



Current controversy in the case of glyphosate, introduction

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! DANGER

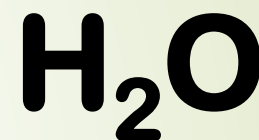
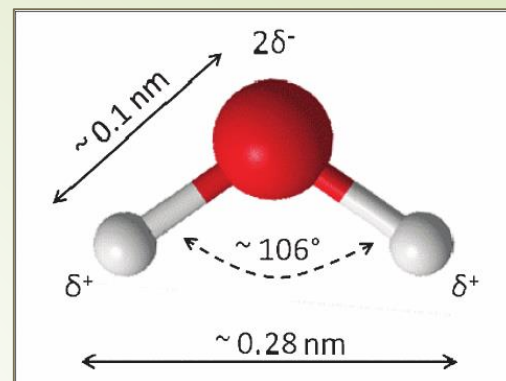


Dihydrogen monoxide is colorless and odorless.

Accidental inhalation of DHMO may be fatal.

Prolonged exposure to its solid form causes severe tissue damage.

Symptoms of DHMO ingestion can include excessive sweating and urination, and possibly a bloated feeling, nausea, vomiting and body electrolyte imbalance.



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Contemporary world is full of chemophobia and many times a chemist has very difficult situation as e.g. to show the physician that E300 is vitamin C (ascorbic acid, or even worse, the **(R)-3,4-dihydroxy-5-((S)-1,2-dihydroxyethyl)furan-2(5H)-one**) and not a bloody chemical.

For chemophobia see: <https://jameskennedymonash.wordpress.com/>

AN ALL-NATURAL BANANA

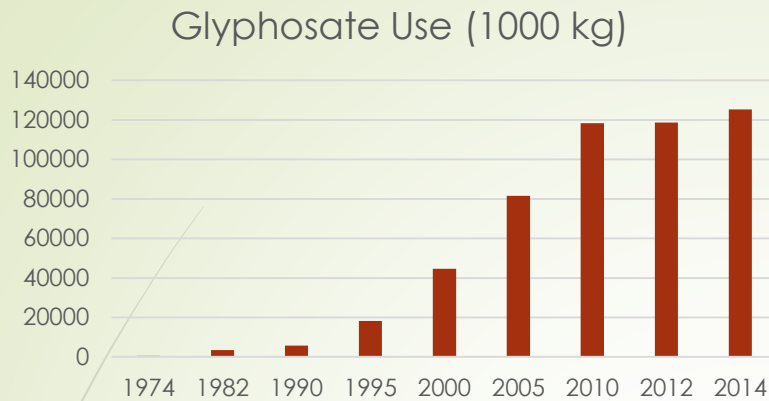


INGREDIENTS: WATER (75%), **SUGARS (12%)** (GLUCOSE (48%), FRUCTOSE (40%), SUCROSE (2%), MALTOSE (<1%), STARCH (5%), **FIBRE (3%)** (E460, E461, E462, E464, E466, E467) **AMINO ACIDS** (GLUTAMIC ACID (19%), ASPARTIC ACID (16%), HISTIDINE (11%), LEUCINE (7%), LYSINE (5%), PHENYLALANINE (4%), ARGININE (4%), VALINE (4%), ALANINE (4%), SERINE (4%), GLYCINE (3%), THREONINE (3%), ISOLEUCINE (3%), PROLINE (3%), TRYPTOPHAN (1%), CYSTINE (1%), TYROSINE (1%), METHIONINE (1%)), **FATTY ACIDS (1%)** (PALMITIC ACID (30%), OMEGA-6 FATTY ACID: LINOLEIC ACID (14%), OMEGA-3 FATTY ACID: LINOLENIC ACID (8%), OLEIC ACID (7%), PALMITOLEIC ACID (3%), STEARIC ACID (2%), LAURIC ACID (1%), MYRISTIC ACID (1%), CAPRIC ACID (<1%)), ASH (<1%), PHYTOSTEROLS, E515, OXALIC ACID, E300, E306 (TOCOPHEROL), PHYLLOQUINONE, THIAMIN, **COLOURS** (YELLOW-ORANGE E101 (RIBOFLAVIN), YELLOW-BROWN E160a), **FLAVOURS** (ETHYL HEXANOATE, ETHYL BUTANOATE, 3-METHYLBUT-1-YL ETHANOATE, PENTYL ACETATE), E1510, NATURAL RIPENING AGENT (ETHENE GAS).

