDT, **dispose** of them properly through a **hazardous waste** collection program. They cannot be put in the trash!

For more information contact: NPIC

Oregon State University, 310 Weniger Hall, Corvallis, OR 97331-6502

Email: npic@ace.orst.edu Web: npic.orst.edu

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Where can I find more information?

For more detailed information about bed bugs and DDT please visit the list of referenced resources below, call the National Pesticide Information Center, Monday - Friday, between 8:00am - 12:00pm Pacific Time (11:00am - 3:00pm Eastern Time) at 800-858-7378, or visit us on the web at npic.orst.edu. NPIC provides objective, science-based answers to questions about pesticides.

Date Reviewed: January 2021

Please cite as: Cocks, M; Cross, A.; Jenkins, J. 2021. Bed Bugs and DDT Fact Sheet; National Pesticide Information Center, Oregon State University Extension Services. <http://npic.orst.edu/factsheets/bb-ddt.html>.

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