



SUMMARY

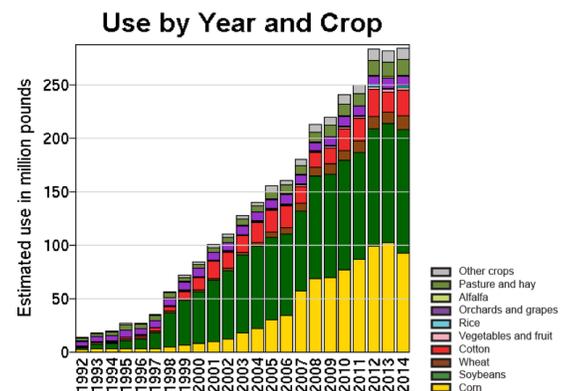
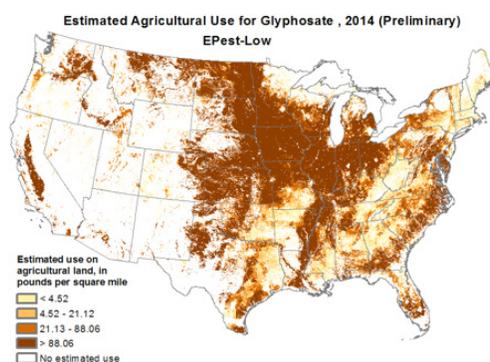
The International Agency for Research on Cancer's (IARC) recent [classification](#) of glyphosate as a "probable" human carcinogen in Monograph 112 has garnered significant attention and calls from activists to ban the widely used herbicide. But the fact remains that an overwhelming majority of health and regulatory authorities have determined glyphosate is safe, making IARC's classification the textbook definition of an outlier. In fact, IARC's methodology has been called into question by the U.S. Environmental Protection Agency (EPA), which criticized the sources of research on which IARC relied and determined that there was no evidence to support IARC's classification of glyphosate.

The process underlying IARC's Monograph 112 was plagued by serious conflicts of interest within the Monograph Working Group. Moreover, the Agency failed to explain that it conducted a hazard assessment rather than a much more relevant risk assessment, which considers numerous factors to determine the likelihood that harm will occur under real world circumstances. In the end, IARC's classification of glyphosate provides another example of the urgent need to reform both the Agency and its processes.

What is Glyphosate?

Glyphosate is an off-patent herbicide used to control broadleaf plants and grasses. It was registered for use by the EPA in 1974 and is currently the most commonly-used herbicide in the world. It is also one of the most studied herbicides, having undergone rigorous review by the [EPA](#), the [European Food Safety Administration](#) (EFSA), and the [United Nations](#).

Glyphosate is an essential tool used by farmers to help produce healthy and sustainable harvests. The vast majority of glyphosate use in the United States occurs in the Midwest region, where it is mostly applied to soybeans, corn, cotton, and winter wheat crops.



Source: [United States Geological Survey's Pesticide National Synthesis Project](#)

Is Glyphosate Safe?

Glyphosate is less toxic than either caffeine or table salt. Over the last 40 years, the herbicide has been rigorously tested and studied by regulatory agencies worldwide that have found it poses no risk to human health when used as directed.

Indeed, there is global scientific consensus that glyphosate is safe, and for this reason it has been repeatedly approved for use by regulatory bodies in the European Union, United States, Canada, Germany and elsewhere. The EPA alone has reaffirmed glyphosate's safety on four separate occasions since it was first registered in 1974.

Below is a sampling of world regulatory bodies that have evaluated glyphosate and agree that it is safe both before and after IARC's review:

