

## Biocides glyphosate and clothianidin are contributing to the destruction of aquatic life on the Great Barrier Reef

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### European Chemicals Agency classifies glyphosate as a substance causing serious eye damage and being toxic to aquatic life with long-lasting effects<sup>1</sup>

*"On 15 March 2017 ECHA's Committee for Risk Assessment (RAC) agrees to maintain the current harmonised classification of glyphosate as a substance causing serious eye damage and being toxic to aquatic life with long-lasting effects. RAC concluded that the available scientific evidence did not meet the criteria to classify glyphosate as a carcinogen, as a mutagen or as toxic for reproduction."*

### On numerous occasions I challenged Geert Dancet about ECHA's classification and asked why the European Commission and EFSA were prepared to relicence such a toxic chemical

I told him our nature reserve had been poisoned by Roundup, salmon and trout had disappeared from certain Welsh Rivers when Roundup had been sprayed on Giant Hogweed and the waiting list for cataract surgery in the England had doubled in 4 years. This was his final reply on 20/09/2017.

----- Forwarded Message -----

**Subject:**RE: US Lawsuit against Monsanto causing cancers

**Date:**Wed, 20 Sep 2017 06:34:28 +0000

**From:**DANCET Geert <Geert.DANCET@echa.europa.eu>

**To:**R MASON <rosemary.mason01@btinternet.com>

Dear Ms Mason,

Thank you for your email to ECHA dated 6 September.

As noted in our previous response, ECHA can only respond to glyphosate-related comments which concern the harmonised classification and labelling (CLH) process. We again stress that in the CLH process ECHA does not assess the risks of substances, only their hazards, in accordance with the provisions of the CLP Regulation. Hence ECHA is not in a position to respond to issues relating to the assessment of the risks associated with the use of glyphosate. ECHA is also not involved in the approval of the active substances used in plant protection products – the relevant decision-making process is ongoing in the European Commission.

ECHA's responses can only be restricted to issues which are within the remit of our Agency. The issues which you have raised in your email are either not within ECHA's remit or have been addressed in previous correspondence. To avoid repeating the same message, I wish to inform you that we will not be responding any correspondence received from you in future unless it raises any issues on which ECHA considers it has responsibility.

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<sup>1</sup> <https://echa.europa.eu/-/glyphosate-not-classified-as-a-carcinogen-by-echa>

Yours sincerely,  
**Geert Dancet**  
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European Chemicals Agency  
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Koffi Dogbevi from Wisconsin-Madison Law School US presented the case: **ECOCIDE LAW AND MONSANTO PAST AND PRESENT ACTIVITIES.** <sup>2</sup>

He wrote to me on 27 June 2017: *"It is interesting to see that ECHA's Committee for Risk Assessment (RAC) agreed to maintain the classification of glyphosate as a substance causing serious and irreversible effect on the eye (Eye Dam. 1, H318) and being toxic to aquatic life with long-lasting effects (Aquatic Chronic 2, H411), and at the same time reaching the conclusion that glyphosate is safe and non-hazardous. While this imbroglio seems to relate to the distinction between hazard (the intrinsic potential to cause harm) and risk (the probability of harm occurring at a given exposure), it is clear that any reasonable person would assert that a product causing an irreversible harm on the eye, and having a long-lasting toxicity impact on aquatic life, is likely a dangerous product.*

**Jean-Claude Juncker appoints Commissioner Frans Timmermans as First Vice President**

On 1 November 2014 Jean-Claude Juncker President of the European Union wrote a letter of appointment to Frans Timmermans as First Vice President in charge of Better Regulation, Interinstitutional Relations, The Rule of Law and the Charter of Fundamental Rights.<sup>3</sup>

**More than 1 million citizens petitioned the European Commission for a glyphosate ban**

This petition was launched in January 2017 and signed by 1,070,825 citizens. Commissioner Andriukaitis and Commissioner Timmermans listened to the European Citizens' Initiative on glyphosate.<sup>4</sup>

**The European Commission renewed the license for glyphosate for 5 years on 12/12/2017**

The Commission responds to European Citizens' Initiative and announces more transparency in scientific assessments. Despite this promise of future transparency, Commissioner Andriukaitis and Vice-President Timmermans renewed the license for 5 years.

**President Juncker signed the Commission Implementing Regulation renewing the approval of the active substance glyphosate** <sup>5</sup>

*"In its opinion, the Committee for Risk Assessment of the Agency (European Chemicals Agency) concluded by consensus that on the basis of the information currently available, no hazard classification for carcinogenicity is justified for glyphosate."* Page 3.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

**Why did President Juncker fail to state ECHA's risk assessment in full?**

*"On 15 March 2017 ECHA's Committee for Risk Assessment (RAC) agrees to maintain the current harmonised classification of glyphosate as a substance causing serious eye damage and being toxic*

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<sup>2</sup> [https://www.academia.edu/29309281/ECOCIDE\\_LAW\\_AND\\_MONSANTO\\_PAST\\_AND\\_PRESENT\\_ACTIVITIES](https://www.academia.edu/29309281/ECOCIDE_LAW_AND_MONSANTO_PAST_AND_PRESENT_ACTIVITIES)

<sup>3</sup> [https://ec.europa.eu/commission/commissioners/2014-2019/timmermans\\_en](https://ec.europa.eu/commission/commissioners/2014-2019/timmermans_en)

<sup>4</sup> [http://europa.eu/rapid/press-release\\_IP-17-5191\\_en.htm](http://europa.eu/rapid/press-release_IP-17-5191_en.htm)

<sup>5</sup>

[https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides\\_glyphosate\\_commission\\_proposal\\_final\\_version.pdf](https://ec.europa.eu/food/sites/food/files/plant/docs/pesticides_glyphosate_commission_proposal_final_version.pdf)

*to aquatic life with long-lasting effects.*” Jack de Bruijn and Geert Dancet of ECHA admitted this was the harmonised risk assessment reached in 2002, when glyphosate was last assessed.

### **Current status of glyphosate in the EU<sup>6</sup>**

The Commission's decision established **three conditions** for further use of glyphosate in the Member States, as the actual decisions concerning the authorisation of plant protection products containing approved substances for use in their territories are the responsibility of Member States:

- Ban a dangerous co-formulant called POE-tallowamine from glyphosate-based products
- Minimise the use in public spaces, such as parks, public playgrounds and gardens
- Scrutinise the pre-harvest use of glyphosate

On 15 March 2017, the Risk Assessment Committee (RAC) of the European Chemicals Agency concluded by consensus that:

- There is no evidence to link glyphosate to cancer in humans, based on the available information
- Glyphosate should not be classified as a substance that causes genetic damage (mutagen) or disrupts reproduction.

### **Greenpeace EU food policy director Franziska Achterberg said: <sup>7</sup>**

*“The Commission is trying to ram through a new glyphosate licence despite massive scandals surrounding its main maker and the EU’s own risk assessment. A new licence is a new licence, regardless of its length. If the Commission continues to allow this toxic chemical to contaminate our soils, water, food and bodies, it is simply rewarding Monsanto for obscuring the dangers linked to its weed killer. The EU needs to ban it now, not in three, five or ten more years. Since early 2016, the Commission has backed an unrestricted EU licence for glyphosate. On six occasions it failed to garner sufficient support for its proposal from European governments (on 8 March 2016, 19 May 2016, 6 June 2016, 24 June 2016 and 25 October 2017)”.*

### **Greens ask for the decision of the European Commission to renew the license for glyphosate to be annulled by the European Court of Justice<sup>8</sup> : ‘the Commission has been led by business interests’**

Philippe Lamberts, co-president of the Greens/EFA group in the European Parliament, comments: *“We will now try build a majority in the European Parliament to take this to the European Court of Justice and will appeal to the Member States that rightly objected to the Commission’s proposals to join us. We must attempt to reverse what is set to be a deeply harmful decision. It will be clear to anyone that reads Professor De Schutter’s meticulous report that the Commission has been led by business interests. They disregarded not only the European Citizens’ Initiative and the view of the European Parliament, but also serious scientific warnings. Despite the large-scale concern, they pressed ahead without even allowing a pause for further investigation. The German government in particular has questions to answer. It seems they are more interested in ensuring the proposed Bayer-Monsanto merger goes ahead than protecting the health of their own citizens.” NB, the merger has gone ahead.*

Professor Olivier De Schutter adds:

*“The Commission has transformed into an institutional crisis what was, initially, a public health issue. It has dismissed the views of the International Agency of Research of Cancer (IARC) of the WHO, according to which glyphosate represents a ‘probable risk of provoking cancer in humans’. It did so despite the fact that the IARC’s findings are far more respected by the scientific community than those of the European agencies — the European Food Safety Authority (EFSA) and the European*

<sup>6</sup> [https://ec.europa.eu/food/plant/pesticides/glyphosate\\_en](https://ec.europa.eu/food/plant/pesticides/glyphosate_en)

<sup>7</sup> <http://www.greenpeace.org/eu-unit/en/News/2017/EU-governments-reject-Commission-push-for-glyphosate/>

<sup>8</sup> <https://www.greens-efa.eu/en/article/press/greens-efa-group-calls-for-commission-decision-to-be-annulled/#.WilLomM7LQ0.twitter>

