

A common weed-killer chemical is at the heart of a \$289 million cancer lawsuit against Monsanto. Here's how worried you should be

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Last week, a jury in San Francisco ordered Monsanto to pay \$289 million in damages to a school groundskeeper who developed cancer after years of using Roundup, the company's popular herbicide. A scary-sounding report published by an environmental group shortly after the trial found traces of the chemical in dozens of everyday foods, from cereal to granola bars.

But the trial's outcome doesn't mean that Roundup — or its chief chemical, called glyphosate — causes cancer.

Instead, it means that members of the jury believed that Monsanto (which recently merged with chemical giant Bayer and announced plans to dissolve its name) intentionally kept information about glyphosate's potential harms from the public.

The lawsuit is just the first part of what could be a decades-long legal fight over glyphosate. Meanwhile, the science linking Roundup to cancer is limited at best, and only further research can change that.

The science on Roundup and cancer is limited. But as for whether Roundup could actually have been the sole or even primary cause of an individual's cancer, the research leans heavily toward "no."

The scare over a potential link between Roundup and cancer appears to have begun with a now widely-criticized statement put out by a World Health Organization group known as the International Agency for Research on Cancer (IARC) in 2015.

That year, the IARC put glyphosate — Roundup's active ingredient — in a cancer-risk category one level below widely-recognized harmful activities like smoking. But several researchers have said the IARC's determination was bogus because there is no evidence that glyphosate causes cancer. In fact, a lengthy review found that the IARC had edited out portions of the documents they used to review glyphosate to make the chemical look far more harmful than its own research had concluded.

During the latest court case, Monsanto attempted to counter plaintiff Johnson's claims that Roundup caused his cancer using extensive testimony from expert witnesses. They pointed out that the evidence definitively linking the glyphosate in Roundup to cancer is scant. More broadly, figuring out what caused one individual's cancer is a tricky business

for any scientist — a point several experts have made since the most recent Monsanto verdict came out last week.

"This verdict is just the first in what could be a long legal battle over Roundup, and proving causality in such cases is not easy," Richard Stevens, a professor at the University of Connecticut School of Medicine who specializes in cancer and its causes, wrote in a recent post for *The Conversation*.

New research could change the controversial classification of glyphosate

The IARC's 2015 statement is not final.

"The agency has often changed its classification of an agent based on new evidence after initial evaluation," Stevens wrote. "Sometimes it has become more certain that the agent poses a hazard, but in other cases it has downgraded the hazard."

Based on new studies (typically in mice), glyphosate could go from its current status — where some people see it as a potential cancer risk — to being recognized as having a very low risk for harm.

Several studies of glyphosate and cancer are ongoing, and more are coming out each year. Just last year, a review of studies looking at the ties between glyphosate and cancer concluded that in the low amounts of that people are actually exposed to, glyphosate "do[es] not represent a public concern."

Conversely, the new evidence could come out strongly against glyphosate and suggest that it's incredibly harmful. As Stevens points out, new evidence dramatically changed the public perception of another popular product which was initially labeled cancerous — a zero-calorie sweetener called saccharin, which is sold under the brand name Sweet' N Low.

In the 1980s, any product containing the sweetener was required to carry a warning label saying that it was "determined to cause cancer." But the science was flawed: the rats that had been used in the studies were especially prone to bladder cancer, and the findings did not apply to people. So in 2016, the sweetener was removed from a list of cancer-causing ingredients.

But glyphosate's status remains to be seen. For now, the court case merely reflects the determination of a jury — not the conclusion of the majority of scientific experts.