

Crucial misrepresentations about glyphosate continue to threaten agriculture. This scientist explains how the UN agency IARC likely manipulated the data

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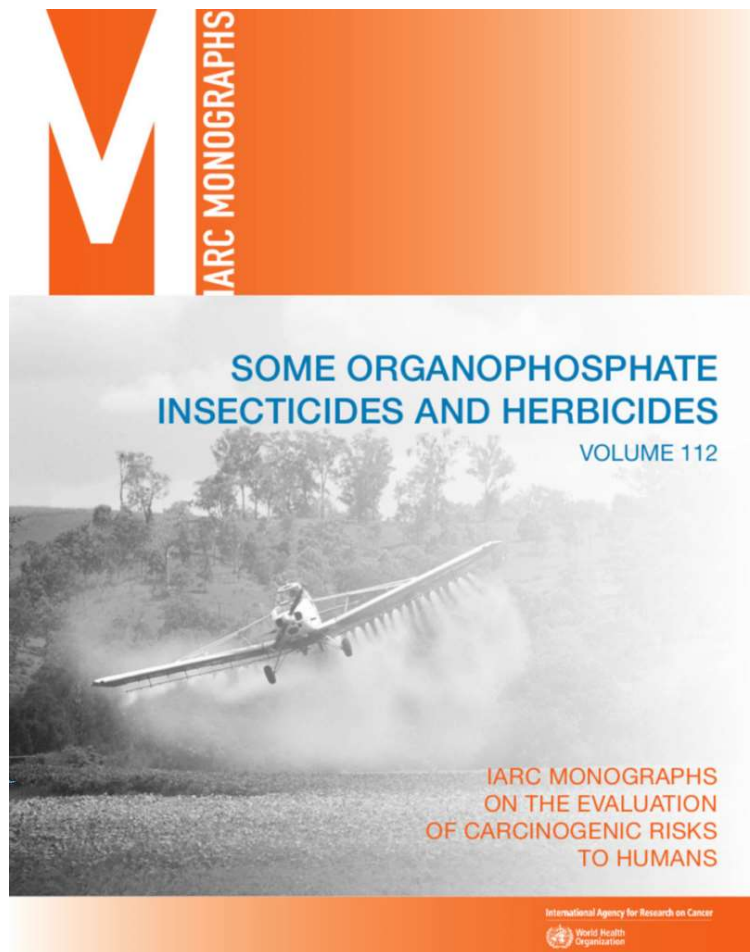
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Geoffrey Kabat | September 27, 2022



Credit: Jeff Roberson/Associated Press

Glyphosate, the active ingredient in the weedkiller Roundup, was introduced over forty-five years ago and is the most widely used herbicide in the world. Until 2015, there was little concern about the toxicity or carcinogenicity of glyphosate. This changed in March 2015, when a Working Group of the International Agency for Research on Cancer (IARC) concluded that glyphosate was “probable human carcinogen.” (The full report *IARC Monograph 112, Some Organophosphate Insecticides and Herbicides* came out almost two years later, in January, 2017). From 2015 on, IARC’s judgment received enormous attention in the media, regulatory circles, activist environmental groups, and, in litigation brought against the chemical’s original producer, Monsanto, and its successor company, Bayer Ag.



Based on the IARC determination, in 2017 the State of California labelled glyphosate a known human carcinogen under Proposition 65.

Starting in 2018, the IARC verdict played a key role in the first cases brought against Monsanto in California. And it continues to play a central role in litigation against glyphosate.

How did this document come to have such enormous influence? The number of people who have actually read the text of IARC's assessment of glyphosate (Monograph 112) appears to be vanishingly small. It seems that IARC's judgment carried such cachet that few felt the need to actually read the 91 pages devoted to it and form an independent opinion of the report. Instead, it has been accepted as an article of faith. A partial explanation for IARC's largely unquestioned authority may be the fact that the agency is loosely affiliated with the World Health Organization.

A less speculative reason is that seventeen supposed international experts in cancer research, who were in the Working Group, agreed with the conclusion. It should give anyone interested in science and the regulatory process pause that basic errors in the IARC document could have been missed by so many experts.

Because the IARC glyphosate determination has been given so much weight and, yet, has received so little critical scrutiny, I am writing this commentary. Although there have been serious critiques of IARC's glyphosate determination (here, here, here, here, and here), a major problem with the IARC classification has often been overlooked due to the attention devoted to issues, which, while worthy of comment, are less important. These include IARC's focus on "hazard" instead of "risk" and the Agency's assessments of other chemicals/substances.

The statistician Robert Tarone has just published a letter in the journal *Clinical Lymphoma, Myeloma, and Leukemia* responding to a review of the evidence that glyphosate causes non-Hodgkin's lymphoma. (Tarone worked at the National Cancer Institute for 28 years and later at the International Epidemiology Institute for 14 years). His brief letter, though a bit technical, deserves careful reading.