*Chemicals Agency (ECHA) —, which have adopted their views based primarily, it now appears, on the documents provided by Monsanto. This is unacceptable. The Court of Justice shall have no choice but to annul the Implementing Regulation, for violation of the requirement to ensure a high level of protection of human health and of the environment, and for violation of the right of citizens to file a ECI — and to contribute thereby to the democratic life of the Union.”*

### **NGOs in Europe filed a complaint for plagiarism**

NGOs have filed their complaint alleging plagiarism by the European Food Safety Authority and the German Federal Institute for Risk Assessment, BfR. In their action, filed in separate courts in Austria, Germany, Italy and France, the NGOs cite some of the information in the "Monsanto Papers", as well as an opinion by a plagiarism researcher, Stefan Weber. This is in addition to their own research. Their lawyer, Josef Unterweger, explains to the media the basis of the complaint.<sup>9</sup>

### **Further revelations uncovered by the Monsanto Papers were email exchanges between EFSA and the EPA: did EFSA dismiss IARC assessment before it was even published?**

Corporate Europe Observatory has summarized the content of several new Monsanto Papers, which were released on 27 and 28 October 2017.<sup>10</sup> *“Certain email [exchanges](#) within the EPA in May 2015 indicate that EFSA had approached the EPA and – as early as then – stated that they were going to disagree with IARC’s assessment.”* Yet in May 2015 EFSA hadn’t even seen IARC’s assessment. It wasn’t published until 29<sup>th</sup> July 2015. The German Bundesamt für Risikobewertung (BfR), which were the official EU rapporteur for glyphosate, had also not conducted their own assessment of the IARC conclusions before 31 August 2015.

### **Why are decisions on glyphosate in the EU made by a group of plant scientists?**

That the Standing Committee on Plants, Animals, Food and Feed is allowed to make decisions on glyphosate displays a total lack of knowledge of human physiology amongst regulators in the European Commission and the US EPA. Monsanto claims glyphosate is only toxic to plants, fungi and bacteria. Humans and animals have exactly the same pathway as in plants; mammals can only absorb nutrients via the bacteria in their gut; the gut microbiome. The gut microbiome is the collective genome of organisms inhabiting our body.<sup>11</sup> But Health Commissioner Vytenis Andriukaitis claims to be a doctor.

### **Monsanto scientists, EFSA and the UK SMC rallied to dismiss the Séralini study as fraudulent and it went largely unreported by the British Media**

In September 2012 Prof Gilles-Eric Séralini and his team (France) published a 2-year rat feeding study with GMO Roundup<sup>®</sup>-tolerant maize and Roundup<sup>®</sup>. This diet provoked chronic hormone and sex dependent pathologies in rats; males developed tumours at 4 months and females at 7 months. Highlights: *“A Roundup<sup>®</sup>-tolerant maize and Roundup<sup>®</sup> provoked chronic hormone and sex dependent pathologies. Female mortality was 2–3 times increased mostly due to large mammary tumours and disabled pituitary. Males had liver congestion, necrosis, severe kidney nephropathies and large palpable tumours. This may be due to an endocrine disruption linked to Roundup<sup>®</sup> and a new metabolism due to the transgene. GMOs and formulated pesticides must be evaluated by long term studies to measure toxic effects.”* The Industry-financed UK Science Media Centre and EFSA pronounced the Séralini study as fraudulent.<sup>12</sup>

### **Prof Séralini won an award for his work and won two libel suits**

<sup>9</sup> <http://gmwatch.org/en/news/latest-news/16755-ngos-press-charges-against-monsanto-german-government-institute-and-efsa-over-glyphosate-assessment>

<sup>10</sup> <https://corporateeurope.org/food-and-agriculture/2017/11/screening-new-monsanto-papers>

<sup>11</sup> <http://www.nature.com/nature/journal/v500/n7464/abs/nature12506.html>

<sup>12</sup> [http://www.sciencemediacentre.org/pages/press\\_releases/12-09-19\\_gm\\_maize\\_rats\\_tumours.htm](http://www.sciencemediacentre.org/pages/press_releases/12-09-19_gm_maize_rats_tumours.htm)

On 16 October 2015 Prof Gilles-Eric Séralini was awarded Whistleblower of the Year by German Scientists for his work on GMOs and Glyphosate.<sup>13</sup> Citation: “He was the first to publish animal test results demonstrating the toxic and carcinogenic properties of the most commonly used herbicide worldwide, the glyphosate-based “Roundup” by carrying out a two-year feeding test on rats. After the research was published, Prof Séralini was attacked by a vehement campaign by ‘interested circles’ from the chemical industry as well as the industry-financed British Science Media Centre.” “Marc Fellous, former President of the Biomolecular Engineering Commission (CGB), has been found guilty of forgery and use of forgery to defame Prof Gilles-Eric Séralini. On 22 September 2016 a judge in the Criminal Court of Paris found Fellous guilty of forgery and the use of forgery in order to defame Prof Gilles-Eric Séralini and CRIIGEN, a research association that focuses on the risks of genetic engineering and pesticides and the development of alternatives. The ruling marks a second court victory this year for Prof Séralini, his research team, and CRIIGEN. On September 7 they won a libel suit in the Appeals Court against Marianne magazine and its journalist Jean-Claude Jaillette, who repeated the defamatory words of the American pro-tobacco and -GMO lobbyist Henry I. Miller.”

### **A short overview of 30 years of our research<sup>14</sup> Gilles-Eric Séralini**

*Institute of Biology and EA2608, Network on Risks, Quality and Sustainable Environment MRSH, University of Caen Normandy, Esplanade de la Paix, 14032 Caen Cedex, France*

Roundup and other glyphosate-based herbicides are the most widely used pesticides in the world; their residues are among the main pollutants in surface waters. Their use has increased through the spraying of 80% of edible agricultural GMOs, which also contain high levels of their residues. They are composed of glyphosate (35–40% in general) and adjuvants that are around 1,000 times more toxic than glyphosate alone and are also endocrine disruptors below toxic thresholds. All endocrine disruptors (ED) are also nervous system disruptors (ND), because they act as “spam” for cell–cell communication, in the sense that they are spurious messages (or molecules) sent to a group of organisms or cells, impeding and slowing down, and in some cases accelerating, the physiological communication system. Therefore, they should be called ENDS (endocrine and nervous system disruptors). From 0.1 ppb in chronic tests in vivo, Roundup is highly tumorigenic, provoking hormone-dependent tumours, other hormonal imbalances, and important liver and kidney toxicities. Pesticide adjuvants play the same role in other pesticide formulations. The declared active principles often appear to be by far the least toxic compounds after water in formulations. Unfortunately for public health, they are the only substances tested by companies for regulatory purposes over the long term in vivo. Thus, the acceptable daily intakes deduced from these tests are 1000–10 000 times too high. In regulatory tests the deleterious effects in rats are compared with historical data on rat pathologies. Analysis of laboratory rodent feeds sourced from five continents reveals that they are so contaminated by pollutants that comparison to these hence inappropriate controls generally masks the chronic pathologies provoked by the pesticides and other chemicals tested. The disputes with industry representatives and lobby groups that arose in the course of this research are also summarized in this short review. Finally, potential methods of improving transparency and advancing scientific knowledge are recommended.

### **Theo Colborn’s crucial research in the early 1990s into endocrine disrupting chemicals (EDCs) that were changing humans and the environment was ignored**

The late Theo Colborn<sup>15</sup> (1927-1914) was the first to research and write about EDCs, man-made chemicals that became widespread in the environment after WW II. In a book published in 1996, Our Stolen Future: Are We Threatening Our Fertility, Intelligence, and Survival? Colborn, Dumanoski

<sup>13</sup> [http://neu.vdw-ev.de/wp-content/uploads/2015/10/Presseinformation-Whistleblower-Preisverleihung-2015\\_150917\\_eng.pdf](http://neu.vdw-ev.de/wp-content/uploads/2015/10/Presseinformation-Whistleblower-Preisverleihung-2015_150917_eng.pdf)

<sup>14</sup> <http://www.amsi.ge/jbpc/31515/15-3-abs-3.htm>

<sup>15</sup> <http://endocrinedisruption.org/about-tedx/theo-colborn>

and Peters<sup>16</sup> revealed the full horror of what was happening to the world as a result of contamination with EDCs. There was emerging scientific research about how a wide range of man-made chemicals disrupts delicate hormone systems in humans. These systems play a critical role in processes ranging from human sexual development to behaviour, intelligence, and the functioning of the immune system. At that stage, polychlorinated biphenyls (PCBs), pesticides DDT, chlordane, lindane, aldrin, dieldrin, endrin, toxaphene, heptachlor, dioxin, atrazine and dacthal were shown to be EDCs. Colborn illustrates the problem by constructing a diagram (page 105) of the journey of a PCB molecule from a factory in Alabama into a polar bear in the Arctic. Colborn says: *“The concentration of persistent chemicals can be magnified millions of times as they travel to the ends of the earth...Many chemicals that threaten the next generation have found their way into our bodies. There is no safe, uncontaminated place.”*

### **The Countess of Mar chaired a meeting of the All-Party Parliamentary Group (APPG) on Agroecology in the Houses of Parliament in London on June 18, 2014**<sup>17</sup>

The meeting discussed the harm caused by the world’s most popular herbicide – Roundup®. People from all round the world met to listen to four experts. The first expert to speak was Dr Don Huber, Plant scientist, Emeritus Professor Purdue University. He produced two crucial slides of facts about glyphosate.

