

Dangerous levels of glyphosate in urine? Junk science paper based upon a large-scale anti-GMO testing campaign

The public and journalists – the consumers of information about health – need to be aware of something that researchers know well – there is no paper that is so dreadful that it cannot be published somewhere.

— ***Geoffrey Kabat, cancer epidemiologist, former faculty member at Stony Brook University School of Medicine and Albert Einstein College of Medicine***

Glyphosate present in urine in people across France at alarming levels? The French water supply awash in “glyphosate contamination”?

That’s the bracing conclusion in a recent academic journal study that’s garnered considerable attention in the media and on the web—and has become yet another talking point for advocacy groups clamoring to ban the world’s most used, and useful, weedkiller.

Do the conclusions and the headline takeaways match the data? How scrupulous were the scientists—in structuring the study, in their analysis and, perhaps most importantly, in their use of language in presenting their results?

This is a story of how an obscure academic paper morphed into a political tool. Why a study that presents itself as scientific and dispassionate is anything but. And how agenda-driven scientists twist language and selectively present data to promote their ideological goals.

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The glyphosate study

The spark for the social media flare-up was a January article in [Environmental Science and Pollution Research](#) (ESPR). Six co-authors researched the levels of the weedkiller in the French population. Their conclusion: “Our present results show a general contamination of the French population with glyphosate, and further contribute to the description of a widespread contamination in industrialized countries.”

The very choice of words—“widespread contamination”—signaled to the reader that this was a startling conclusion. It was manna from heaven for dozens of pro-organic and anti-GMO websites, and even some news sites, which within days were putting their darkest spin on the paper.



Glyphosate detected in 99% of the French population, with highest values in children, men, and farmers

 JAN 17, 2022

“Glyphosate detected in 99% of the French population, with highest values in children, men, and farmers,” [noted a mid-January headline](#) on The Organic Center website. It was one of dozens of similar posts across the web.

No surprise that any news about glyphosate garners such attention. After all, glyphosate is the most popular herbicide in the world—and the weedkiller has become the most studied agricultural chemical since DDT. Originally traded under the name Roundup, glyphosate is paired with genetically-engineered herbicide-resistant corn, soybeans and cotton. That’s made it a proxy target of anti-biotechnology advocacy groups for years.

Most biotechnology and glyphosate rejectionists built their case on a highly controversial ‘hazard’ study by a UN sub-group IARC—International Agency for Research on Cancer—which concluded in 2015 that the weedkiller is “probably carcinogenic to humans.” They did not conclude this based on studies on humans, but on animals.

IARC placed glyphosate in a hazard category with other ‘dangerous’ substances or situations: red meat, hot beverages and working as a barber; in other words, it was not considered very toxic. Most specifically, IARC did not conclude that trace amounts of glyphosate in our food posed a cancer hazard to the general populace—the implied central claim of the French study.

Dan Wixted, who helps run [Cornell University's Pesticide Safety Education Program](#), [notes](#) that the IARC determined glyphosate poses a cancer ‘hazard’—and that’s significantly different, he says, from posing a ‘risk’. “EPA considers exposure as well as hazard (toxicity) when determining the reference dose, which is therefore based on risk,” he says. That’s why substances like hot beverages are on the list. The cases of cancer from, say, hot beverages are close to negligible...as is the case, IARC’s evidence showed, from glyphosate.

Before the IARC monograph was released, and after more than 1000 studies, the scientific consensus on glyphosate was near unanimous: the weedkiller is safe for the environment, beneficial insects and humans if used properly.

IARC’s out-of-step findings set in motion an international effort to reassess the herbicide.

Over the next 6 years, [18 other global regulatory and oversight organizations](#), including the UN’s World Health Organization itself to the FDA, European Food Safety Authority, and Food Safety Commission of Japan, reviewed IARC’s cancer warnings [based on just a few dozen, controversially selected studies]

and added hundreds more studies to the mix. In of the [most comprehensive independent reviews](#), published in 2017 by the European Food Safety Authority, concluded:

Two complementary exposure assessments, human-biomonitoring and food-residues-monitoring, suggests that actual exposure levels are below these reference values and do not represent a public concern.

Here is the infographic summarizing all of the independent reviews, with links to the original studies.

glyphosateinfographic glp

Click [here](#) for a downloadable PDF version of this infographic.

