



Is it SAFE?

Getting answers from the National Pesticide Information Center

By: *Kaci Buhl, with illustrations by Karl Edwards*

Consider the word “safe.” Is it “safe” to go rock-climbing? Drive a car? Take vitamins? The only “safe” answer is no, it’s not safe for everyone 100 percent of the time. That kind of certainty—100 percent safety—is like unicorns: we’ve heard about them, but we’ve never seen one. People ask us every day whether or not pesticides are safe. They want to know if they have anything to worry about when they’re exposed to pesticides.

I work at the [National Pesticide Information Center \(NPIC\)](#), the only one of its kind in the United States, and it’s housed right here at Oregon State University. Since 1995, we have answered hundreds of thousands of inquiries from all over the world, from people who want to know, say, how to get rid of bedbugs, or if it’s safe to use slug bait in the garden.

If we say, “Yes, it’s safe,” the caller could throw all caution to the wind. One angry woman called us because her now sickened dog had eaten half a bag of slug bait labeled “safe for use around pets.”

Therefore, it’s not safe to say “safe.”

NPIC is funded primarily by the U.S. Environmental Protection Agency to prevent pesticide-related illness, injury, and pollution. In 20 years, we have built a collection of files, databases, and books that could rival many libraries. Over 5 million people come to our website each year, and more than one third of those people live outside the US. We have a team of scientists who have a passion for sharing knowledge to make people’s lives better. These pesticide specialists respond to NPIC inquiries in real time over the phone. Let me say that again: If you call our 800-number, a real person with extensive education in toxicology will answer the phone, ready to help you. There’s no maze of button-pushing or confusing vocal prompts.



At NPIC, our specialists help callers reframe their yes-or-no questions about pesticide safety into a better understanding of higher-or-lower risk. Risk depends on two measures: the toxicity of the pesticide and the amount of exposure one has to the pesticide. Pesticide specialists help people evaluate their risk. They don't make recommendations or tell people what they should do. Instead, they start by asking questions.

For example, if someone calls NPIC asking if it's safe to eat garden spinach that was treated with pesticides, we might ask a series of questions like this:

- *First of all, are you asking because someone is already sick?*
- *Which pesticide was used? Do you have the container with you?*
- *How much of the pesticide was used?*
- *Did you dilute it with water, according to label directions?*
- *How long ago was the spinach treated, and how frequently?*
- *When are you planning to start the harvest and what will you do with it?*
- *How much do you expect you and others will eat?*

We use fact sheets, regulatory documents, databases, and peer-reviewed articles to find relevant data. Then we try to translate the science as efficiently as possible, knowing that most callers are impatient for an answer and don't want a lecture.

The idea that scientists are awful communicators is a cliché, perhaps born from the awful handwriting of physicians. But NPIC scientists are highly trained communicators, careful to ask questions and provide information for callers to evaluate their own levels of risk and to decide on their own course of action.

It can get challenging when callers' emotions run high. Our specialists are trained in risk communication and customer service, using the model LEAPS = Listen, Empathize, Apologize, Problem-Solve. Here's how it works:

Caller: "I'm mad as hell! My neighbor insists on spraying harmless weeds with toxic chemicals, and he's infringing on my rights to live an organic lifestyle."

NPIC approach: Ask a lot of questions. "Are you feeling okay? Have you spoken to your neighbor about this? Do you know what herbicides he is spraying?" Look up the herbicide's half-life and volatility. Discuss regulatory resources and constraints, offer local phone numbers for incident investigation and neighbor notification, as needed. Talk about ways to minimize exposure when spraying happens next door. And empathize. "I'm sorry this is happening. It sounds really frustrating."



Caller: “Well, I’m glad it’s an herbicide that breaks down quickly. I’ll set up a notification agreement so I can leave the area when he’s spraying next time. I might even offer to pull his weeds for him. My nephew needs the work.”



And another example:

Caller: “My kids’ playset is made of treated wood, and I just read online about its potential to cause cancer. Should I pull out the playset and burn it? It would break their hearts.”