One was a picture of an octopus: each arm is used to describe the multiple actions of the biocide glyphosate: Mineral chelating agent (previously used for cleaning boilers) ‘grabbing’ minerals such as Boron, Ca, Co, Cu, Fe, K, Mg, Mn, Ni and Zn that are essential to metabolic processes and absorption of amino acids; Growth regulator; Antibiotic; Herbicide; Toxicant; Virulence enhancer; Organic phosphonate; Persistent in the environment.

The second was the epidemic of diseases in the US that have increased between 1995 and 2011 and are linked to glyphosate: the incidence of the same diseases has increased in the UK over that time. Alzheimer’s disease, Dementia, Autism, ADHD Bipolar, Diabetes (Type 2) Multiple sclerosis, Motor-neurone Disease, Obesity, Stroke, Hypertension, Cataracts & eye diseases, Inflammatory bowel disease, Birth defects, Colitis, Crohn’s disease, Hypercholesterolaemia, Allergies, asthma, Atopic dermatitis, Miscarriage/ infertility, Renal disease/failure, Liver abnormalities, Coeliac disease, Gluten intolerance, Pancreatic abnormalities, Autoimmune diseases, Arthritis and **cancers**.  
The meeting wasn’t reported by the UK Corporate Media.

## **The causes of decline in coral cover on the Great Barrier Reef**

### **The 27–year decline of coral cover on the Great Barrier Reef and its causes**<sup>18</sup>

Extracts: Based on the world’s most extensive time series data on reef condition (2,258 surveys of 214 reefs over 1985–2012), we show a major decline in coral cover from 28.0% to 13.8% (0.53%  $\gamma^{-1}$ ), a loss of 50.7% of initial coral cover. Tropical cyclones, coral predation by crown-of-thorns starfish (COTS), and coral bleaching accounted for 48%, 42%, and 10% of the respective estimated losses amounting to 3.38%  $\gamma^{-1}$  mortality rate. Importantly, the relatively pristine northern region showed no overall decline. Thus, reducing COTS populations, by improving water quality and developing alternative control measures, could prevent further coral decline and improve the outlook for the Great Barrier Reef. **Such strategies can, however, only be successful if climatic conditions are stabilized, as losses due to bleaching and cyclones will otherwise increase.**

<sup>16</sup> Theo Colborn, Dianne Dumanoski and John Peterson Myers. Our Stolen Future: Are We Threatening Our Fertility, Intelligence, and Survival? A Scientific Detective Story 1996 Penguin; New York

<sup>17</sup> <https://sustainablepulse.com/2014/07/02/uk-parliamentary-meeting-brings-dangers-roundup-public-focus/#.WsjZe2bMygQ>

<sup>18</sup> <http://www.pnas.org/content/109/44/17995.full>

### **Herbicides: A new threat to the Great Barrier Reef<sup>19</sup>**

In 2009, researchers showed runoff of herbicides particularly associated with sugar cane cultivation in the adjacent catchment.

Abstract: The runoff of pesticides (insecticides, herbicides and fungicides) from agricultural lands is a key concern for the health of the iconic Great Barrier Reef, Australia. Relatively low levels of herbicide residues can reduce the productivity of marine plants and corals. However, the risk of these residues to Great Barrier Reef ecosystems has been poorly quantified due to a lack of large-scale datasets. Here we present results of a study tracing pesticide residues from rivers and creeks in three catchment regions to the adjacent marine environment. Several pesticides (mainly herbicides) were detected in both freshwater and coastal marine waters and were attributed to specific land uses in the catchment. Elevated herbicide concentrations were particularly associated with sugar cane cultivation in the adjacent catchment. We demonstrate that herbicides reach the Great Barrier Reef lagoon and may disturb sensitive marine ecosystems already affected by other pressures such as climate change.

### **Scientific Consensus Statement of Reef Plan 2013<sup>20</sup>**

*“Great Barrier Reef marine ecosystems and their associated catchments are part of a dynamic, interconnected system. Activities within the catchments affect the condition of coral reefs and seagrass meadows, which have both declined severely in the period since 2008. Marine water quality continues to be negatively affected by the discharge of excess nutrients, fine sediments and pesticides from the adjacent catchments, and poor marine water quality is a major cause for the poor state of many of the key marine ecosystems (coral reefs, seagrass meadows, coastal wetlands and estuaries) of the Great Barrier Reef. Many coastal and inshore seagrass meadows of the Great Barrier Reef are exposed to herbicide concentrations that adversely affect seagrass productivity. The contribution of herbicides to recent widespread seagrass losses is unknown.”*

### **Glyphosate persistence in samples of seawater<sup>21</sup> taken from the Great Barrier Reef**

Extracts: Glyphosate is one of the most widely applied herbicides globally but its persistence in seawater has not been reported. Here we quantify the biodegradation of glyphosate using standard “simulation” flask tests with native bacterial populations and coastal seawater from the Great Barrier Reef. The half-life for glyphosate at 25 °C in low light was 47 days, extending to 267 days in the dark at 25 °C and 315 days in the dark at 31 °C, which is the longest persistence reported for this herbicide. AMPA, the microbial transformation product of glyphosate, was detected under all conditions, confirming that degradation was mediated by the native microbial community. This study demonstrates glyphosate is moderately persistent in the marine water under low light conditions and **is highly persistent in the dark**. Little degradation would be expected during flood plumes in the tropics, which could **potentially deliver dissolved and sediment-bound glyphosate far from shore**.

### **Why was glyphosate found in the sea and so far from shore?**

Instructions for using Roundup Advance AG Herbicide by Monsanto include: *“Protection of Wildlife, Fish, Crustacea and Environment. Do not contaminate dam, river or stream with the product.”*<sup>22</sup>

Clothianidin (Sumitomo Shield a long-acting systemic neonicotinoid insecticide) has been granted registration by APVMA for use on very low-lying sugar cane plantations.

Instructions: PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT<sup>23</sup>

<sup>19</sup> <https://www.sciencedirect.com/science/article/pii/S0269749109001304>

<sup>20</sup> <https://www.reefplan.qld.gov.au/about/assets/scientific-consensus-statement-2013.pdf>

<sup>21</sup> <http://www.sciencedirect.com/science/article/pii/S0025326X14000228>

<sup>22</sup> <http://websvr.infopest.com.au/LabelRouter?LabelType=L&ProductCode=70096>

<sup>23</sup> [http://www.sumitomo-chem.com.au/sites/default/files/pdf/labels/shield\\_label.pdf](http://www.sumitomo-chem.com.au/sites/default/files/pdf/labels/shield_label.pdf)

*DO NOT apply under weather conditions, or from spraying equipment, that may cause spray drift onto nearby or adjacent areas, particularly wetlands, water-bodies or watercourses. **This product is highly toxic to aquatic invertebrates.** DO NOT contaminate streams, rivers or waterways with the chemical or used containers. DO NOT apply when there are aquatic and wetland areas including aquacultural ponds or surface streams and rivers downwind from the application area and within the mandatory no-spray zone shown in table 1.*

### **Global warming transforms coral reef assemblages<sup>24</sup>**

Australian Research Council Centre of Excellence for Coral Reef Studies, James Cook University, Townsville, Queensland, Australia: no mention of pesticides

Abstract: Global warming is rapidly emerging as a universal threat to ecological integrity and function, highlighting the urgent need for a better understanding of the impact of heat exposure on the resilience of ecosystems and the people who depend on them<sup>1</sup>. Here we show that in the aftermath of the record-breaking marine heatwave on the Great Barrier Reef in 2016<sup>2</sup>, corals began to die immediately on reefs where the accumulated heat exposure exceeded a critical threshold of degree heating weeks, which was 3–4 °C-weeks. After eight months, an exposure of 6 °C-weeks or more drove an unprecedented, regional-scale shift in the composition of coral assemblages, reflecting markedly divergent responses to heat stress by different taxa. Fast-growing staghorn and tabular corals suffered a catastrophic die-off, transforming the three-dimensionality and ecological functioning of 29% of the 3,863 reefs comprising the world's largest coral reef system. Our study bridges the gap between the theory and practice of assessing the risk of ecosystem collapse, under the emerging framework for the International Union for Conservation of Nature (IUCN) Red List of Ecosystems<sup>3</sup>, by rigorously defining both the initial and collapsed states, identifying the major driver of change, and establishing quantitative collapse thresholds. The increasing prevalence of post-bleaching mass mortality of corals represents a radical shift in the disturbance regimes of tropical reefs, both adding to and far exceeding the influence of recurrent cyclones and other local pulse events, presenting a fundamental challenge to the long-term future of these iconic ecosystems.

### **CSIRO admitted that Australia works with global corporations for market access**

In 1992, according to an interview with John Stocker, Commonwealth Scientific and Industrial Research Organisation's former chief executive, "*Working with the transnationals makes a lot of sense, in the context of market access... There are very few Australian companies that have developed market access in the United States, in Europe and in Japan, the world's major marketplaces. Yes, we do find that it is often the best strategy to get into bed with these companies.*"<sup>25</sup> The APVMA was also established in 1992.