As Health Canada summarized [in 2019](#):

No pesticide regulatory authority in the world currently considers glyphosate to be a cancer risk to humans at the levels at which humans are currently exposed.

Skeptical investigative journalists challenge organic biotechnology rejectionists

The scientific skepticism was mirrored in the high-end journalism community, which dug into IARC's process and history. A year-long investigation by Reuters ([here](#), [here](#), [here](#), [here](#)) documented widespread conflicts of interest and manipulation of data by IARC. Among the numerous scandalous findings, the scientist who guided the IARC conclusion signed on as a [paid consultant to anti-glyphosate litigants](#) shortly after the results were internally agreed upon and publicly released.

The science community consensus now underscores that trace amounts in food pose no health hazard and further rejects IARC's suggestion that glyphosate could pose health concerns to applicators when used as designed. This conclusion is underpinned by the US Department of Agriculture's 20-year [Agricultural Health Study](#), which has tracked more than 55,000 pesticide applicators.

But, of course, that's not what this made-to-order glyphosate attack study seemed to suggest... and what some news outlets and social media circulated. This is what the readers of The Organic Center [are being told](#):

Exposure to glyphosate has been linked to many important human health concerns including the development of cancers, impaired neurodevelopment, and endocrine disruption, particularly related to sex hormones.

It's not accurate to say anti-biotechnology sites are innocently duped by bad science, as they are willing participants in a global campaign attacking the use of biotechnology in conventional agriculture by proxy. They pine for a nostalgic era that never existed, when farmers flourished using pre-Green Revolution organic techniques—in real life, a time when literally tens of millions of people died annually from malnutrition.

This study and its embrace as an ideological weapon illustrate how glyphosate has emerged as a cultural symbol of our age of divisiveness. While the scientific consensus recognizes that the much-maligned weedkiller has proven its effectiveness, mild toxicity and limited environmental impact, that's not the view of advocacy groups, including some activist scientists—like those who authored the French glyphosate study. They selectively use language that presents the weedkiller as the toxic head of the agri-business snake.

Why the disconnect between independent scientists and activist groups? Because most people, including many journalists, are not skilled at dissecting the potential biases in an academic paper and translating it for their readers. They often do not ask the right questions. Who are the authors? Are they shading the

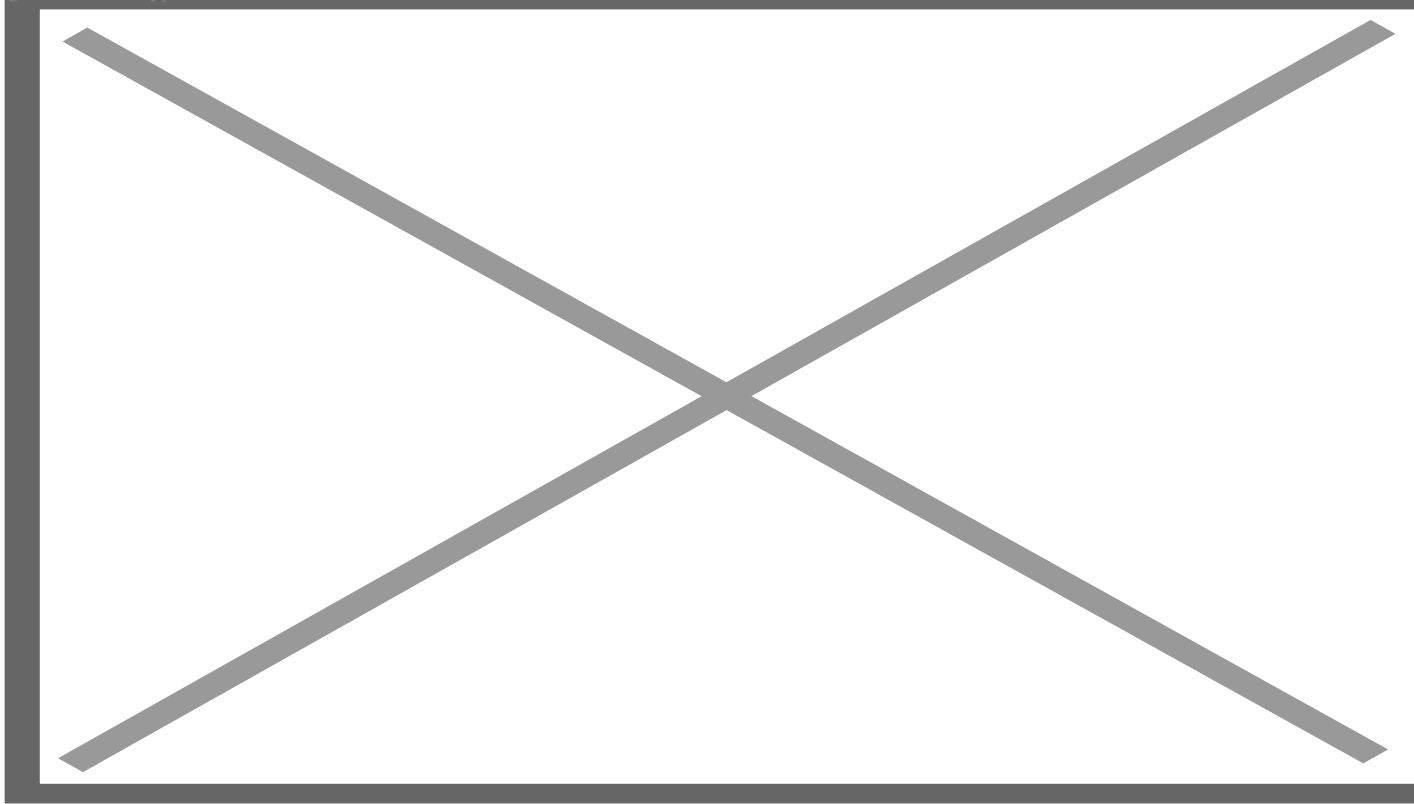
data? How do they address contested data? What do similar studies conclude?

