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TOXIC EXPOSURES

Pesticide Exposure as Likely to Cause Cancer as Smoking

*People who don't farm, but live in U.S. agricultural communities where pesticides are used on farms, face an increased cancer risk as significant as if they were smokers, according to a study published July 25 in *Frontiers in Cancer Control and Society*.*

by **The New Lede**

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1986 PAGEVIEWS**By Shannon Kelleher**

People who don't farm, but live in U.S. agricultural communities where pesticides are used on farms, face an increased cancer risk as significant as if they were smokers, according to a new study.

The study, published July 25 in the journal **Frontiers in Cancer Control and Society**, analyzed cancer incidence data from nearly every U.S. county and looked at how that data corresponded to federal data on agricultural pesticide use.

Researchers reported that they found the higher the pesticide use, the higher the risk for every type of cancer the researchers looked at.

"Agricultural pesticide usage has a significant impact on all the cancer types evaluated in this study (all cancers, bladder cancer, colon cancer, leukemia, lung cancer, non-Hodgkin's lymphoma [NHL], and pancreatic cancer); and these associations are more evident in regions with heavy agricultural productivity," the study states.

"Pesticide-associated cancers appear to be on par for several smoking-associated cancer types," the study states.

It has been well established that smoking increases cancer risk, with at least 70 of the thousands of **chemicals in tobacco smoke** considered carcinogens.

The findings add to a wealth of research on pesticides and human **health** risks that point to shortcomings in U.S. pesticide regulations, said Dana Barr, and environmental health researcher at Emory University who was not involved in the study.

"Right now, I don't think the regulations for pesticides are the most health-protective, and they seem to presume that a chemical is safe until it is proven **toxic**, not the other way around," she said. "I do think we need policy reform that puts the onus on the manufacturers to do a better job of evaluating safety before allowing new registrations."

The authors said they analyzed U.S. Geological Survey (USGS) data available for 69 pesticides in thousands of counties along with cancer data from the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC).

"We naively thought some of the cancer [risk] rates would not be affected," said Isain Zapata, associate professor at the Rocky Vista University, College of Osteopathic Medicine in Colorado and an author of the study. "That was where we found our surprise," he said.

“We talk about pesticides being bad, we have examples of specific pesticides having some very extreme effects,” said Zapata. But ... it doesn't affect only people that are exposed directly while working with [pesticides].”



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Beyond farmers

Previous research has linked pesticides to numerous cancers.

Glyphosate, the active ingredient in the weedkiller Roundup and the most widely used herbicide in the world has been classified as a probable human carcinogen by the International Agency for Research on Cancer.

More than 100,000 plaintiffs **sued Monsanto** and owner Bayer AG alleging exposure to **Roundup** and related products caused them to develop NHL.

The U.S. Environmental Protection Agency (EPA) maintains there is no evidence that **glyphosate causes cancer** in humans.

Dicamba, an active ingredient in several other popular weedkillers, was linked to numerous cancers in a **2020 NIH study**.

In February, a federal judge in Arizona banned three **dicamba-based weedkillers** made by Bayer, BASF and Syngenta and ruled that the EPA broke the law by allowing their use.

The new study published today is not a part of the long-running **Agricultural Health Study**, or AHS, which is a collaboration by the National Cancer Institute, the National Institute of Environmental Health Sciences and the EPA.

Since 1993, the AHS has been studying cancer and other health outcomes in 89,000 farmers licensed to spray pesticides in North Carolina and Iowa, as well as their spouses.

In 2022, an **AHS study** found increased kidney cancer rates in farmers who frequently used certain pesticides, including **chlorpyrifos**, **paraquat** and **atrazine**, as well as increased thyroid cancer rates in farmers who sprayed the insect-killer lindane and in those using the fungicide

metalaxyl.

However, while the Agricultural Health Study has made many contributions to knowledge about the link between pesticides and cancers in farmers, it does not account for people who live in agricultural areas but do not farm.

“Our study aims to fill in that gap,” the new assessment states.



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'Few areas spared'

To understand how much pesticide use contributes to cancer risk in different U.S. regions, Zapata and colleagues first ran a statistical analysis to map patterns of agricultural pesticide use across the U.S. using USGS county-level data.

Next, they used CDC and NIH data to determine how these pesticide use patterns corresponded with cancer incidences.

They observed the greatest elevated risk in states known for high **corn production**, including the top U.S. corn-growing state of Iowa, along with Illinois, Nebraska, Missouri, Indiana and Ohio.

The study noted, however, that the effects of pesticide exposure were “spread out through the country with few areas spared.”

While the studies focused on pesticide usage as a whole, they also found that some specific chemicals contributed more to a county's cancer risk than others.

For example, higher risks of colon and pancreatic cancer were found in regions where **dicamba** was popular, while higher cancer risk in general, as well as colon and pancreatic cancer, specifically, were observed in regions where glyphosate was widely used.

“We need to educate people,” said Zapata. “We need to continue doing research so we have better ways of using these products or evaluating the effects of these products.”