- [EPA Federal Insecticide, Fungicide, and Rodenticide Act \(FIRFA\) Report](#) (2016): "An extensive database exists for evaluating the carcinogenic potential of glyphosate, including 23 epidemiological studies, 15 animal carcinogenicity studies, and nearly 90 genotoxicity studies for the active ingredient glyphosate. These studies were evaluated for quality and results were analyzed across studies within each line of evidence[...]. The available data at this time do no support a carcinogenic process for glyphosate."
- [New Zealand's Environmental Protection Authority](#) (2016): "Based on the inconsistency in the results of the studies on glyphosate exposure and [non-Hodgkin lymphoma], and the lack of any association in the largest, most robust study, it was concluded that there is no convincing evidence of an association between glyphosate exposure and the development of cancer in humans."
- [German Federal Institute for Occupational Safety and Health to the European Chemicals Agency](#) (2016): "Based on the epidemiological data as well as on data from long-term studies in rats and mice, taking a weight of evidence approach, no hazard classification for carcinogenicity is warranted for glyphosate according to the CLP criteria."
- [United Nations/World Health Organization](#) (2016): "In view of the absence of carcinogenic potential in rodents at human-relevant doses and the absence of genotoxicity by the oral route in mammals, and considering the epidemiological evidence from occupational exposures, the Meeting concluded that glyphosate is unlikely to pose a carcinogenic risk to humans from exposure through the diet."
- [EPA's Cancer Assessment Review Committee](#) (2015): "In accordance with the 2005 Guidelines for Carcinogen Risk Assessment, based on the weight-of evidence, glyphosate is classified as 'Not Likely to be Carcinogenic to Humans.'"
- [European Food Safety Authority](#) (2015): "EFSA concluded that glyphosate is unlikely to pose a carcinogenic hazard to humans and the evidence does not support classification with regard to its carcinogenic potential..."
- [Canadian Pest Management Regulatory Agency](#) (2015): "It is important to note that a hazard classification is not a health risk assessment. The level of human exposure, which determines the actual risk, was not taken into account by WHO (International Agency for Research on Cancer, IARC). Pesticides are registered for use in Canada only if the level of exposure to Canadians does not cause any harmful effects, including cancer."
- [Australian Pesticides and Veterinary Medicines Authority](#) (2013): "The APVMA currently has no data before it suggesting that glyphosate products registered in Australia and used according to label instructions present any unacceptable risks to human health, the environment and trade."
- [EPA](#) (2013): "Based on the lack of evidence of carcinogenicity in two adequate rodent carcinogenicity studies, glyphosate is not expected to pose a cancer risk to humans."

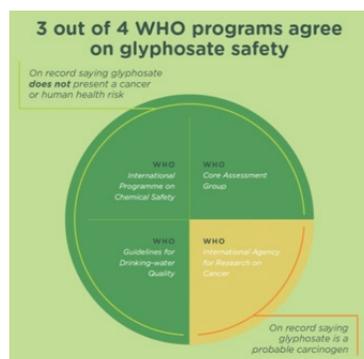
IARC's Monograph 112 on Glyphosate

Despite consistent and repeated affirmations of glyphosate's safety and a complete lack of evidence suggesting otherwise, IARC issued a press release in March 2015, announcing its intention to classify glyphosate as "probably carcinogenic" ([Group 2A](#)) under its hazard-based classification system. But IARC did not release Monograph 112 revealing its justification for the decision until December 2015 – nearly nine months after the initial announcement.

IARC's classification of glyphosate as a 2A carcinogen has been met with significant controversy. Since its findings are an anomaly, many in the scientific community have [questioned](#) the scientific integrity of IARC's Monograph process. For instance, the EPA's [Cancer Assessment Review Committee](#) criticized IARC for "inclusion of the positive findings from studies with known limitations, the lack of reproducible positive findings and the omission of the negative findings from reliable studies may have had a significant bearing on IARC's conclusion on the genotoxic potential of glyphosate."

[Read about the flaws of IARC's hazard – not risk – approach.](#)

IARC's position on glyphosate is an outlier even within the World Health Organization (WHO). Three out of four WHO programs (WHO's International Programme on Chemical Safety, Core Assessment Group and WHO's Guidelines for Drinking-Water Quality) have determined glyphosate does not present a cancer risk to humans. When asked about the discrepancy, the WHO is quick to distance itself from IARC, [saying](#) it is "functionally independent."