Those are the questions we ask.

Inside the ‘junk science’ study

Glyphosate is an herbicide used by farmers globally for more than 40 years, pre-dating the agricultural biotechnology revolution that began in the 1990s. It is distinguished by its low toxicity and its effectiveness in controlling weeds with minimal environmental impact and no known health hazards for consumers in the trace levels found in our food.

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Credit: American Chemical Society

The most extensive research to date is the [Agricultural Health Study](#), which traced the health of more than 54,000 pesticide applicators—people exposed to the highest levels of glyphosate. Published in 2018 in the Journal of the National Cancer Institute (JNCI), researchers found no association between glyphosate, the main ingredient in Monsanto’s popular herbicide Roundup, “and any solid tumors or lymphoid malignancies overall, including non-Hodgkin Lymphoma (NHL) and its subtypes”. The report added: “Glyphosate was not statistically significantly associated with cancer at any site.”


In its review of studies on the potential carcinogenicity of glyphosate, IARC cherry-picked a few dozen studies, many on animals—but conspicuously did not incorporate in its analysis the AHS study, considered the global gold standard for data on the impact of glyphosate on humans—which directly contradicted IARC’s findings.

With this context, we can now begin to ask: What’s the science behind these new apocalyptic claims that industrialized countries are facing “widespread contamination” from trace amounts in our food that could lead to a variety of killer cancers? What’s the credibility and independence of the authors? How did this article even get published?

The [paper’s abstract](#) represents what on the surface seems like a purely scientific research purpose: “Our objective was to determine glyphosate levels in the French general population” But that’s not exactly what the authors address in their article.

Research Article | [Open Access](#) | [Published: 12 January 2022](#)

Quantifiable urine glyphosate levels detected in 99% of the French population, with higher values in men, in younger people, and in farmers

[Daniel Grau](#), [Nicole Grau](#), [Quentin Gascuel](#), [Christian Paroissin](#), [Cécile Stratonovitch](#), [Denis Lairon](#), [Damien A. Devault](#) & [Julie Di Cristofaro](#) 

[Environmental Science and Pollution Research](#) (2022) | [Cite this article](#)

13k Accesses | **1** Citations | **560** Altmetric | [Metrics](#)

Here is the summary of the paper (broken into paragraphs):

- France is the first pesticide-consuming country in Europe. Glyphosate is the most used pesticide worldwide and glyphosate is detected in the general population of industrialized countries, with higher levels found in farmers and children.
- Little data was available concerning exposure in France. Our objective was to determine glyphosate levels in the French general population and to search for an association with seasons, biological features, lifestyle status, dietary habits, and occupational exposure.
- This study includes 6848 participants recruited between 2018 and 2020. Associated data include age, gender, location, employment status, and dietary information.
- Glyphosate was quantified by a single laboratory in first-void urine samples using ELISA. [ELISA stands for enzyme-linked immunoassay, a laboratory test to detect antibodies, which are produced by the body’s immune system when it detects harmful substances, called antigens.]

