

Glyphosate takes another hit: Herbicides may lead to antibiotic resistance

This has not been a good week for glyphosate, the active ingredient in Roundup and other herbicides. On Friday, the World Health Organization (WHO) [announced](#) that it had classified glyphosate, the United States' most widely-used pesticide, as "[probably carcinogenic to humans](#)."

Now, the chemical has another strike against it. A [study](#) published today by the American Society of Microbiology's journal mBio has linked glyphosate and two other widely-used herbicides—[2,4-D](#) and [dicamba](#)—to one of the [most pressing public health crises](#) of our time: [antibiotic resistance](#).

This study found that exposure to these herbicides in their commercial forms changed the way bacteria responded to a number of antibiotics, including [ampicillin](#), [ciprofloxacin](#), and [tetracycline](#)—drugs widely used to treat a range of deadly diseases.

Dicamba, 2,4-D, and glyphosate have been in use for decades, so why have their antibacterial-resistance effects not been documented before? As the study's lead author, [Jack Heinemann](#), professor of genetics at the University of Canterbury in New Zealand, explains, when pesticides are tested for adverse effects, "it's the lethal toxicity that people focus on." In other words, how much of the chemical will kill an organism.

"What makes our study different, is that it is looking at a sub-lethal effect," says Heinemann. "The effect we see requires that the bacteria stay alive."

Scientists know that [overuse of antibiotics in humans can decrease their effectiveness](#). In the same way, says Heinemann, "exposure to these pesticides make the pathogens stronger."

Also to consider is the approval earlier this year of [a new pesticide that combines glyphosate and 2,4-D](#) and soybean and cotton seeds [genetically engineered to resist dicamba](#), all of which are expected to increase use of these pesticides.

Read full, original article: [Study Links Widely Used Pesticides to Antibiotic Resistance](#)