Source: www.geneticliteracyproject.org

IARC scientists are also responsible for much of this controversy as they immediately [initiated a lobbying campaign](#) to ban glyphosate in Europe on the basis of IARC's findings. Many of the scientists authored an advocacy piece arguing for the European Union to reject EFSA's independent conclusions. EFSA studied glyphosate both before and after IARC's decision and determined that glyphosate [did not pose a cancer hazard](#).

IARC's Influence on U.S. EPA and Other Agencies

While conducting a routine evaluation of glyphosate, the EPA published a [risk assessment report](#) by its Cancer Assessment Review Committee (CARC) in April 2016. CARC is the authoritative body for EPA to determine whether registered substances pose a risk of cancer and has conducted past reviews on glyphosate and numerous other substances. This report, marked final as of October 2015 and signed by all 13 of its authors, concluded that glyphosate is not likely to be carcinogenic to humans. Days later, this report was suddenly taken down from the website, with EPA [claiming that it was somehow not final](#). EPA Administrator Gina McCarthy [confirmed](#) that the lead author of the CARC report, Jesudoss Rowland, retired in May 2016 – shortly after the CARC report was posted and taken down.

GROUP	WHAT DOES IT MEAN?	WHAT DOES IT INCLUDE?
GROUP 1	CARCINOGENIC TO HUMANS Sufficient evidence in humans. Causal relationship established.	Tobacco, mustard gas, plutonium, processed meats, canned fish, alcohol, sun
GROUP 2A	PROBABLY CARCINOGENIC TO HUMANS Limited evidence in humans. Sufficient evidence in animals.	Red meat, frying, very hot beverages, exposures from working in hairdressing
GROUP 2B	POSSIBLY CARCINOGENIC TO HUMANS Limited evidence in humans. Insufficient evidence in animals.	Pickled vegetables, radiofrequency electromagnetic fields, exposures from working in carpentry, gasoline
GROUP 3	CARCINOGENICITY NOT CLASSIFIABLE Inadequate evidence in humans. Inadequate evidence in animals.	Coffee, tea, caffeine, fluorescent lighting
GROUP 4	PROBABLY NOT CARCINOGENIC Evidence suggests no carcinogenicity in humans/animals.	ONLY 1 CHEMICAL EVER PLACED IN THIS GROUP, OF ALL SUBSTANCES ASSESSED Caprolactam, which is used in the manufacture of synthetic fibres.

Source: [Compound Interest](#)

According to [IARC](#), two EPA scientists participated in writing IARC's Monograph 112: Mathew Martin and Peter Egeghy. While Administrator McCarthy has [denied](#) that EPA staffers directly participated on the glyphosate issue with IARC, emails ([link1](#), [link2](#)) obtained by the House Science Committee show that both Martin and Egeghy were in fact active participants in the IARC Monograph on glyphosate. Accordingly, Congress has raised [questions](#) about the divide within the Agency.

In July 2016, EPA [noticed](#) its intention to form a Scientific Advisory Panel (SAP) to review glyphosate in October. On October 14, 2016, the EPA [announced](#) that the panel meeting, scheduled for October 18-21, 2016, was being postponed “due to recent changes in the availability of experts for the peer review panel.” On November 15, 2016 EPA confirmed that that one panelist, Peter Infante, was dismissed from the panel and nominated [additional](#) members. The SAP panel is scheduled to meet in December 2016.

The IARC Monograph is the only reason given by the Agency to deviate from normal procedure. As part of the SAP process, EPA's Office of Pesticide Programs released its [Evaluation of Carcinogenic Potential of Glyphosate](#) in September 2016, which expanded on the earlier CARC research, concluding that “the available data at this time do not support a carcinogenic process for glyphosate.” Additionally, EPA was highly critical of all eight studies that were cited and/or referenced in the Monograph 112 press release. EPA also deemed seven studies cited in Monograph 112 as “low quality” — including two of the primary studies used by IARC to make its glyphosate determination.

In addition to EPA's activity on glyphosate, the [Centers for Disease Control](#) and the [National Toxicology Program](#) (NTP) are now both initiating their own duplicative inquiries of glyphosate. NTP has twice completed studies that found [no indication](#) that glyphosate causes cancer.