- Our results support a general contamination of the French population, with glyphosate quantifiable in 99.8% of urine samples with a mean of 1.19 ng/ml + / - 0.84 after adjustment to body mass index (BMI).
- We confirm higher glyphosate levels in men and children. Our results support glyphosate contamination through food and water intake, as lower glyphosate levels are associated with dominant organic food intake and filtered water.
- Higher occupational exposure is confirmed in farmers and farmers working in wine-growing environment.
- Thus, our present results show a general contamination of the French population with glyphosate, and further contribute to the description of a widespread contamination in industrialized countries.

Who are the authors?

Do the authors have conflicts of interest, an important question to ask when reviewing any paper? And it's the responsibility of authors to disclose such conflicts, perceived or real. Here are the co-authors:

- Daniel Grau, Nicole Grau and Quentin Gascuel, Association Campagne Glyphosate, Foix
- Christian Paroissin, University of Pau and Pays de l'Adour, CNRS, LMAP, E2S UPPA, Pau
- Cécile Stratonovitch, ARSEAA, Pôle Guidance Infantile, Psychiatrie Infanto-juvénile Secteur III, Labège
- Denis Lairon, Faculty of Medicine of La Timone, Aix Marseille University, INSERM, INRA, C2VN, Marseille, France
- Damien A. Devault, Centre Universitaire de Formation et de Recherche de Mayotte, Dembeni, Mayotte
- Julie Di Cristofaro, ADES, Aix Marseille University, CNRS, EFS, Marseille

In this case, only one author (Cécile Stratonovitch) declared a conflict of interest. But others had undisclosed conflicts. The first three authors declared an affiliation with the Association Campagne Glyphosate, an activist group, but they did not represent that as a COI, which of course it is.

Two authors, Daniel Grau and Cécile Stratonovitch, testified in court (along with Gilles-Éric Séralini, whose 2012 paper claiming glyphosate caused cancer in rats was [retracted](#) before he [placed it in a pay-for-play journal](#)) in support of what are known as "*faucheurs volontaires*"—so-called voluntary reapers, notorious for vandalizing GMO fields, seed bags and shipments, equipment, etc. linked to crop biotechnology). These conflicts of interest were not disclosed.

