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### Glyphosate carcinogenic? Independent global scientists weigh in

March 23, 2015 | Science Media Centre

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The Science Media Centre—an independent British-based non-profit that solicits reactions from top independent scientists when major new studies are released—has posted a slew of responses to the March 20th decision by IARC to reclassify the herbicide glyphosate as a likely carcinogen.



The entire roundup of views can be found [here](#). Here are some excerpts:

**Dr. Oliver Jones, Senior Lecturer in Analytical Chemistry at RMIT University in Melbourne, said:**

“The main thing in this new assessment is that two pesticides not previously assessed by the IARC (Glyphosate and Diazinon) have been reviewed and classified as ‘probably carcinogenic to humans’. Malathion has been upgraded to the same status, while Parathion and Tetrachlorvinphos are now classified as ‘possibly carcinogenic’.

“This sounds scary and IARC evaluations are usually very good, but to me the evidence cited here appears a bit thin.

“People might be interested to know that there are over 70 other things IARC also classifies as ‘probably carcinogenic’, including night shifts. In the highest category of known carcinogens are ‘alcoholic beverages’ and ‘solar radiation’ (sunlight)—along with plutonium.

“So yes, pesticides can be dangerous, but are many other common things which are also dangerous in sufficient amounts or over long periods of time – the dose makes the poison. While absence of evidence is not evidence of absence this does seem to me to be a precautionary rather than a reactionary change.

**Professor Alan Boobis, from biochemical pharmacology at Imperial College London, said:**

“IARC bases its conclusions on an evaluation of the human and experimental data, leading to hazard identification. They ask: is a substance carcinogenic? And if so, how good is the evidence in humans?

“The IARC process is not designed to take into account how a pesticide is used in the real world – generally there is no requirement to establish a specific mode of action, nor does mode of action influence the conclusion or classification category for carcinogenicity.

“The IARC process is not a risk assessment. It determines the potential for a compound to cause cancer, but not the likelihood. Exposure assessment in epidemiological studies on the effects of pesticides is notoriously difficult.

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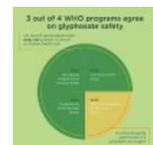
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Agricultural workers, the most commonly studied group, are almost never exposed to just a single pesticide and it is very difficult to establish cause and effect.

“The UK Committee on Carcinogenicity has evaluated possible links between pesticide exposure and cancer on several occasions. It has found little evidence for such a link. At most, the evidence was inconsistent and was considered insufficient to call for regulatory action.

“In my view this report is not a cause for undue alarm.

**Professor Sir Colin Berry, Emeritus Professor of Pathology at Queen Mary University of London, said:**

“I have served on a number of regulatory bodies for the UK, EU and WHO and I am well used to sifting wheat from chaff in the analysis of pesticides. What is missing in this new assessment is balance in the consideration of the studies.

“There are over 60 genotoxicity studies on glyphosate with none showing results that should cause alarm relating to any likely human exposure. For human epidemiological studies there are 7 cohort and 14 case control studies, none of which support carcinogenicity.

“The authors have included non-Hodgkin lymphoma (NHL), but that diagnosis is no longer used in pathology because it’s far too imprecise. Even if you do include NHL there are still 7 studies, only one of which is positive – and that one is not a good study in my view.

“The weight of evidence is against carcinogenicity.

**Professor David Coggon, from occupational and environmental medicine at the University of Southampton, said:**

“IARC monographs do not present new primary research. Rather they rigorously and systematically review the available evidence from published peer-reviewed studies in animals and humans in order to classify chemicals according to their cancer hazard (i.e. their potential to cause cancer at some level of exposure) in animals and in humans.

“Given the large number of epidemiological studies that have been carried out on pesticides and cancer, many of them looking at multiple types of malignancy, it is to be expected that some positive associations will occur simply by chance. Thus, when evaluating the epidemiological evidence, one is looking for a consistent pattern of increased risk for one or more tumour types, which is unlikely to be explained by biases (often unavoidable) in the study methods. It is clear from the summary table in the Lancet report that clear and consistent evidence of this type was not found for any of the pesticides that were considered.

“Where there are any indications that a compound might cause cancer, it will not be approved for use unless there is good evidence that it is not genotoxic and that no risk of cancer would occur from the levels of exposure that could occur in a worst case scenario. Risk assessments are reviewed periodically, and particularly if new evidence emerges to suggest a previously unrecognised problem.

“The IARC report does not raise immediate alarms. However, I would expect regulatory authorities around the world to take note of this new evaluation, and to consider whether it indicates a need to review their risk assessments for any of the pesticides that they currently approve.”

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**Rosalind Dalefield** • a year ago

It is a great pity that Professor Coggon apparently did not read the reference list that IARC cited, before claiming that they rigorously and systematically review the available evidence. He is completely wrong in this case. The number of papers cited by IARC was tiny, only 16 papers of which 7 had nothing whatsoever to do with glyphosate. In fact, far from conducting a rigorous and systematic review, IARC cherry-picked a miniscule number of papers.