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GLYPHOSATE - Harmless Tool or Sneaky Poison, EP Brussels Mat 10, 2017



Worldwide estimates of use suggest that glyphosate-based herbicides were applied in 2014 amounting nearly **0.5 kg glyphosate on every hectare of croplands** on the planet, i.e. in summary over 100 million kg/year.

Since 1974 over 8.6 billion kilograms of glyphosate active ingredient have been applied worldwide, where ca. two-thirds of the total volume of glyphosate applied has been sprayed in just the last 10 years.

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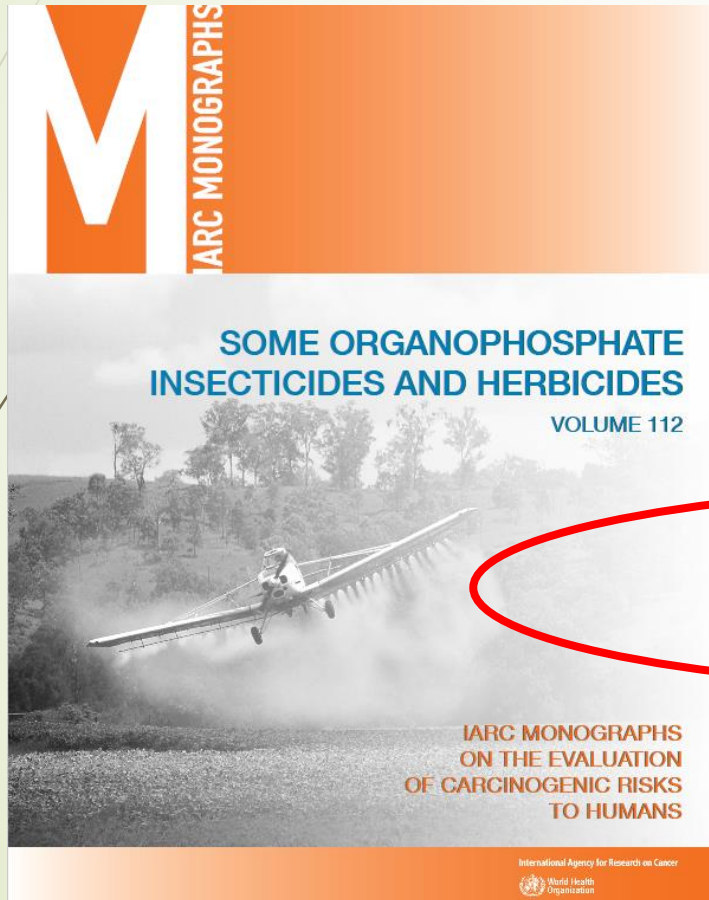
Benbrook CM. Trends in glyphosate herbicide use in the United States and globally. *Environ Sci Eur* 2016;28:3.

Connected are two issues:

“Roundup Ready” (RR), genetically engineered (GE) herbicide-tolerant (HT) plants were developed mainly by the same company that owned patents on Roundup.

Last several years growing portion of glyphosate production is in China, from where some imported chemicals (by my personal experience) contained not more than 40 % of the desired compound.

World Health Organization's **International Agency for Research on Cancer** (IARC) re-classified glyphosate as “probably carcinogenic to humans” (i.e., Group 2A).



6. Evaluation

6.1 Cancer in humans

There is *limited evidence* in humans for the carcinogenicity of glyphosate. A positive association has been observed for non-Hodgkin lymphoma.

6.2 Cancer in experimental animals

There is *sufficient evidence* in experimental animals for the carcinogenicity of glyphosate.

6.3 Overall evaluation

Glyphosate is *probably carcinogenic to humans* (Group 2A).

6.4 Rationale

In making this overall evaluation, the Working Group noted that the mechanistic and other relevant data support the classification of glyphosate in Group 2A.