### **Australian Pesticides and Veterinary Medicines Authority will not restrict glyphosate**

The APVMA has concluded that glyphosate does not pose a carcinogenic risk to humans and that there are no grounds to place it under formal reconsideration. Read the full assessment in the proposed regulatory position report on our website.<sup>26</sup> Final Position on Glyphosate 15/03/2017.<sup>27</sup>

### **Australian Pesticides and Veterinary Medicines Authority Corporate Plan 2017-2018<sup>28</sup>**

Reduce the regulatory burden on industry through an enhanced client service approach

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<sup>24</sup> <https://www.nature.com/articles/s41586-018-0041-2>

<sup>25</sup> [http://powerbase.info/index.php/Commonwealth\\_Scientific\\_and\\_Industrial\\_Research\\_Organisation](http://powerbase.info/index.php/Commonwealth_Scientific_and_Industrial_Research_Organisation)

<sup>26</sup> <https://apvma.gov.au/node/13891>

<sup>27</sup> <https://apvma.gov.au/node/26561>

<sup>28</sup>

[https://apvma.gov.au/sites/default/files/publication/27381-9691r\\_apvma\\_-\\_corporate\\_plan\\_2017-21\\_tagged.pdf](https://apvma.gov.au/sites/default/files/publication/27381-9691r_apvma_-_corporate_plan_2017-21_tagged.pdf)

Page 26: “The way a regulator implements and enforces its legislation can make a significant difference to the potential burden industry might face. The APVMA does not set the regulatory framework for agvet chemicals. Our role is to implement the legislation and associated regulations. As a regulator the APVMA will balance regulatory efficiency with the need to ensure appropriate protections for the health and safety of people, animal and the environment. We will implement reforms to our business that enhance client service, streamline administrative burden and improve regulatory responsiveness so that Australia’s agricultural industries can leverage the future economic opportunities for growth and to reduce the regulatory burden on agvet chemical industries bringing new and improved products to market.”

### **Systemic neonicotinoid insecticides: a disaster in the making; Dr Henk Tennekes**

Dr Henk Tennekes, an independent toxicologist from the Netherlands, first warned of the danger of these neurotoxic insecticides in 2010. He showed that neonicotinoid insecticides produce effects at any concentration level provided the exposure time is sufficiently long.<sup>29</sup> The systemic neonicotinoid insecticides: A disaster in the making. Dr Tennekes says that his book: “... catalogues a tragedy of monumental proportions regarding the loss of invertebrates and subsequent losses of the insect-feeding (invertebrate-dependent) bird populations in all environments in the Netherlands. The disappearance can be related to agriculture in general, and to the neonicotinoid insecticide imidacloprid in particular, which is a major contaminant of Dutch surface water since 2004. The relationship exists because of crucial (and catastrophic) disadvantages of the neonicotinoid insecticides: the damage to the central nervous system of insects is irreversible and cumulative.” Tennekes showed that there is no safe level of exposure, and even minute quantities can have devastating effects in the long term. They leach into groundwater and contaminate surface water and persist in soil and water, chronically exposing aquatic and terrestrial organisms to these insecticides. “So, what, in effect, is happening is that these insecticides are creating a toxic landscape, in which many beneficial organisms are killed off.” Tennekes and Sánchez-Bayo later demonstrated that chemicals that bind irreversibly to specific receptors (neonicotinoids, genotoxic carcinogens and some metaloids) produce toxic effects in a time-dependent manner, no matter how low the level of exposure.<sup>30</sup>

### **Systemic neonicotinoid insecticides are extremely persistent in the soil**

Clothianidin, for example, on sugar cane, has a half-life in soil is up to 1386 days.<sup>31</sup>

In 2005, US EPA had a document on clothianidin that revealed that in some heavy soils, it was still projected to be present at 19 years but decided to exclude it.<sup>32</sup>

### **The former ‘top’ scientist of the European Commission defended the registration of clothianidin, a systemic neonicotinoid insecticide with a long half-life in soil**

According to (EC) 1107/2009 clothianidin should never have been registered in the first place because it failed to the EU criteria for half-life in soil; this should be no greater than 120 days. (*The US EPA conditional registration document for clothianidin in 2003 stated that the aerobic soil metabolism half-life under a variety of soil conditions was 148-1,155 days and the terrestrial field dissipation was 277-1,386 days.*)”

However, when challenged, Michael Flüh former Head of Unit Pesticides and Biocides for the European Commission defended this on 10/07/2012. “The allegation as regards the illegality of the registration of clothianidin is strongly rejected. The assessment of clothianidin, carried out by a Rapporteur Member State (RMS), and peer reviewed by experts from all Member States, concluded

<sup>29</sup> <http://www.ncbi.nlm.nih.gov/pubmed/20803795>

<sup>30</sup> <http://omicsonline.org/2161-0525/2161-0525-S4-001.pdf>

<sup>31</sup> Footprint Database: International Union of Pure and Applied Chemistry (IUPAC)

<http://sitem.herts.ac.uk/aeru/iupac/>

<sup>32</sup> <http://www.cbgnetwork.org/3613.html>

*that safe uses for this substance exist. The assessment covered the persistence of the substance in soil as well as its toxicity and leaching potential.”*

## **European Legislation set up for the benefit of the agrochemical industry**

### **Exchanges between Monsanto Europe and the Health Commissioner confirm this**

Monsanto Europe replied to Health Commissioner Andriukaitis on 04/04/2016 to say that the 24 Glyphosate Task Force GTF members were prepared to grant very limited access to the data.<sup>33</sup> From this very revealing letter we learn that the current EU legislation is set up to “*protect intellectual property and confidential information from public disclosure. ...All confidential data ...shall be deleted or redacted (Regulation 1107/2009, Article 63).*” Much of the industry data submitted to the German RMS was redacted.

### **The European Parliament has no legislative function in the approvals process**

According to the European Glyphosate Task Force, the renewal process is legislated for by means of a Commission Regulation (No. 1107/2009). Therefore, the European Parliament has no legislative function within the framework of the approval process.<sup>34</sup> However, Baum Hedlund sent the *Monsanto Papers* to four members of the European Parliament after their request for advice.<sup>35</sup>

### **Successive Heads of Pesticide Unit, Health and Consumers Directorate General (DG Sante) European Commission appear to have no appropriate specialist knowledge**

Michael Flüh admitted to being a non-scientist (in a video) and Klaus Berend who replaced him after Michael Flüh resigned is an expert in the REACH specifications of plastics in aviation. See below under Biocides Regulations.

European Commission decision on middle management staff<sup>36</sup>

Page 2 (2) Middle managers should not only have a very good knowledge of their subject areas, they should also be outstanding in managing work and people.

Page 5 Article 4 The role of heads of unit is regarded as particularly important. They shall possess specific management (i.e. work organisation, people management and, where relevant, financial resources management) competencies and an appropriate degree of specialist knowledge and technical expertise.

### **Biocides Regulations in the European Union makes a lot of money for someone**

**REACH (Registration, Evaluation, Authorisation and Restriction of Chemical substances):** The Biocidal Product Regulation (BPR, Regulation (EU) 528/2012) concerns the placing on the market and use of biocidal products, which are used to protect humans, animals, materials or articles against harmful organisms, like pests or bacteria, by the action of the active substances contained in the biocidal product.<sup>37</sup>

*“REACH is a regulation of the European Union, adopted to improve the protection of human health and the environment from the risks that can be posed by chemicals, while **enhancing the competitiveness of the EU chemicals industry**. It also promotes alternative methods for the hazard assessment of substances in order to reduce the number of tests on animals.”*

It came into force on 02/08/07.

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<sup>33</sup> [https://ec.europa.eu/commission/commissioners/sites/cwt/files/letter\\_1.pdf](https://ec.europa.eu/commission/commissioners/sites/cwt/files/letter_1.pdf)

<sup>34</sup> [http://www.glyphosate.eu/system/files/sidebar-files/renewal\\_process\\_for\\_glyphosate\\_faqs\\_0.pdf](http://www.glyphosate.eu/system/files/sidebar-files/renewal_process_for_glyphosate_faqs_0.pdf)

<sup>35</sup> <https://usrtk.org/wp-content/uploads/2017/08/Exhibit-Letter-from-plaintiffs-attorneys-to-European-Parliament.pdf>

<sup>36</sup> [https://ec.europa.eu/info/sites/info/files/european-commission-decision-on-middle-management-staff\\_3288\\_c\\_2016\\_en.pdf](https://ec.europa.eu/info/sites/info/files/european-commission-decision-on-middle-management-staff_3288_c_2016_en.pdf)

<sup>37</sup> <https://echa.europa.eu/regulations/biocidal-products-regulation>

*Exponent Inc.* is a company that helps chemical firms with REACH compliance.<sup>38</sup> It describes itself as “a research and scientific consultant firm with clients from industry (including crop protection) and government.” *Exponent Inc.* was employed by Bayer to criticise EFSA’s work on neonicotinoids and bees in 2013. It also contributed to a review by a Dow employee that concluded that “*exposure to specific pesticides during critical periods of brain development and neurobehavioral outcomes is not compelling.*”<sup>39</sup> Dr Caroline Harris, a Vice-President of *Exponent Inc* was on the UK Advisory Committee on Pesticides even before it became the Expert Committee on Pesticides.