Congressional Action

This confusion, coupled with the importance of the herbicide to U.S. agriculture, has triggered bipartisan inquiries into EPA's review of glyphosate and the National Institute of Health's (NIH) funding of IARC (which totaled [\\$39 million](#) from 1992-2006). Below is a list of actions taken by House and Senate leaders:

- Letter from House Science Committee Chairman Lamar Smith to EPA about why the CARC report was removed. ([link](#))
- Chairman Smith follow-up letter seeking interviews with EPA staffers who participated in the IARC report on glyphosate, and EPA staffers who wrote the CARC report. ([link](#))
- House Agriculture Committee Chairman Michael Conaway, Ranking Member Collin Peterson and Subcommittee Chairman Rodney Davis letter to the EPA inquiring about the glyphosate report and requesting related documents. ([link](#))
- Rep. Robert Aderholt, Chairman of the Appropriations Subcommittee on Agriculture, letter to the NIH questioning the science behind IARC's Monograph on glyphosate and funding from NIH. ([link](#))
- Rep. Frank Lucas questioning EPA Administrator McCarthy at House Science Committee hearing on the CARC report. ([link](#))
- Rep. Barry Loudermilk questioning McCarthy at House Science Committee hearing on emails proving EPA staffers participated in IARC report on glyphosate. ([link](#))
- Senate Interior Appropriations Bill for FY 2017 language on glyphosate: “Glyphosate Reregistration—The Committee is aware that the Agency is currently in the process of reviewing the registration for glyphosate, which is a very important crop protection tool for America's farmers. Furthermore, glyphosate has been used for decades and, when properly applied, has been found to present a low risk to humans and wildlife by regulatory bodies around the world, including Australia, Canada, the European Union, Japan, and by the Joint FAO/WHO Meeting on Pesticide Residues. The Committee urges the Agency to complete its reregistration of glyphosate expeditiously.” – Page 68 ([link](#))

- House Labor, HHS Appropriations bill language on funding for IARC: “International Agency for Research on Cancer (IARC)—The Committee recognizes that understanding the relationship among chemical agents and other hazardous substances and cancer is an important area of research. The Committee requests an update on NIH support for the IARC on Cancer Monographs on the Evaluation of Carcinogenic Risks to Humans.” – Page 57 ([link](#)) Rep. Frank Lucas questioning EPA Administrator McCarthy at House Science Committee hearing on the CARC report. ([link](#))
- Rep. Barry Loudermilk questioning McCarthy at House Science Committee hearing on emails proving EPA staffers participated in IARC report on glyphosate. ([link](#))
- Senate Interior Appropriations Bill for FY 2017 language on glyphosate: “Glyphosate Reregistration” –The Committee is aware that the Agency is currently in the process of reviewing the registration for glyphosate, which is a very important crop protection tool for America’s farmers. Furthermore, glyphosate has been used for decades and, when properly applied, has been found to present a low risk to humans and wildlife by regulatory bodies around the world, including Australia, Canada, the European Union, Japan, and by the Joint FAO/WHO Meeting on Pesticide Residues. The Committee urges the Agency to complete its reregistration of glyphosate expeditiously.” – Page 68 ([link](#))
- House Labor, HHS Appropriations bill language on funding for IARC: “International Agency for Research on Cancer (IARC) –The Committee recognizes that understanding the relationship among chemical agents and other hazardous substances and cancer is an important area of research. The Committee requests an update on NIH support for the IARC on Cancer Monographs on the Evaluation of Carcinogenic Risks to Humans.” - Page 57 ([link](#))