How the authors covertly framed the data on glyphosate traces in urine

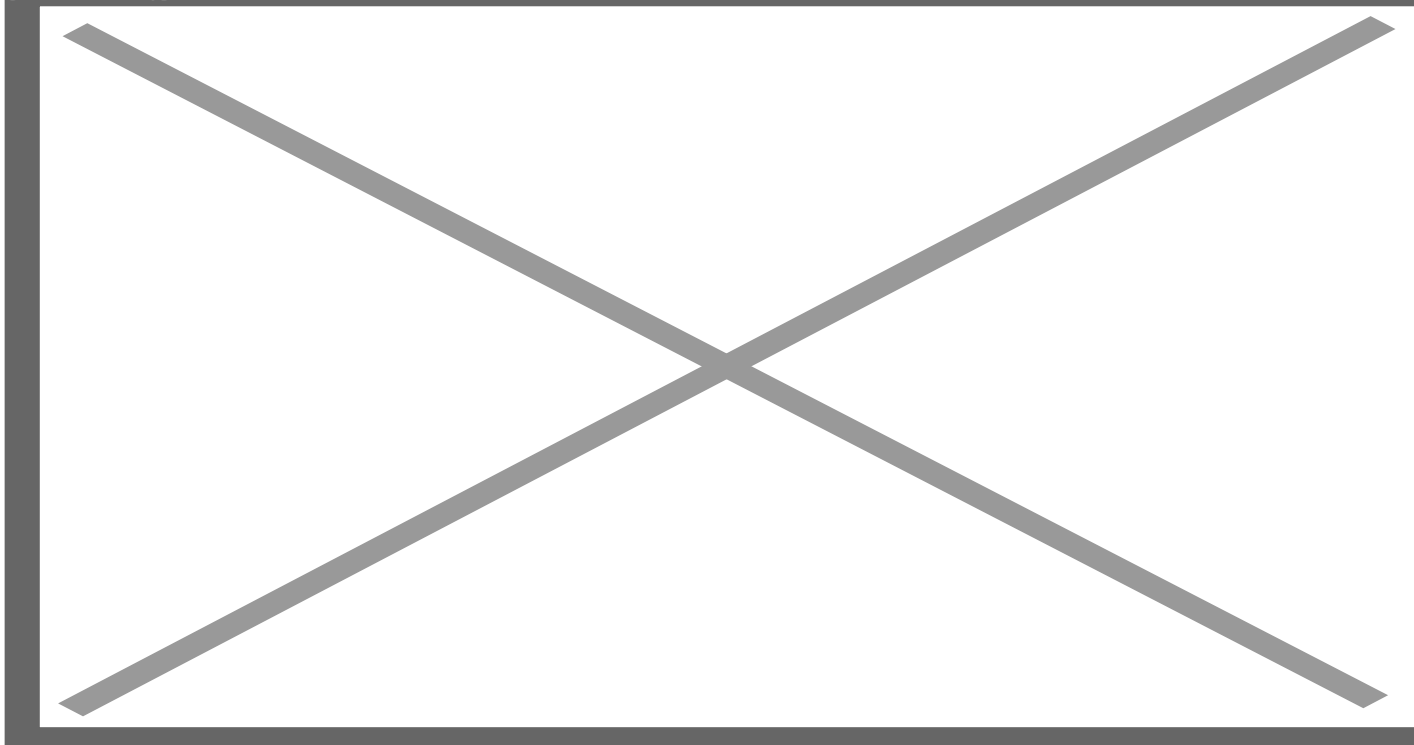
Two important ways to detect bias are to review the use of language and framing of data. In the abstract and throughout the paper, the authors liberally used such inflammatory terms such as "widespread contamination" to describe their conclusions. Is that a fair description of what they actually found?

It should be noted that almost no other research study examining trace levels of glyphosate use the hyperbolic term “contamination”. ‘Contamination’ is a loaded word. It does not mean, as the authors carelessly use it, undefined, the mere presence of an undesirable element. Rather an impurity must be at a level that spoils, infects or otherwise corrupts something else.

The science question: do the trace levels reach a biologically relevant threshold or are they just artifacts of the factoid that sophisticated research tools can now find in the form of trace elements of almost any substance in our blood or urine at parts per billion (ppb), trillion (ppt) or even parts per quadrillion (ppq). Because urine and faeces are the elimination routes for glyphosate that passes through the intestines, it is not surprising that certain amounts can be detected in human urine samples using advanced detection technology. However, if the estimated exposure is clearly below science-based trigger values (i.e., the ADI or AOEL), [there is no health concern for consumers](#).

For [context sake](#), one ppm equals 1 minute in 2 years or a drop of gasoline in a full sized car’s tank; one ppb equals a second in 32 years, or a drop of water in an Olympic sized pool; and one ppt equals 1 second in 32 centuries, or a drop of water in a pool covering a football field to a depth of 43 feet. [Note: most studies report trace numbers in $\mu\text{g/L}$ in which one 1 ppb = 1 $\mu\text{g/L}$]

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Credit: Environmental Chemistry

Numerous activist groups, such as the US-based Environmental Working Group, have issued online screeds after conducting “studies”, claiming minute traces of glyphosate found in breakfast cereals prove a health danger. But they use made-up benchmarks. Using US Environmental Protection Agency standards, or even the hyper-conservative health benchmark set in California, the strictest in the world, shows

[no danger from residues](#). According to the [EPA](#), “the chronic dietary risk posed by glyphosate food uses is minimal.”

Both the US Food and Drug Administration in the US and the European Food Safety Authority have concluded that glyphosate traces in urine from food or garden exposure [do not pose a health danger](#)—and it’s not even close. In a [2015 study](#), the EFSA reported that published glyphosate levels in human urine samples resulting from dietary intake of glyphosate represented 0.1–0.66% of the ADI (acceptably daily intake), while the maximum levels in human urine samples were estimated to remain below 0.1% of the ADI. EFSA’s conclusion: such exposure levels are not expected to pose any risk to human health.