NPIC approach: Ask a lot of questions. “How old are the children? Do they engage in hand-to-mouth activities? Is the playset treated regularly with a sealant?” Look up cancer studies about chemically treated lumber and put the risk in context. Discuss the importance of oral route of exposure. Brainstorm ways to reduce exposure risk after playing. Discourage illegal burning of the playset. Discuss the risk of inhaling smoke from treated wood. “I know this is a tough decision with no absolute answers, but I’m here to help.”

Caller: “Okay, I see things I can do to reduce the risk without destroying the playset. And we’ll be vigilant about hand-washing after play time.”

The job of NPIC is to provide as much information as possible for callers to make their own informed decisions. The course of action chosen by callers is dependent on their own perception and tolerance of risk.

Risk *perception* is personal and influenced by the situation. If there’s considerable benefit to be gained, or if one has familiarity, trust, or control in the situation, the perceived risk is lower.

Risk *tolerance* is personal and influenced by many social and cultural factors. If children are involved, or if the potential harm is catastrophic, the tolerance for risk is lower.

When emotions run high, people tend to ignore probabilities. When the Powerball jackpot reached \$1 billion last year, most of my friends bought tickets, despite a vanishingly small chance of winning. I might have assumed that science-minded people wouldn’t waste their time or money. But no, it was “math-shmath; give me ten tickets.” Similarly, people ignore the vanishingly low probability of harm from using insect repellents with DEET. “Math-shmath; these are my kids.” This is known as “probability neglect” and it kicks in when emotions run high.



When you ask me, “Is it safe?” I hear what you really mean: “Is it below my risk tolerance?” It would be wrong for me to answer that question for you or anyone else, but it’s the job of NPIC

to find answers to all of the questions you need to decide for yourself. It will be a decision based on toxicity and exposure. It's how science can help make people's lives better.

THE BUZZ ON MOSQUITOES

Q and A with the National Pesticide Information Center

Should I spray my yard for mosquitoes?

- Your community might already be controlling mosquitoes. Find out at npic.orst.edu/vecmlr.html.
- Many of the pesticides available for at-home sprays don't last very long, so mosquitoes that enter your yard a few days after you spray may be unaffected.
- The mosquitoes that carry West Nile Virus do live in Oregon.
- The mosquitoes that carry the Zika virus don't live in Oregon, so far. Check updates at cdc.gov/zika/vector.
- The mosquitoes that carry the Zika virus travel only about a quarter-mile from the puddle, tire, or bottle cap where their eggs hatched.



What else can I do?

- Mosquitoes need standing water to breed; reduce the population by removing all standing water from your yard and surrounding area.
- Make sure your gutters are draining and water is not pooled under your planters.
- Dispose of used tires or drill holes in them to ensure drainage.
- Clean bird baths every few days; mosquito eggs can stick to the bottom and survive dry periods.

What about my backyard party coming up?

- Keep trees and shrubs trimmed back; they provide resting sites for mosquitoes.
- Mosquitoes are clumsy flyers, so keep the air moving around your guests.
- Avoid gathering at dusk when mosquitoes are most active.



- Right before the party, use a strong stream of water on foliage to knock mosquitoes off their feet and wet their wings.
- Consider using permethrin-treated clothing.

What about repellents?

- Follow the label instructions for all insect repellents.
- The Centers for Disease Control say DEET, picaridin, oil of lemon eucalyptus (p-menthane-3,8-diol), and IR3535 provide reasonably long-lasting protection.
- Oil of lemon eucalyptus should not be used on children under three.
- Some essential oils may repel mosquitoes, but they have to be applied more often.
- Most repellents should be washed off when you return indoors.
- Use sunscreen first, followed by repellent, unless the label says otherwise.
- Always read the label for details.



Are there any quick fixes?

- Ultrasonic devices that claim to repel mosquitoes have not been shown to work.
- Automatic misting systems can harm fish, pollinators, and bystanders, and increase the risk of pesticide resistance.