Related Links

- A Top Weedkiller Could Cause Cancer. Should We Be Scared? (NPR, [March 24, 2015](#))
- Andiukaitis Response Letter to Portier (European Commission, [December 15, 2015](#))
- ATSDR Notice of Intent to Develop Set 28 (Federal Register (includes glyphosate review), [February 12, 2015](#))
- Canadian Pest Management Regulatory Agency Study (Health Canada, [June 17, 2015](#))
- CARC Report on Glyphosate (US EPA, [October 1, 2015](#))
- Chaffetz investigating taxpayers funding for flawed cancer agency (The Hill, [October 7, 2016](#))
- Chaffetz, Johnson Eye Glyphosate Studies (Morning Consult, [September 26, 2016](#))
- CLH Proposal for Harmonised Classification and Labelling: Glyphosate (ECHA, [May 13, 2016](#))
- Conclusion on the peer review of the pesticide risk assessment of the active substance glyphosate (EFSA Journal, [November 12, 2015](#))
- Conservative Legal Group Sues EPA for Documents in Debate Over Herbicide (Morning Consult, [September 29, 2016](#))
- Controversial body’s glyphosate research isn’t reliable, critics say (Legal News Line, [June 23, 2016](#))
- Differences in the carcinogenic evaluation of glyphosate between the International Agency for Research on Cancer (IARC) and the European Food Safety Authority (EFSA) (Journal of Epidemiology & Community Health, [January 1, 2016](#))
- Email 1 correspondence regarding EPA staffers present at Monograph 112 (House Science, [March 14, 2015](#))
- Email 2 correspondence regarding EPA staffers present at Monograph 112 (House Science, [March 27, 2015](#))
- EPA Glyphosate Issue Paper ([September 12, 2016](#))

- EPA Notice of SAP Review Panel for Glyphosate October 2016 ([October 6, 2016](#))
- EPA RED Fact Sheet: Glyphosate ([September 19, 1993](#))
- EPA Report on Glyphosate & Pesticide Tolerances (Federal Register, [April 11, 1997](#))
- EPA says glyphosate, used in Monsanto herbicide, likely not carcinogenic (Reuters, [September 16, 2016](#))
- EPA Statement on Glyphosate ([May 1, 2013](#))
- EPA takes offline report that says glyphosate not likely carcinogenic (Reuters, [May 2, 2016](#))
- Estimated Agricultural Use for Glyphosate Map (USGS, [August 31, 2016](#))
- Europe's food safety watchdog says to release studies on weed-killer glyphosate (Reuters, [September 29, 2016](#))
- Europe's weedkiller wars (Politico, [June 13, 2016](#))
- EXCLUSIVE-US lawmakers to investigate funding of WHO cancer agency (Reuters, [October 6, 2016](#))
- Full House Science Committee Hearing on the CARC report (CARC report, [June 22, 2016](#))
- Glyphosate has become lightning rod for environmental activists (Delta Farm Press, [October 3, 2016](#))
- IARC Q&A on Glyphosate ([March 1, 2016](#))
- Joint FAO/WHO Meeting on Pesticide Residues (WHO, [May 13, 2016](#))
- Letter from Chairman Davis to Administrator McCarthy on glyphosate report and requesting related documents (Glyphosate report & requesting related documents, [May 11, 2016](#))
- Letter from Chairman Johnson to Administrator McCarthy on herbicide atrazine ([September 23, 2016](#))
- Letter from Chairman Smith to Administrator McCarthy on the removal of the CARC report (Removal of the CARC report, [May 4, 2016](#))
- Letter from Chairman Smith to Administrator McCarthy requesting an interview with EPA staffers associated with IARC & CARC reports (Request for interview with EPA staffers from IARC & CARC reports, [June 7, 2016](#))
- Letter from Representative Aderholt to Dr. Collins requesting a briefing on NIH funding standards and IARC (NIH justification of funds for IARC, [June 7, 2016](#))
- Monograph 112 Participants ([October 6, 2016](#))
- NTP Preparing To Assess Glyphosate's Carcinogenicity In Toxicology Study (Inside EPA, [June 28, 2016](#))
- NTP Technical Report on Toxicity Studies of Glyphosate (NTP, [July 11, 1992](#))
- Q&A exchange between Representative Loudermilk and Administrator McCarthy at House Science hearing on CARC report (CAC report, [June 22, 2016](#))
- Q&A exchange between Representative Lucas and Administrator McCarthy at House Science hearing on CARC report (CARC report, [June 22, 2016](#))
- Report from House Labor, HHS Appropriations on bill language about IARC (Bill language