Do the authors fairly portray the current state of independent research on glyphosate?

We’ve reviewed the scientific consensus on the safety of glyphosate: 20 studies, not one concluding glyphosate poses harm to humans consuming trace amounts. Only IARC identified concerns. Note that it placed glyphosate risk for applicators at the level of eating red meat and drinking hot beverages. Notably IARC did not conclude trace residues in food posed measurable harm to the general public.

What do these researchers conclude? It’s always telling in a paper to see what sources they cite to frame the issue. Here, their choices are both revealing and startling disappointing:

Human exposure to glyphosate, either by food and water intake or via external exposure, has been extensively studied. However, because of differences in methodology between studies, direct data comparison is difficult (Connolly et al. [2020a](#)).

They then go on to summarize the data from numerous cherry-picked studies, but do not cite the consensus conclusion: No agency of note globally has found that trace levels in our food found in parts per billion pose a health hazard: not one.

It’s also curiously, depressingly revealing, how they reference the science consensus on glyphosate’s alleged health dangers, writing, “Important human health concerns have been raised regarding glyphosate exposure.” They prominently cite IARC of course, and fringe studies by a range of ethically challenged and discredited researchers, including one from IARC consulting advisor Christopher Portier who hid his paid consulting work with glyphosate tort ambulance chasers, as well as [Charles Benbrook](#), an agricultural economist on the pay of the organic industry.

Notably, in their summary the authors did not cite any of the 19 independent studies that contradicted IARC’s findings. Nor did they note that IARC did not conclude that trace food exposure of glyphosate are a cancer hazard.

What’s the quality of the data?

In this case, the data used in the study were not collected independently by objective researchers or neutral collaborators to underpin a research project. Rather, they were assembled by local activist groups. The “data” was collected in what’s known as the “glyphosate pissers” operation organized at the national level by “

[Campagne Glyphosate](#)” in support of the 21 “*faucheurs volontaires*” of the Ariège Department (South of France).

Who is this group? They are notorious anti-biotechnology activists. They stood charged with “gang destruction of property” after invading three garden centers in September 2016 and March 2017, painting dozens of glyphosate cans in order to make them unfit for sale. One purpose of the urine-testing campaign was to put pressure on the Court which heard their case, in a move akin to the media campaigns staged in support of the class action tort cases targeting glyphosate and Monsanto in California.

The purpose of this operation was pre-determined: not to collect data for independent analysis but to “demonstrate” a generalized “contamination” of the French population by glyphosate. The campaign led to thousands of complaints targeting “any person involved in the distribution and wide dissemination in the environment of probably carcinogenic molecules of glyphosate”—there follows a long list of people to be eventually charged for “endangering the life of others, aggravated deception, environmental damage [...], where relevant as a gang” (higher sanctions are provided in French law for unlawful acts committed as a gang, as a group).

The data used were collected from volunteers, whether anti-glyphosate activists, like-minded people or people who simply wanted to know their level of “contamination”. They are not representative of the French population.

The collected urine samples were subjected to an ELISA test (Enzyme-Linked Immuno Assay), charged to the volunteers at a rather high price ([85 euros and where appropriate a 50 euros supplement for the filing of a complaint](#)).

Did the authors of this French study under our review present any of this context or background? No.

Process problems guarantee suspect results

At this point, one may rightly suspect that the academic peers who reviewed the article prior to publication could not have known this background as it was withheld by the authors. But what about the editors?

There are ten Frenchmen on the editorial board. They should have known. There has been no response to an [open letter](#) sent to the Editor-In-Chief, Philippe Garrigues (University of Bordeaux) to no response outlining many of these issues.

One may also rightly say that the above criticisms should not invalidate the paper. Despite its tonal biases, how solid is the evidence in support of its conclusions? But there is an obvious flaw that should have raised a red flag: the integrity of the data.

The authors of the ‘scientific’ paper are evasive and cryptic about the analysis method and the chain of custody in handling the urine samples. After a long paragraph on the merits of the ELISA test for water, they write:

Urine samples were analyzed according to the manufacturer’s protocol, as validated by Krüger et al. (Krüger et al. 2014) based on ELISA and GC–MS [Gas Chromatography-Mass Spectrometry] assay data comparison on human urine samples.... All assays were performed by Biocheck GmbH. The ELISA was performed according to the manufacturer’s protocol for human urine samples. [...]