**A global industry has emerged to advise on Biocides Regulation. The British Government is making a lot of money out of it because BiocidesHub is based in the UK.**

As with the regulation of pesticides, it is controlled by the pesticides industry and based in the UK. Biocides Symposia are held regularly around the world to “*get up-to-speed on all that’s new in biocidal products regulation*” to “*stay one step ahead.*” Courses are from £300-400 per day to \$1585 for a Symposium. A multitude of firms have clients from ‘*industry, crop protection and government*’. Chemical Watch **BiocidesHub** (Shrewsbury) offers 13 Events on Biocides Regulation in 2016, ranging from beginners’ courses to advanced courses. **A Biocide means a killer of life.**

**Chemicals registration and notification:**

What must chemical companies do to remain in compliance with the substance registration or notification/reporting provisions of REACH?

**Cancer Research UK was hijacked by the Agrochemical Industry in 2010 with the full knowledge of the UK government: the former Chairman of Cancer Research UK was founder of Syngenta**

Michael Pragnell (CBE, awarded in 2016 for services to cancer) former Chairman of Cancer Research UK was founder of Syngenta and former Chairman of CropLife International.<sup>40</sup>

This was formed in 2001 from BASF, Bayer, Dow, DuPont, FMC Corp, Monsanto, Sumitomo and Syngenta. The CRUK website says that there is no convincing evidence that pesticides cause cancer. Instead CRUK links cancer to life style choices: alcohol, obesity and smoking.

Cancer Research UK figures for 2014 (that don’t seem to have been published by the Corporate Media) shows the huge numbers of cancers that are killing people in the UK.

**2014 in Britain there were 13,605 new cases of Non-Hodgkin Lymphoma (4,801 deaths)<sup>41</sup>**

41,265 new cases of bowel cancer (15,903 deaths); 12,523 new cases of kidney cancer (4,421 deaths); 5,550 new cases of liver cancer (5,091 deaths); 5,419 new cases of melanoma (2,459 deaths); 3,404 new cases of thyroid cancer (376 deaths); 10,063 new cases of bladder cancer (5,369 deaths); 9,324 new cases of uterine cancer (2,166 deaths); 7,378 cases of ovarian cancer (4,128 deaths) 9,534 new cases of leukaemia (4,584 deaths); 55,222 new cases of invasive breast cancer (11,433 deaths); 46,690 new cases of prostate cancer (11,287 deaths); 8,919 new cases of oesophageal cancer (7,790 deaths) and 5,501 new cases of myeloma (2,928 deaths); 2,418 new cases of testicular cancer (60 deaths); in 2015 9,921 new cases of pancreatic cancer (8,817 deaths in 2014). In the US in 2014 there were 24,050 new cases of myeloma.

**US Lawsuit in America on behalf of plaintiffs with cancers**

These are some of the cancers that plaintiffs in the US have alleged have been caused by Roundup. Attorneys for Baum Hedlund have been acting on behalf of these plaintiffs. The lawsuit began on

<sup>38</sup> <http://www.exponent.com/REACH/>

<sup>39</sup> <http://www.ncbi.nlm.nih.gov/pubmed/23777200>

<sup>40</sup> [https://www.vinci.com/vinci.nsf/en/management-board-directors/pages/michael\\_pragnell.htm](https://www.vinci.com/vinci.nsf/en/management-board-directors/pages/michael_pragnell.htm)

<sup>41</sup> <http://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/pancreatic-cancer>

March 13<sup>th</sup> 2017 U.S. District Judge Vince Chhabria ruled — over Monsanto’s objections — that documents obtained by plaintiffs through discovery could be unsealed.<sup>42</sup>

Page 14 line 1 Dr Williams Heydens admitted that he ‘ghost-wrote’ an article for Gary Williams: “Roundup herbicide does not pose a health risk to humans” when their own scientists privately wrote that: “[t]he terms glyphosate and Roundup cannot be used interchangeably ....For example you cannot say that Roundup is not a carcinogen...we have not done the necessary testing on the formulation to make that statement.”

Robert F. Kennedy, Jr., another of the plaintiffs' attorneys said, "*This trove marks a turning point in Monsanto's corporate life. They show Monsanto executives colluding with corrupted EPA officials to manipulate and bury scientific data to kill studies when preliminary data threatened Monsanto's commercial ambitions, bribing scientists and ghostwriting their publications, and purchasing peer review to conceal information about Roundup's carcinogenicity, its toxicity, its rapid absorption by the human body, and its horrendous risks to public health and the environment.*"

After 1 year of revelations from unsealing Monsanto email exchanges, including ones with the US Environmental Protection Agency and the European Food Safety Agency that show collusion amongst the regulators, it is about to end. Judge Chhabria will have judged the “science” between eight independent scientists that say that Roundup does cause cancer and four on behalf of Monsanto that deny it.

### **Antibiotic resistance an apocalyptic threat from use of herbicides**

In 2013 Professor Dame Sally Davies claimed that antibiotic resistance is an apocalyptic threat to humans and should be put on the list of civil emergencies. She blamed doctors and vets for overuse. But in 2017, a paper from New Zealand showed that herbicides glyphosate, dicamba and 2-4 D change antibiotic responses to pathogenic bacteria.<sup>43</sup>

## **World-wide soil contamination by glyphosate and neonicotinoid insecticides causes dramatic declines in insect biomass and birds**

### **Glyphosate and AMPA: widespread persistence in topsoils in Europe<sup>44</sup>**

*“A new research study by the European Commission’s Joint Research Centre, the Dutch University of Wageningen and Rikilt laboratories, reveals that among 317 EU soil samples of arable land, 42% contained AMPA, the most toxic metabolite of glyphosate, while glyphosate was found in 21% of the soils; 18% of the samples had both. The study was conducted in six crop systems along 11 EU member states comprising soils under different geographical and climatic conditions. Denmark, **the UK and Portugal** are the worst in this spectrum, with the highest detection frequency, while Italy and Greece seem to be the ones using less glyphosate on their crops. However, and most notably, these 2 molecules could be found in every tested member state. **All tested crops presented glyphosate and AMPA residues.** By far, the worst case was that of Portuguese vineyards, while no crops exhibited patterns of reduced reliance on glyphosate compared to others.”*

Angeliki Lyssimachou, PAN Europe’s ecotoxicologist said: “This study (from the European Commission’s own Joint Research Centre) clearly contradicts the predictions of European Authorities that glyphosate does not persist in the environment.<sup>45</sup> In fact, European agriculture is highly reliant on a toxic substance that is not even properly regulated in the EU, putting everyone at risk.”

<sup>42</sup> <http://baumhedlundlaw.com/pdf/monsanto-documents/daubert-brief/Plaintiffs-1-Response-in-Opposition-to-Monsanto-Companys-Daubert-and-Summary-Judgment-Motion.pdf>

<sup>43</sup> <http://mic.microbiologyresearch.org/content/journal/micro/10.1099/mic.0.000573>

<sup>44</sup> <http://www.sciencedirect.com/science/article/pii/S0048969717327973>

<sup>45</sup> <http://www.glyphosate.eu/environmental-fate-and-behaviour-glyphosate>

## European Commission rejected the advice of its own Joint Research Centre

- On levels of glyphosate and AMPA in European Soils
- On organic foods
- **On healthy soils:** *“Heavy tilling, multiple harvests and abundant use of agrochemicals have increased yields at the expense of long-term sustainability. In the past 20 years, agricultural production has increased threefold and the amount of irrigated land has doubled, notes a paper in the outlook by the Joint Research Centre (JRC) of the European commission. Over time, however, this diminishes fertility and can lead to abandonment of land and ultimately desertification. The JRC noted that decreasing productivity can be observed on 20% of the world’s cropland, 16% of forest land, 19% of grassland, and 27% of rangeland.”<sup>46</sup>*

## Ecological Armageddon after dramatic plunge in insect numbers 18/10/2017

More than 75 percent decline over 27 years in total flying insect biomass in protected areas in Germany<sup>47</sup>

Part of Abstract: *Global declines in insects have sparked wide interest among scientists, politicians, and the general public. Loss of insect diversity and abundance is expected to provoke cascading effects on food webs and to jeopardize ecosystem services. Our understanding of the extent and underlying causes of this decline is based on the abundance of single species or taxonomic groups only, rather than changes in insect biomass which is more relevant for ecological functioning. Here, we used a standardized protocol to measure total insect biomass using Malaise traps, deployed over 27 years in 63 nature protection areas in Germany (96 unique location-year combinations) to infer on the status and trend of local entomofauna.*

*When the total weight of the insects in each sample was measured a startling decline was revealed. The annual average fell by 76% over the 27-year period, but the fall was even higher – 82% – in summer, when insect numbers reach their peak.<sup>48</sup>*

## Catastrophe as scientists reveal the massive decline in bird populations in France

On 21/03/2018 two research papers revealed French bird populations had fallen by a third in the past 15 years as a result of loss of insects. It was front page of *Le Monde* but failed to gain prominence in the British media. The French scientists said this was symptomatic of the future facing Europe as a whole of *“biodiversity oblivion.”* It was a pattern repeated across Europe. *“The situation is catastrophic,”* said Benoit Fontaine, a conservation biologist at France’s National Museum of Natural History and co-author of one of the studies. *“Our countryside is in the process of becoming a veritable desert,”* he said in a communique released by the National Centre for Scientific Research (CNRS), which also contributed to the findings. The primary culprit, researchers speculate, is the intensive use of pesticides on vast tracts of monoculture crops, especially wheat and corn. The problem is not that birds are being poisoned, but that the insects on which they depend for food have disappeared.