Before appending the letter, I will highlight the key points and add a few comments of my own:

1. IARC based its classification of glyphosate on the animal (that is, rodent) data, because IARC judged the epidemiology (i.e., human data) to be "limited."
2. When all the rodent studies are examined, there are more *inverse* associations of glyphosate exposure with tumor incidence than there are positive associations. (IARC simply ignored the inverse associations and focused on a few weakly positive associations). There is also evidence that, in the course of editing, positive evidence was strengthened and exculpatory evidence was curtailed.
3. It was Christopher Portier, an American statistician, who, in 2014, chaired an advisory board that proposed that IARC assess glyphosate. Portier then served as the "invited expert" on the Working Group that evaluated glyphosate. Within two weeks after the meeting, he went to work as a litigation consultant for two law firms representing plaintiffs against Monsanto.
4. The author of the review claims that a paper that included exculpatory rodent data was not available for review by IARC. However, Tarone points out that, in fact, IARC cited the paper in question and noted that it provided an online data supplement containing the original tumor data, but this was either ignored by the Working Group, or not provided to it by the staff. These data were included in Tarone's own assessment of IARC and glyphosate. Tarone comments that, whatever the explanation for the uncited data, it reflects a "lack of rigor."
5. In closing, Tarone points out another instance of this lack of rigor. The original agenda for Monograph 112, which was posted in July, 2014, only included organophosphate insecticides —not glyphosate. Glyphosate was added later, and its evaluation may have been rushed. In any event, IARC uses the wrong chemical designation for glyphosate. It is a *phosphonate*, not an *organophosphate*, as designated in the Monograph title.

6. My final point is that it tells us something important that a meticulous examination of the evidence contained in Tarone's 2018 commentary gets much less attention — even from scientists concerned with this question — than a seriously-flawed report, whose conclusion is at odds with that of every other health and regulatory agency in the world.

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Letter to the Editor

Response to “A Review and Update with Perspective of Evidence that the Herbicide Glyphosate (Roundup) is a Cause of Non-Hodgkin Lymphoma”

Robert E. Tarone

Clinical Lymphoma, Myeloma and Leukemia, Vol. 000, No.xxx, 1–1 © 2022 Elsevier Inc. All rights reserved.

A recent perspective by Weisenburger¹ falsely claims that my paper² criticizing the International Agency for Research on Cancer (IARC) classification of glyphosate as a probable human carcinogen was “industry-sponsored.” Claims that I have an industry conflict of interest with regard to this paper, or any other publication on the IARC glyphosate classification, have previously been rebutted in detail.³ The paper was written without consultation with, or pay from, any entity associated with industry, and demonstrated that the glyphosate classification was erroneous, because of a seriously flawed summary of rodent tumor data. Completely exculpatory rodent tumor evidence had to be excluded from deliberations in order for the IARC Monograph 112 Working Group to conclude that there was sufficient evidence that glyphosate was an animal carcinogen. It is telling that Weisenburger cites a review paper on glyphosate rodent studies written by a fellow plaintiff expert in Roundup litigation,⁴ but does not cite a comprehensive review of the same glyphosate rodent studies that concluded that the evidence does not support a conclusion that glyphosate causes cancer.⁵ It is noteworthy that for both the glyphosate rodent studies relied upon by IARC^{2,3} and the larger collection of glyphosate rodent studies relied upon by the U.S. Environmental Protection Agency and other regulatory bodies⁶ there were more tumor types showing significant decreases in tumor rates with increasing glyphosate exposure levels than there were showing significant increases. There is simply no credible evidence that glyphosate causes malignancies in rodents. Because the Working Group concluded that epidemiological evidence was limited, the probable carcinogen classification of glyphosate relied on the conclusion that there was sufficient evidence of animal carcinogenicity.

Weisenburger also falsely claims that an industry-sponsored rodent study review paper⁷ was “not available for review by IARC.” In fact, the paper is discussed in sections 3.1.3 and 3.2.3 of

the glyphosate chapter in Monograph 112.⁷ The Monograph 112 discussion notes that the review article provided an online data supplement containing the original data on tumor incidence from the rodent studies reviewed in the paper. This data supplement was the source for the exculpatory tumor data excluded from the Monograph 112 Working Group deliberations, but reported in my papers.^{2,3} This data was either ignored by the Working Group, or was not provided to the Working Group by IARC staff. In either case, this demonstrates a lack of scientific rigor in the IARC Monographs Program, which is also evidenced by the title of Monograph 112: glyphosate is a phosphonate, not an organophosphate. It appears that expediting the evaluation of glyphosate as soon as possible after it was proposed in March 2014 as a medium priority agent for IARC consideration took precedence over scientific accuracy.

Disclosure

Dr. Tarone was deposed in December 2019 as an unpaid fact witness in Roundup litigation. The purpose of the deposition was to defend his published papers on the IARC glyphosate classification.

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Having reviewed some of the crucial issues involved in IARC's evaluation of glyphosate, we are in a better position to appreciate a stunning sentence that appears early in Tarone's letter:

Completely exculpatory rodent tumor evidence had to be excluded from deliberations in order for the IARC Monograph 112 Working Group to conclude that there was sufficient evidence that glyphosate was an animal carcinogen.

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Editor's note/correction: Title updated 9-27-22 at 10:10amET