First it should be made clear that the testing laboratory, BioCheck, is not a human medical science laboratory; rather it’s a Leipzig-based veterinary laboratory—obviously not accredited by the French Accreditation Committee (COFRAC to perform medical analyses—it is not accredited to perform ELISA tests for glyphosate.

There were other process issues as well. The manufacturer’s protocol was mentioned twice in the study but not referenced. Who were the validators? The laboratory that implemented it. There was no indication of detection and quantification limits (in fact, they are found elsewhere, sort of as an incidental remark).

And there is no indication of the conditions under which the samples were prepared and shipped to Leipzig (in fact by mail, with no stated preservation measures other than a 10-minute water bath). The samples were taken under the supervision of a bailiff, but this was just for show, as it provided no guarantee for the subsequent steps of the process.

Here is the main data-related issue: The ELISA test used is unreliable and is well known to produce false positives; even its manufacturer, Abraxis, advises confirming positive results with another method. The German [Bundesinstitut für Risikobewertung](#) (BfR—federal institute for risk evaluation) wrote in June 2015 that it was not aware of any validation of the test for urine. In this case, the alleged validation of the protocol is by the founder and owner of the BioCheck laboratory, hired by the Association Campagne Glyphosate. What a huge conflict of interest!

In addition, the limit of quantification used by Biocheck is that for the search of glyphosate in water rather than the much higher value indicated by Abraxis. Blind comparisons organized by farmers’ groups—duplicated samples tested with ELISA and gaz chromatography coupled with mass spectrometry—have shown that the claimed generalized “contamination” is bogus.

Numerous scientists and reporters have previously noted the dubiousness of the laboratory, highlighting prior chain of custody issues. Without taking a firm position, Libération’s CheckNews asked on September 14, 2019: [“Les tests urinaires utilisés par les “pisseurs” de glyphosate sont-ils fiables ?”](#) (Are the urine tests used by glyphosate “pissers” reliable?).

On September 5, 2019, Atlantico's question mark in the title was essentially cautionary in "[Tests de Biocheck : une fraude à grande échelle dans l'affaire des "pisseurs" de glyphosate ?](#)"

Ms. Géraldine Woessner headlined in Le Point, on December 19, 2019 : "[Preuve à l'appui : les glyphotests sont bidon !](#)" (Proven: the glyphotests are bogus!).

On Contrepoints, Mr. Armand Paquereau showcased the view by farmers skeptical that there is a serious "problem", writing: "[Glyphosate : les écolos veulent ramener l'agriculture au XIXe siècle](#)" (Glyphosate: environmentalists want agriculture to return to the 19th century).

Did the scientists writing this academic article know of the scientific dubiousness of the data collected and reported upon?

The scientists who wrote this study no doubt know these facts, as they are well known in French science circles. Yet they chose to publish an article based on data from a procedure that various scientists and journalists have called or suggested to be fraudulent. And they never acknowledged the dubiousness of the organization and almost certainty that the data verged on useless.

Even Biocheck knows that its search to find trace glyphosate residues in parts per billion ultimately goes down a scientific rat hole of speculation and misinformation, writing in its test reports:

Ideally, your urine should not contain any glyphosate residues. ... Human urine test results with values below 1 ng/ml can currently only be classified as of low concern with reservation due to the lack of clear studies.

So, with the publication of this French "study," their mission was accomplished as headlines about 'contaminating residues' flooded the media, yielding its intended effect: confusing and stoking fear among the anxious general population who does not have a science background. It also spurred legislators, easily bamboozled by activist propaganda, to call for additional bans. The propaganda campaign worked.

Media response

The publication of the 'scientific' paper gave rise to a dispatch from Agence France-Presse (AFP). Sud-Ouest, the regional newspaper, quotes one of the paper's authors, Mr. Denis Lairon, in a piece titled: "[Du glyphosate retrouvé dans les urines de nombreux volontaires-plaignants, selon une étude](#)" (Glyphosate found in the urine of many volunteers-complainants, according to a study):

But for them [the authors] its size makes the analysis relevant, especially since 'our results confirm almost all other international studies', while being 'rather in the high end' of the levels found, notes Denis Lairon, director of research emeritus at INSERM and one of the authors.

Lairon did acknowledge the problems with some of the data:

However, he says he is ‘surprised to see a quasi-systematic contamination.