*“There are hardly any insects left, that’s the number one problem,”* said Vincent Bretagnolle, a CNRS ecologist at the Centre for Biological Studies in Chize. Recent research, he noted, has uncovered similar trends across Europe, estimating that flying insects have declined by 80%, and bird populations have dropped by more than 400m in 30 years.<sup>49</sup>

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<sup>46</sup> <https://www.theguardian.com/environment/2017/sep/12/third-of-earths-soil-acutely-degraded-due-to-agriculture-study>

<sup>47</sup> <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0185809>

<sup>48</sup> <https://www.theguardian.com/environment/2017/oct/18/warning-of-ecological-armageddon-after-dramatic-plunge-in-insect-numbers>

<sup>49</sup> <https://www.theguardian.com/world/2018/mar/21/catastrophe-as-frances-bird-population-collapses-due-to-pesticides>

**The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)** Report published in March 2018: *“Biodiversity – the essential variety of life forms on Earth – continues to decline in every region of the world, significantly reducing nature’s capacity to contribute to people’s well-being. This alarming trend endangers economies, livelihoods, food security and the quality of life of people everywhere, according to four landmark science reports released today, written by more than 550 leading experts, from over 100 countries.”*<sup>50</sup>

**Le Monde, the ‘most sober’ of national journals, splashed the fact across the top of its front page: the UK Corporate Media is silent.**

Britain has lost half of its wildlife. Now’s the time to shout about it (Michael McCarthy on 21/03/2018.) *“Most Britons remain blithely unaware that since the Beatles broke up, we have wiped out half our wildlife. Intensive farming is the problem. Three generations of making agriculture more industrial have given Europe cheap food on a mammoth scale, but a terrible environmental price has eventually been paid, which we are only now understanding. The heart of the matter is universal pesticide use: we benefit from farming wholly based on poison, which has exterminated more and more of the insects at the base of myriad food chains in the natural world.”*<sup>51</sup>

**Neonicotinoid insecticides are killing birds and are highly toxic to aquatic systems**

The American Bird Conservancy (ABC) Report was published in March 2013 and updated in 2015: *‘Neonicotinoid Insecticides and Birds’: The Impact of the Nation’s Most Widely Used Insecticides on Birds.*<sup>52</sup> The authors were Dr Pierre Mineau, former Senior Research Scientist at Environment Canada and Cynthia Palmer, an Environmental Lawyer.

Page 3 of ABC: *“A single corn kernel coated with a neonicotinoid can kill a song bird. Even a tiny grain of wheat or canola treated with the oldest neonicotinoid, imidacloprid, can poison a bird. As little as 1/10<sup>th</sup> of a corn seed per day during egg-laying season is all that is needed to affect reproduction with any of the neonicotinoids registered to date...Major risk concerns raised by scientists both inside and outside the agency appear to have gone unheeded in agency registration decisions.”*

Page 5 of ABC: *“It looks as if the US EPA and other regulatory agencies consistently approved registrations despite their own scientists’ repeated and ever-growing concerns. It is relevant to ask why we conduct scientific evaluations of products if those evaluations have little or no bearing on the registration decisions that are made, and when staff scientists warning of ‘major risk concerns’ appear to be ignored to assess the threats posed by the neonicotinoid insecticides to birds and to the aquatic ecosystems on which many species depend.”*

Page 64 of ABC: *“It is clear that we are witnessing contamination of the aquatic environment at levels that will affect aquatic food chains. This has a clear potential to affect consumers of those aquatic resources, be they birds, fish or amphibians.”*

**A first-hand description of the effects of GM Roundup Ready corn on biodiversity**

EFSA said that glyphosate was not ecotoxic even though ECHA classified it as such.

Childs, C. *Apocalyptic Planet. Field Guide to the Future of the Earth.*<sup>53</sup>

Chapter 6 Species Vanish: Page 185. Grundy County, Iowa was where Craig Childs spent a long weekend in a monoculture of GM-Roundup® Ready Corn looking for wildlife.

Page 187: *“In this cornfield, I had come to a different kind of planetary evolution. I listened and heard nothing, no bird, no click of an insect ...* Page 188: *Mr Owen was the farmer who had given us permission to backpack across his cornfields. He grew a combination of DuPont and Monsanto stock. We were in DuPont now. It didn’t look any different to me.”*

<sup>50</sup> <https://www.ipbes.net/news/media-release-worsening-worldwide-land-degradation-now-%27critical%27-undermining-well-being-32>

<sup>51</sup> <https://www.theguardian.com/commentisfree/2018/mar/26/wildlife-modern-farming-insects-birds>

<sup>52</sup> [http://www.abcbirds.org/abcprograms/policy/toxins/Neonic\\_FINAL.pdf](http://www.abcbirds.org/abcprograms/policy/toxins/Neonic_FINAL.pdf)

<sup>53</sup> Childs, C. *Apocalyptic Planet. Field Guide to the Future of the Earth*, New York: Vintage Books (2013).

Robert Krulwich's blog commented on Craig Child's description:<sup>54</sup> "Corn farmers champion corn. Anything that might eat corn, hurt corn, bother corn, is killed. Their corn is bred to fight pests. The ground is sprayed. The stalks are sprayed again. So, Craig wondered, "What will I find?" The answer amazed me. He found almost nothing. There were no bees. The air, the ground, seemed vacant. He found one ant "so small you couldn't pin it to a specimen board." A little later, crawling to a different row, he found one mushroom, "the size of an apple seed." Then, later, a cobweb spider eating a crane fly (only one). A single red mite "the size of a dust mote hurrying across the barren earth," some grasshoppers, and that's it." Though he crawled and crawled, he found nothing else. "It felt like another planet entirely," he said, a world denuded.

Yet, 100 years ago, these same fields, these prairies, were home to 300 species of plants, 60 mammals, 300 birds, hundreds and hundreds of insects. This soil was the richest, the loamiest in the state. And now, in these patches, there is almost literally nothing but one kind of living thing. We've erased everything else. There's something strange about a farm that intentionally creates a biological desert to produce food for one species: us. It's efficient, yes. But it's so efficient that the ants are missing, the bees are missing, and even the birds stay away. Something's not right here. Our cornfields are too quiet."

Page 192: Childs said: "I chose Iowa for a mass-extinction analogue because it is the most thorough picture of genetic exhaustion, the many organs of what was once tallgrass prairie removed and replaced with this."

Iowa was just one state in which the US Geological Survey said: "Glyphosate and AMPA were detected frequently in soils and sediment, ditches and drains, precipitation, rivers, and streams; and less frequently in lakes, ponds, and wetlands; soil water; and groundwater."<sup>55</sup>

**On 22/03/2018 Damian Carrington interviewed the eminent biologist Prof Paul Ehrlich<sup>56</sup>**

"A shattering collapse of civilisation is a "near certainty" in the next few decades due to humanity's continuing destruction of the natural world that sustains all life on Earth, according to biologist Prof Paul Ehrlich ...there is an increasing toxification of the entire planet by synthetic chemicals that may be more dangerous to people and wildlife than climate change. Ehrlich also says an unprecedented redistribution of wealth is needed to end the over-consumption of resources, but "the rich who now run the global system – that hold the annual 'world destroyer' meetings in Davos – are unlikely to let it happen".

Ehrlich is also concerned about chemical pollution, which has already reached the most remote corners of the globe. "The evidence we have is that toxics reduce the intelligence of children, and members of the first heavily influenced generation are now adults."

He treats this risk with characteristic dark humour: "The first empirical evidence we are dumbing down Homo sapiens were the Republican debates in the US 2016 presidential elections – and the resultant kakistocracy. On the other hand, toxification may solve the population problem, since sperm counts are plunging."

He says: "You don't need a scientist to know what's causing the sixth mass extinction. It's simple. It's us."

