



## Glyphosate Q&A Sheet

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### What is glyphosate?

It is a weed-killing chemical found in Roundup® and many other weed killers. Like other herbicides, it is usually combined with one or many other ingredients to make the final product.

### Does Virginia Tech have an official position for or against using glyphosate?

No. It is our mission to educate. We are happy to answer questions and help find solutions using legal and effective methods while considering the risks.

### Does glyphosate cause cancer in humans?

It may, at high enough doses. However, the [largest study](#) ever published looking at farmers and other applicators, found no association between glyphosate and solid tumors, including Non-Hodgkins Lymphoma (NHL). That study found a potential association between glyphosate exposure and a certain type of blood cancer that was not statistically significant. Another [study](#) suggested that using fertilizers could account for this risk.

### What do health agencies and regulators say about it?

The International Agency for Research on Cancer (IARC), an arm of the World Health Organization (WHO), determined in 2015 that glyphosate is a probable human carcinogen. That determination was surprising to many. ([IARC](#)) responded to critics by clarifying its intent – to identify potential hazards. They asked, “Can it cause cancer under any circumstances?” The IARC group hazards based on the strength of evidence, not the potency of the carcinogen(s). They defer to national and international bodies to take the next step, which is risk-assessment. Risk assessment is based on expected levels of exposure and background cancer rates.

Many governments have published risk assessments about glyphosate, finding it is unlikely to cause cancer in humans when used according to the label directions.

- US Environmental Protection Agency, [December 18, 2018](#)
- European Food Safety Authority, [November 12, 2015](#)
- Australian Pesticides and Veterinary Medicine Authority, [March 15, 2017](#)
- New Zealand Environmental Protection Authority, [August 2016](#)
- Health Canada, [April 2015](#)
- International assembly of experts: FAO/WHO [May 16, 2016](#)

To put the IARC determination in context, they put the following items in the same category as glyphosate, Group 2A “Probable human carcinogens.”

- Red meat
- Indoor emissions from burning wood

- High-temperature frying
- Late-night work shifts

The following items were placed in a stronger-evidence category, “Known human carcinogens.”

- Processed meats
- All alcoholic beverages
- Sunlight
- Engine exhaust
- Outdoor air pollution

The work of [hazard identification](#) is important, but it is only the first step in understanding risk.

### **What about other ingredients in glyphosate weed-killers?**

[Researchers](#) reviewed the scientific literature on glyphosate, its major metabolite AMPA, formulated Roundup® products manufactured by Monsanto, and the surfactant POEA. They concluded that none of the components caused cancer. However, POEA can be harmful to a variety of aquatic wildlife (i.e. minnows, frogs, micro-organisms). It can be difficult to determine the risks associated with other ingredients in pesticide formulations, including Roundup®. This is because manufacturers are not currently required to identify “other ingredients” on product labels.

### **How have the courts ruled on glyphosate?**

Court rulings vary. A California jury found Monsanto liable in August 2018 for causing a man’s cancer. The man used glyphosate weed-killers for years. The case has been appealed. In contrast, a federal judge in California ruled in June 2018 against the state’s case for placing warning labels on containers of glyphosate under Proposition 65. It would have required warnings about the potential for glyphosate to cause cancer. The judge cited a “heavy weight of evidence” that the risk was very low. The courts will likely evaluate more cases in the future.

### **Are foods with glyphosate residue safe to eat?**

A tiny amount of glyphosate is not likely to cause harm, even if we eat those foods daily. There are residue limits for glyphosate on many fruits, vegetables, corn, grains, milk, and eggs. The [FDA](#) monitors the level of glyphosate on foods in the marketplace. So far, they have not found foods that exceed residue limits, based on risk assessments. The dose (amount) makes the poison.

### **How can I reduce my risk?**

To reduce exposure to glyphosate from food, buy organic foods with the official logo from USDA. Also, use alternative methods of weed control in your yard and garden. Contact a [VCE Master Gardener](#) for other weed control ideas. If you choose to use glyphosate weed-killers, you can still reduce your risk by making sure to follow the pesticide label carefully. The pesticide label is the law. While glyphosate is poorly absorbed through the skin, some parts of the body are more absorptive than others. Minimize your exposure by wearing protective gloves and clothing, and keep people and pets away from the area until sprays have dried. Contact your local extension agent or Virginia Tech Pesticide Programs at [www.vtpp.org](http://www.vtpp.org) or 540-231-6543 for more information about using pesticides safely.