Merely surprised by questionable data? From an expert in human nutrition?

In “[BioCheck, un laboratoire aux curieuses analyses](#)” (BioCheck, a laboratory with curious analyses), Mr. Gil Rivière-Wekstein wrote in February 2019, a month after an unspeakable Envoyé Spécial devoted to glyphosate aired by the public TV broadcaster France 2, with a small table in support:

The 100% [100% of the people tested positive] figure seems to be an infallible constant in these analyses. At least when the samples are analyzed by the BioCheck laboratory, which is systematically responsible for all these spectacular results.

screenshot pm

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Other questions

The authors of the 'scientific' study conducted sub-population analyses based upon several criteria, in a sort of fishing expedition. The corresponding figures are doomed to the same irrelevance as the almost 100% of people who are allegedly "contaminated." But that's not all. For example, the authors write in a

subtitle:

Tap and spring water consumption are associated with higher glyphosate levels whereas filtered water consumption is associated with lower glyphosate levels.

And, in the abstract:

[...] Our results support glyphosate contamination through food and water intake, as lower glyphosate levels are associated with dominant organic food intake and filtered water.

Whilst residues in food are indeed the primary source for the uptake of glyphosate—and its subsequent rapid elimination by the faeces and urine—the claimed associations are spurious.

A mere look at one of the tables illustrates the cherry picking

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On average, the reported level of glyphosate is higher for consumers of organic food (1.19 ng/ml) than non-consumers (1.17 ng/ml). The authors get away with the comment that the difference is not statistically significant. They say it is, however, for consumers who eat more vs. less than 85% organic. But why 85%, were it not, one may suspect, for the miraculous outcome of statistical significance? Moreover, reliably self-reporting a level of consumption on a scale with 5% increments is hardly credible.

Similarly, a cause-and-effect association is not supported by the French water quality regulations and the results of monitoring of water intended for human consumption. In 2017, for instance, glyphosate was found above the quality threshold of 0.1 µg/l (or 0.1 ng/ml, i.e. less than one-tenth of the claimed average “contamination” of 1.19 ng/ml) in only [three samples out of 7,596](#). Incidentally, the sanitary value which triggers administrative health protection measures, such as a recommendation not to use tap water for consumption, is 900 µg/l (

9,000 times higher than the quality threshold).

The paper, correctly interpreted

A saying has it that one should be suspicious when facing any statement starting with “it is known that” or the like. The recommendation should be amplified: that means this entire paper is suspect.

In summary, this “research” is based on questionable to meaningless data resulting from an incorrectly applied assay prone to producing false positives, gathered from a non-representative population sample for militant rather than research purposes, and analyzed by a team riddled with conflicts of interests.

Correctly interpreted, however, the data contain good news that runs counter to the intentions of its authors: there is no cause for concern. Let’s repeat the most important evidence, but notably not noted by its authors: The reported levels of glyphosate are below the acceptable daily intake levels by at least three orders of magnitude. This is the identical conclusion in a [2016 study that the BfR](#) (German Federal Institute for Risk Assessment) had also drawn about another attempt to use ‘glyphosate in urine’ scare stories.

This underscores the global consensus on the potential risk posed to human health by glyphosate residues in food: there is none.

A review of the latest data on glyphosate in [Analytical Toxicology](#) in 2020 concluded what this article painfully illustrates, to the detriment of its authors: while glyphosate does not pose known health hazards from trace amounts of our food, the discussion is now no longer based on science—it’s political:

The data presented in this study demonstrate that political decisions on permitted quantities and allowed agricultural uses/applications of pesticides might have a direct impact on individual exposure levels, despite a generally very low background of exposure.

The debate over glyphosate—one of the most successful, low environmental and health impact agricultural chemicals in history—is now almost entirely ideological. This article should never have been published in its current form. It’s junk science, ideological science. It remains unworthy of being in a scientific journal.

André Heitz is an agronomist by training and former United Nations system civil servant with the International Union for the Protection of New Varieties of Plants (UPOV) and the World Intellectual Property Organization (WIPO). He [blogs](#) in French.

[Jon Entine](#) is the founding executive director of the [Genetic Literacy Project](#), and winner of 19 major journalism awards. He has written extensively in the popular and academic press on agricultural and population genetics. You can follow him on Twitter [@JonEntine](#)