## **Glyphosate is present everywhere: why have British citizens not been informed?**

<sup>54</sup> <https://www.npr.org/sections/krulwich/2012/11/29/166156242/cornstalks-everywhere-but-nothing-else-not-even-a-bee>

<sup>55</sup> <http://onlinelibrary.wiley.com/doi/10.1111/jawr.12159/abstract>

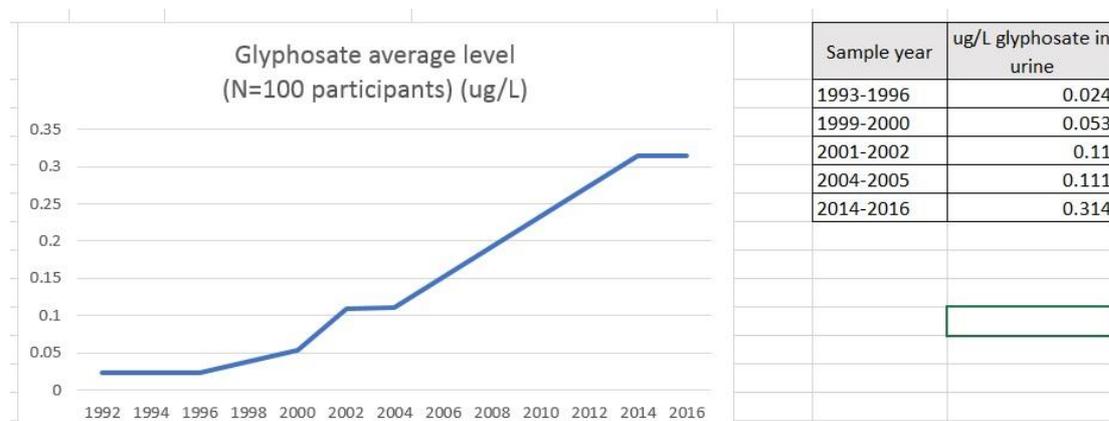
<sup>56</sup> <https://www.theguardian.com/cities/2018/mar/22/collapse-civilisation-near-certain-decades-population-bomb-paul-ehrllich>

Séralini found glyphosate in rodent diets for testing chemicals used in every continent. Samsel has found glyphosate present in the keratin proteins of humans and animals, in **vaccines**, baby milk formulations, pet foods and rat feeds for experimental purposes. It has been found in sanitary products made from GM cotton. All processed foods including orange juice; beers, breakfast cereals, bread, wine; all non-organic vegetables including potatoes. In March 2016 a survey of more than 2009 German citizens tested showed that more than 99% had glyphosate in their urine and the highest levels were in children and young adults and those that were meat eaters.<sup>57</sup> Glyphosate was found to be persistent in seawater off the Great Barrier Reef.<sup>58</sup> It was also found in the islands of Hawai'i where the agrochemical industry undertakes testing of GM crops, which the people of Hawai'i don't want.<sup>59</sup> *"The most commonly tested GE "trait" is herbicide-resistance (82% of field releases over the past two years), which permits heavier and more frequent spraying of herbicides than is otherwise possible (3.2 & 3.4). Hawai'i's incredible biodiversity and many threatened and endangered species are at risk from intensive pesticide use on the Islands. "*

**Excretion of the herbicide glyphosate in older adults between 1993 and 2016<sup>60</sup>**

Extracts: *"The herbicide Roundup is sprayed onto genetically modified crops and applied as a desiccant to most small non-genetically modified grains. Use of this herbicide has increased since 1994 when genetically modified crops were introduced in the United States. Glyphosate, the primary ingredient in the herbicide, is found in these crops at harvest. Environmental exposure through dietary intake of these crops has potential adverse health effects and can be assessed by measuring urinary excretion. We measured excretion levels of glyphosate and its metabolite aminomethylphosphonic acid (AMPA) in participants from the Rancho Bernardo Study (RBS) of Healthy Aging.*

*Mean glyphosate and AMPA levels and the proportion of samples with detectable levels increased over time.*



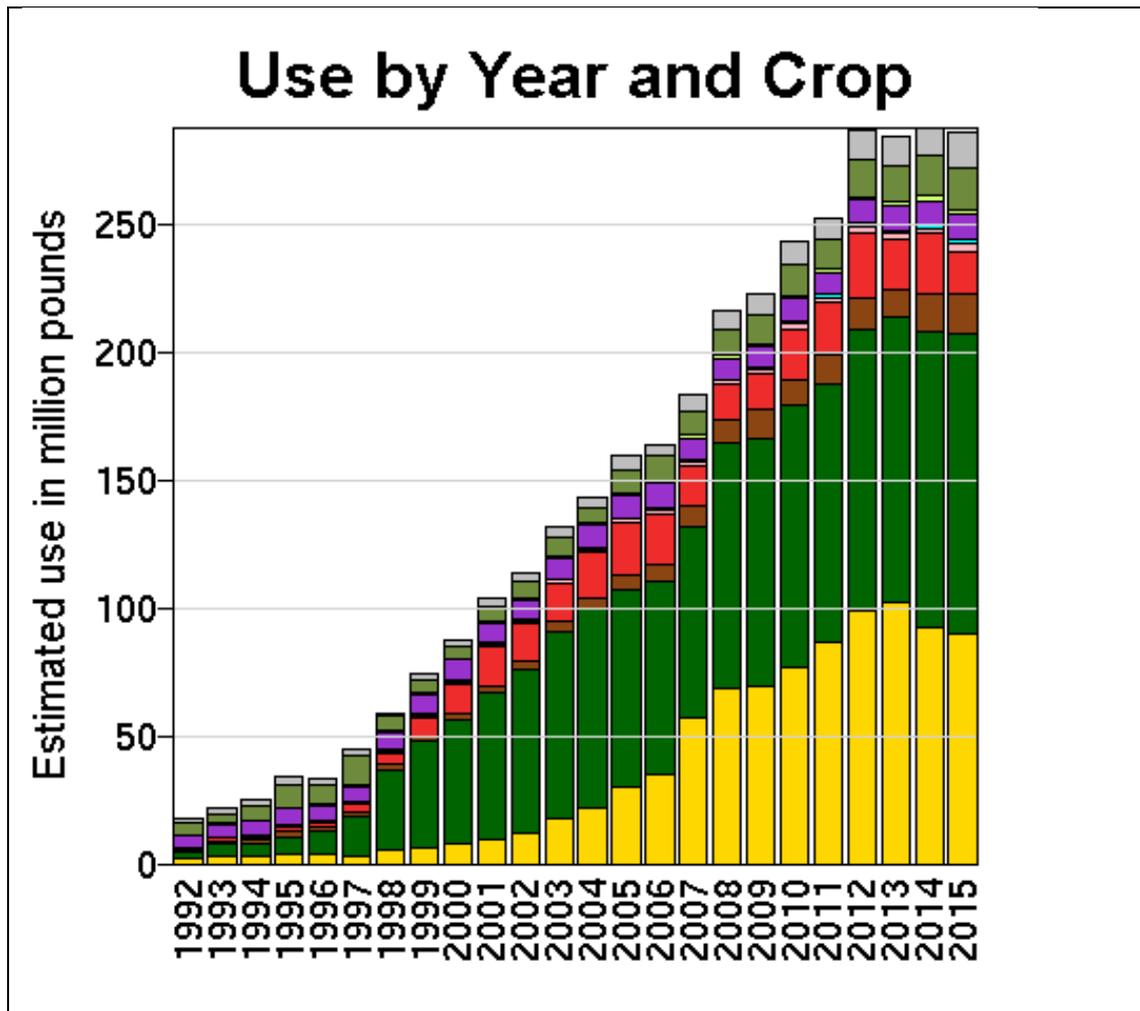
Graph reproduced by kind permission of Dr J. Sass PhD Senior Scientist NRDC

<sup>57</sup> <http://www.lifegate.com/people/lifestyle/glyphosate-almost-all-germans-intoxicated>

<sup>58</sup> <http://www.sciencedirect.com/science/article/pii/S0025326X14000228>

<sup>59</sup> [http://www.centerforfoodsafety.org/files/pesticidereportfull\\_86476.pdf](http://www.centerforfoodsafety.org/files/pesticidereportfull_86476.pdf)

<sup>60</sup> <https://jamanetwork.com/journals/jama/article-abstract/2658306>



Glyphosate use by year in the US 1992-2015 <sup>61</sup>

### Birth defects in animals in Montana correlates with glyphosate usage on crops and with birth defects in humans

A recent study by Hoy *et al.* found alarming increases in congenital malformations in wildlife in Montana that Hoy has been documenting for the past 19 years. Similar birth defects have occurred in humans in the USA. Their graphs illustrating human disease patterns over the twelve-year period correlate remarkably well with the rate of glyphosate usage on corn, soy and wheat crops, which has increased due to “Roundup® Ready” crops. While the animals’ exposure to the herbicide is through food, water and air, the authors believe that human exposure is predominantly through food, as the majority of the population does not reside near agricultural fields and forests. They conclude: *“Our over-reliance on chemicals in agriculture is causing irreparable harm to all beings on this planet, including the planet herself. Most of these chemicals are known to cause illness, and they have likely been causing illnesses for many years. But until recently, the herbicides have never been sprayed directly on food crops, and never in this massive quantity. We must find another way”*.<sup>62</sup>

<sup>61</sup>

[https://water.usgs.gov/nawqa/pnsp/usage/maps/show\\_map.php?year=2015&map=GLYPHOSATE&hilo=H&dis p=Glyphosate](https://water.usgs.gov/nawqa/pnsp/usage/maps/show_map.php?year=2015&map=GLYPHOSATE&hilo=H&dis p=Glyphosate)

<sup>62</sup> <http://www.esciencecentral.org/journals/the-high-cost-of-pesticides-human-and-animal-diseases-2375-446X-1000132.php?aid=56471>

## Genetically-engineered crops, glyphosate and the deterioration of health in the United States of America. Swanson *et al.*<sup>63</sup>

**Abstract:** A huge increase in the incidence and prevalence of chronic diseases has been reported in the United States (US) over the last 20 years. Similar increases have been seen globally. The herbicide glyphosate was introduced in 1974 and its use is accelerating with the advent of herbicide-tolerant genetically engineered (GE) crops. Evidence is mounting that glyphosate interferes with many metabolic processes in plants and animals and glyphosate residues have been detected in both. Glyphosate disrupts the endocrine system and the balance of gut bacteria, it damages DNA and is a driver of mutations that lead to cancer.