3 ^ | v • Reply • Share >



**Wackes Seppi** → Rosalind Dalefield • a year ago

IARC did not cite any references. What you can currently read is an article in the Lancet from a group who were sitting, with others, in the expert group.

Fact is, the justification for the classification of glyphosate as probably carcinogenic produced in that paper and in the IARC press release is unconvincing.

^ | v • Reply • Share >



**Mlema** → Rosalind Dalefield • a year ago

Wow. Ms. Dalefield knows more about how to determine whether or not something is carcinogenic than the IARC. And it looks like she decides that based on how many papers are looked at.

^ | v • Reply • Share >



**Rosalind Dalefield** → Mlema • a year ago

That's \*Doctor\* Dalefield, double Board-certified toxicologist, to you.

There are dozens of papers on the safety of glyphosate out there, and copious evidence that it is not genotoxic or carcinogenic. The references cited by IARC are very obviously inadequate.

1 ^ | v • Reply • Share >



**terra jackson** → Rosalind Dalefield • 8 months ago

You were certified as a diplomat on the American Board of Toxicology in 1999; the certification is only good for five years. Let's check the other one shall we? Your CV is online, and you haven't practiced Vet medicine, which is what your thesis was based on, since 1997.

^ | v • Reply • Share >



**Peter Olins** → terra jackson • 8 months ago

terra,

You created an anonymous Disqus profile less than a week ago, and have made three comments.

A piece of advice: you may want to consider offering something constructive or informative, rather than trying to trash someone else's professional credentials.

For example, which studies relating to the safety of glyphosate have you read, and how do you think they support the decision of the IARC?

3 ^ | v • Reply • Share ›



**Mlema** → Rosalind Dalefield • a year ago

The IARC is composed of experts free of conflict of interest, or even the appearance of such

You're saying their references are inadequate because there are less of them. You're implying that every paper out there is the same in relevance, quality, and value - so all you have to do is count the ones that say glyphosate can cause cancer and compare that number to the ones that say it can't.

The group was investigating carcinogenicity. What dozens of independent, relevant and qualified papers do you believe the group should have considered that they didn't? To support a statement like you've made, you need to put the list of papers they considered side by side with the dozens of papers you say are out there on glyphosate carcinogenicity - and explain why you think the group cherry-picked their studies and why their conclusion is wrong.

^ | v • Reply • Share ›



**Mike Muszynski** • a year ago

Also rated as possibly carcinogenic (same rating as glyphosate):

Aloe vera, whole leaf extract

2 ^ | v • Reply • Share ›



**Rosalind Dalefield** → Mike Muszynski • a year ago

Oh, but that's natural, doncha know! (Being sarcastic)

^ | v • Reply • Share ›



**Ken Dunkley** • a year ago

I pray that there will be scientifically sound reporting of this in the press to assuage reaction by the anti-GMO myth-mongers.

2 ^ | v • Reply • Share ›



**BeliTsari** • a year ago

Not that anybody's interested. <http://www.ncbi.nlm.nih.gov/pm...> OK, now cue the trolls, down mom's basement <http://www.prwatch.org/news/20...>

^ | v • Reply • Share ›



**MeOhMy** → BeliTsari • a year ago

I'm interested. But there's no point in discussing it on this site.

^ | v • Reply • Share ›



**ocmyst** • a year ago

There is no proof that Tobacco is carcinogenic; heard this BS for many years from the industry. Lead is completely safe. It has not been established that Agent Orange has not had any harmful effects on our

established that Agent Orange has not had any harmful effects on our soldiers. Again, again and again we hear the same BS when it comes to any report that may cause harm to corporate profit. Common sense will tell anyone, with an intellect that can function independently, that a broad spectrum chemical weed killer is going to be harmful to humans, no matter what is said by those make money by selling it. They are designed to be toxic.

^ | v • Reply • Share ›



**RN4one** → ocmyst • a year ago

We are not talking about hearing this from the "industry". Scientific studies showed for years the dangers of tobacco, etc. We are talking about independent scientific studies. If you are not willing to investigate the science for yourself why are you even ON a site like this where the motto is "where science trumps ideology"? Better you should stick to the fear-mongering media outlets who emotionalize every topic in order to get you to click on their links so they can sell more advertising dollars. No conflict of interest there by "those who make money selling it" (to quote YOU).

3 ^ | v • Reply • Share ›



**ocmyst** → RN4one • a year ago

Having worked for Scripps Institute of Oceanography now retired, I am quite familiar with how science works, how it doesn't and understand that it has limitations. I've also seen how science can be polluted by well funded special interest. I also know, first hand, how the media exaggerates and do not put much credence in what they say or print.