IARC's Report on Glyphosate



Glyphosate has a long history of safe use. In evaluations spanning four decades, the overwhelming conclusion of experts worldwide has been that glyphosate, when used according to label directions, does not present an unreasonable risk of adverse effects to humans, wildlife or the environment.

In March 2015, IARC convened a meeting to evaluate the potential carcinogenic risks to humans from several pesticides, including glyphosate, an active ingredient in many popular herbicides, including Roundup brand herbicides. After that meeting the IARC panel classified glyphosate in Category 2A, a category that also includes red meat.

Based on the overwhelming weight of evidence, Monsanto strongly disagrees with IARC's classification of glyphosate.

Importantly, IARC overlooked decades of thorough and science-based analysis by regulatory agencies around the world and selectively interpreted data to arrive at its classification of glyphosate. No regulatory agency in the world considers glyphosate to be a carcinogen.

Related Resources

- Monsanto.com/glyphosate
- Glyphosate.eu
- [Give It A Minute: Glyphosate](#) (video)
- [MonsantoBlog.com](#) (search "glyphosate" or "IARC")
- [Discover.Monsanto.com](#) (ask your questions)
- [Monsanto's statement on IARC](#) (March 20, 2015)

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Based on the overwhelming weight of evidence, Monsanto strongly disagrees with IARC's classification of glyphosate.

<http://www.monsanto.com/iarc-roundup/pages/default.aspx>; downloaded on May 3, 2017

YouTube



You can drink a big glass
and it does not hurt

Vous pouvez en boire un grand verre
et ça ne fait aucun mal.

SPECIAL
INVESTIGATION

▶ | 🔊 0:06 / 0:45



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Lobbyist Claims Monsanto's Roundup Is Safe To Drink, Freaks Out
When Offered A Glass

LD₅₀ rats 4873 mg/kg, p.o.

[The Merck Index, 13th ed.](#)

From my point of view, when I learn that:

„ ... glyphosate suppresses **cytochrome P450 (CYP) enzymes** and the biosynthesis of amino acids ... „

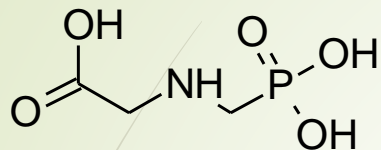
Samsel A. Seneff S.: Entropy 15, 1416 (2013).

if I know the **cytochrome P450** is responsible for (i.a.)

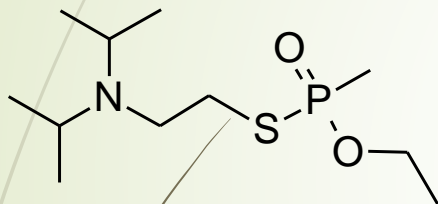
metabolism of drugs and steroids (cholesterol, estrogen, testosterone, vitamin D, bile acid [also steroid endogenous synthesis]), arachidonic acid or fatty acid, retinoic acid, ...

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I feel uneasy.



N-(phosphonomethyl)glycine **glyphosate**



S-{2-[di(propan-2-yl)amino]ethyl} O-ethyl
methylphosphonothioate
nerve gas agent VX

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In any case chemist, dealing with the biologically active compounds, sees **structural similarity**, starts to be interested. Here I would see: „alerted“.

... arbitrary limits on pesticide use will impact food supply, drive up food prices and ultimately make it harder to fulfil the right of every citizen to access affordable food ...

... pesticides are responsible for around 200,000 deaths every year ...

Pesticide use ,threatens human rights', UN adviser claim
in: Chemistry World, April 2017, issue 4, p. 11

QUESTION:

Essay



OPEN ACCESS

Is it time to reassess current safety standards for glyphosate-based herbicides?

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Charles M Benbrook,^{4,5} Lynn Carroll,⁶ Theo Colborn,^{6,¥} Lorne G Everett,⁷
Michael Hansen,⁸ Philip J Landrigan,⁹ Bruce P Lanphear,¹⁰ Robin Mesnage,³
Frederick S vom Saal,¹¹ Wade V Welshons,¹² John Peterson Myers^{13,14}

ANSWER:

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YES, IT IS HIGH TIME WE DID SOMETHING

... and it is actually why we are here today ...

I wish you successful workshop ...

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