A major cause of the current cancer epidemic are environmental toxins. Take a gander at the MSDS of a long list of chemicals, if you don't believe. Long term studies of the carcinogenic properties of many substances, in many cases, are just not possible. So it is impossible to say that in 10 years a substance will cause cancer; which doesn't mean it won't, but industry seems to think it means it doesn't.

I've read studies saying glyphosate alters gut bacteria, which, as it turns out, is a major component of human health. So possibly in this way it could be very harmful. The human body is complicated and has many little understood components that are essential to well being.

All in all there are a lot of unknowns and from my point of view; I don't want anything in my body that is designed to kill organic life ( common sense? ). That's my thinking, not the medias.

^ | v • Reply • Share ›



**Larkin Curtis Hannah** → ocmyst • a year ago

Do these bacteria have the same membrane transport system to move glyphosate into the cell as plant cells? And what is the  $K_i$  of the bacterial enzyme compared to the  $K_i$  of the plant enzyme? And what is the level of glyphosate in the stomach of people? And don't farm animals have the same types of microflora and hence, shouldn't farm animals also be adversely affected? It seemed to me that we should have some measurement of the parameters above before we start speculating about some hypothetical problem.

1 ^ | v • Reply • Share ›



**Peter Olins** → Larkin Curtis Hannah • a year ago

Growth inhibition for a common human microbe (E.coli) is only seen at levels of glyphosate vastly higher than present in the diet (e.g. drinking herbicide out of the bottle). I hesitate to elaborate further, since this thread is really about cancer.

1 ^ | v • Reply • Share ›



**Ken Dunkley** → Larkin Curtis Hannah • a year ago

All good points, except I don't believe human gut flora are the same as farm animal microbiota, especially ruminants.

^ | v • Reply • Share ›



**Peter Olins** → ocmyst • a year ago

I can't find any research study showing an effect on gut bacteria at relevant levels of exposure. Please share a couple of links.

There are hundreds of different cancers, some of them common, unfortunately. Why do you claim there is an "epidemic"? Has anything changed?

Do you have evidence for the major role of environmental toxins? I'll admit it's plausible, but I don't see how it's demonstrable in the absence of a population not exposed to these undefined toxins.

^ | v • Reply • Share ›



**Rosalind Dalefield** → ocmyst • a year ago

Unfortunately you seem to have no competence in toxicology, or you would not commit such as a basic error as misusing the word 'toxin'.

^ | v • Reply • Share ›



**Jack Heppner** → ocmyst • a year ago

I agree that the biggest damage to human health caused by glyphosate is the damage it does to the micro-flora in the human gut. Glyphosate disrupts the shikimate pathway in the plants it kills. It turns out our micro-flora have the same kind of pathway that this chemical interrupts. With a weakened network of gut bacteria human health is on the skids.

^ | v • Reply • Share ›



**Jon Entine** Mod → Jack Heppner • a year ago

Except there is no empirical evidence of that.

2 ^ | v • Reply • Share ›



**Peter Olins** → Jack Heppner • a year ago

Plenty of bacteria in "...skids..."!

^ | v • Reply • Share ›



**Ken Dunkley** → Jack Heppner • a year ago

Does anyone have credible references with information about the typical quantities of glyphosate ingested by humans and what levels might impact gut microbes?

One of the most valuable effects of our gut microflora is to mediate the impact of ingested chemicals. There are important and simple things

that humans can do to have a happy and balanced gut flora, other than to avoid foods with ingredients derived from Roundup Ready GMO crops! Like eat more whole plant foods with lots of fiber and prebiotic long-chain carbohydrates!

^ | v • Reply • Share ›



**ML** → ocmyst • a year ago

What exactly was your role at scripps?

^ | v • Reply • Share ›



**ocmyst** → ML • a year ago

Instrumentation; designing and building scientific apparatus. Mechanical, electro-optics, electronics etc. Fun job

^ | v • Reply • Share ›



**Rosalind Dalefield** → ocmyst • a year ago

Just a metrologist then?

^ | v • Reply • Share ›



**Rosalind Dalefield** → ocmyst • a year ago

No toxicology or carcinogenicity then? Thought not.

^ | v • Reply • Share ›



**jorge gonzález** → Rosalind Dalefield • 8 months ago

The impurities in the formulations should be relevant, could be different from small scale high purity formulations (usually tested in experimental preclinical studies) to the industrial formulations produced in thousands of tons.

^ | v • Reply • Share ›



**Danny Choriki** → ocmyst • a year ago

They are designed to be toxic to plants, in the case of glyphosate, by interrupting photosynthesis. Common sense needs to dig a little deeper.

^ | v • Reply • Share ›



**JMac** • a year ago

Genetic Smokescreen Project

^ | v • Reply • Share ›



**Christian Abel** • a year ago

IARC = CIRC in French (pronounced like "Cirque")

"Cirque" in French means "circus".

lol

^ | v • Reply • Share ›

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