In the present study, US government databases were searched for GE crop data, glyphosate application data and disease epidemiological data. Correlation analyses were then performed on a total of 22 diseases in these time-series data sets. The Pearson correlation coefficients are highly significant ( $< 10^{-5}$ ) between glyphosate applications and hypertension ( $R = 0.923$ ), stroke ( $R = 0.925$ ), diabetes prevalence ( $R = 0.971$ ), diabetes incidence ( $R = 0.935$ ), **obesity** ( $R = 0.962$ ), lipoprotein metabolism disorder ( $R = 0.973$ ), Alzheimer's ( $R = 0.917$ ), senile dementia ( $R = 0.994$ ), Parkinson's ( $R = 0.875$ ), multiple sclerosis ( $R = 0.828$ ), autism ( $R = 0.989$ ), inflammatory bowel disease ( $R = 0.938$ ), intestinal infections ( $R = 0.974$ ), end stage renal disease ( $R = 0.975$ ), acute kidney failure ( $R = 0.978$ ) cancers of the **thyroid** ( $R = 0.988$ ), **liver** ( $R = 0.960$ ), **bladder** ( $R = 0.981$ ), **pancreas** ( $R = 0.918$ ), **kidney** ( $R = 0.973$ ) and **myeloid leukaemia** ( $R = 0.878$ ).

The Pearson correlation coefficients are highly significant ( $< 10^{-4}$ ) between the percentage of GE corn and soy planted in the US and hypertension ( $R = 0.961$ ), stroke ( $R = 0.983$ ), diabetes prevalence ( $R = 0.983$ ), diabetes incidence ( $R = 0.955$ ), **obesity** ( $R = 0.962$ ), lipoprotein metabolism disorder ( $R = 0.955$ ), Alzheimer's ( $R = 0.937$ ), Parkinson's ( $R = 0.952$ ), multiple sclerosis ( $R = 0.876$ ), hepatitis C ( $R = 0.946$ ), end stage renal disease ( $R = 0.958$ ), acute kidney failure ( $R = 0.967$ ), cancers of the **thyroid** ( $R = 0.938$ ), **liver** ( $R = 0.911$ ), **bladder** ( $R = 0.945$ ), **pancreas** ( $R = 0.841$ ), **kidney** ( $R = 0.940$ ) and **myeloid leukaemia** ( $R = 0.889$ ). The significance and strength of the correlations show that the effects of glyphosate and GE crops on human health should be further investigated.

## The International Monsanto Tribunal and other Reports on pesticides

### Summary of the advisory opinion of the International Monsanto Tribunal<sup>64</sup>

Delivered on the 18<sup>th</sup> of April 2017 in The Hague, Netherlands

The International Monsanto Tribunal is a unique "Opinion Tribunal" convened by civil society to clarify the legal obligations and consequences of some of the activities of the Monsanto Company. In brief: the five judges of the Monsanto Tribunal agree that:

- **Monsanto has violated human rights to food, health, a healthy environment and the freedom indispensable for independent scientific research.**
- **'ecocide' should be recognized as a crime in international law.**
- **human rights and environmental laws are undermined by corporate-friendly trade and investment regulation.**

### UN Rapporteur: Report of the Special Rapporteur on the right to food: Pesticides are "global human rights concern" and UN experts urge new treaty

The United Nations received a [report](#) by the Special Rapporteur on the right to food, presented to the United Nations Human Rights Council, focused more narrowly on agricultural chemicals. The UN report states unequivocally that the storyline perpetuated by companies like Monsanto—the one that says we need pesticides to feed the world—is a myth. The Report presented to the UN human

<sup>63</sup> [http://www.organic-systems.org/journal/92/JOS\\_Volume-9\\_Number-2\\_Nov\\_2014-Swanson-et-al.pdf](http://www.organic-systems.org/journal/92/JOS_Volume-9_Number-2_Nov_2014-Swanson-et-al.pdf)

<sup>64</sup> [http://www.monsanto-tribunal.org/upload/asset\\_cache/1016160509.pdf](http://www.monsanto-tribunal.org/upload/asset_cache/1016160509.pdf)

rights council on 08/03/2017, is severely critical of the global corporations that manufacture pesticides, accusing them of the “*systematic denial of harms*”, “*aggressive, unethical marketing tactics*” and heavy lobbying of governments which has “*obstructed reforms and paralysed global pesticide restrictions*”.<sup>65</sup>

**GENEVA (7 March 2017)** – Two United Nations experts are calling for a comprehensive new global treaty to regulate and phase out the use of dangerous pesticides in farming and move towards sustainable agricultural practices. They say: “*excessive use of pesticides are very dangerous to human health, to the environment and it is misleading to claim they are vital to ensuring food security.*” Chronic exposure to pesticides has been linked to cancer, Alzheimer’s and Parkinson’s diseases, hormone disruption, developmental disorders and sterility. Farmers and agricultural workers, communities living near plantations, indigenous communities and pregnant women and children are particularly vulnerable to pesticide exposure and require special protections.

The experts warn that certain pesticides can persist in the environment for decades and pose a threat to the entire ecological system on which food production depends. The excessive use of pesticides contaminates soil and water sources, causing loss of biodiversity, destroying the natural enemies of pests, and reducing the nutritional value of food. The impact of such overuse also imposes staggering costs on national economies around the world.

The experts say the use of neonicotinoid pesticides is particularly worrying because they are accused of being responsible for a systematic collapse in the number of bees around the world. **For example, heavy use of these insecticides has been blamed for the 50 per cent decline over 25 years in honeybee populations in both the United States and the United Kingdom of Great Britain and Northern Ireland.** Such a collapse, they say, threatens the very basis of agriculture as 71% of crop species are bee-pollinated.

#### **UN Report statements on pregnant women and children**

*Para. 24. Children are most vulnerable to pesticide contamination, as their organs are still developing and, owing to their smaller size, they are exposed to a higher dose per unit of body weight; the levels and activity of key enzymes that detoxify pesticides are much lower in children than in adults. Health impacts linked to childhood exposure to pesticides include impaired intellectual development, adverse behavioural effects and other developmental abnormalities. Emerging research is revealing that exposure to even low levels of pesticides, for example through wind drift or residues on food, may be very damaging to children’s health, disrupting their mental and physiological growth and possibly leading to a lifetime of diseases and disorders.”*

#### **The Poison Papers Expose Decades of Collusion between Industry and Regulators over Hazardous Pesticides and Other Chemicals Center for Media and Democracy**

*“The Bioscience Resource Project and the Center for Media and Democracy today are releasing a trove of rediscovered and newly digitized chemical industry and regulatory agency documents stretching back to the 1920s. The documents are available at [PoisonPapers.org](http://PoisonPapers.org). Together, the papers show that both industry and regulators understood the extraordinary toxicity of many chemical products and worked together to conceal this information from the public and the press. These papers will transform our understanding of the hazards posed by certain chemicals on the market and the fraudulence of some of the regulatory processes relied upon to protect human health and the environment.”*

**The UN expert on Toxics Baskut Tuncak wrote in the *Guardian* on 06/11/2017: The EU and glyphosate: it's time to put children's health before pesticides**<sup>66</sup>

<sup>65</sup> <http://www.pan-uk.org/site/wp-content/uploads/United-Nations-Report-of-the-Special-Rapporteur-on-the-right-to-food.pdf>

<sup>66</sup> <https://www.theguardian.com/environment/2017/nov/06/the-eu-and-glyphosate-its-time-to-put-childrens->

*“Our children are growing up exposed to a toxic cocktail of weedkillers, insecticides, and fungicides. It’s on their food and in their water, **and it’s even doused over their parks and playgrounds.** The UN Convention on the Rights of the Child, the most ratified international human rights treaty in the world (only the US is not a party), makes it clear that states have an explicit obligation to protect children from exposure to toxic chemicals, from contaminated food and polluted water, and to ensure that every child can realise their right to the highest attainable standard of health. These and many other rights of the child are abused by the current pesticide regime. These chemicals are everywhere and they are invisible. The only way to protect citizens, especially those disproportionately at risk from exposure, is for governments to regulate them effectively, in large part by adhering to the highest standards of scientific integrity.”*

**Samsel and Seneff wrote paper IV on Glyphosate: Glyphosate, pathways to modern diseases IV: cancer and related pathologies**<sup>67</sup>

Anthony Samsel, with the help of his Senator, had been trying to get the secret long-term studies concealed by the US EPA under the FOI Act.<sup>68</sup> The Federal Agency finally supplied these documents (in excess of 100,000 pages) in 2015. Samsel concluded that: *“significant evidence of tumours was found during these investigations”*. A Monsanto scientist had claimed that glyphosate didn’t accumulate but was excreted unchanged from the body<sup>69</sup> and referred to the glyphosate re-assessment in Europe in 2002. However, Monsanto’s secret studies revealed otherwise.

In this paper Table 11 Page 127 shows the distribution and bioaccumulation of <sup>14</sup>C labelled glyphosate in blood, bone, organs and other tissues of Sprague Dawley rats. Residues were present in bone, marrow, blood and glands including the thyroid, testes and ovaries, as well as major organs, including the heart, liver, lungs, kidneys, spleen and stomach. The eye is included in this list. Stout, L.D. & Ruecker, F.A. Chronic study of glyphosate administered in feed to albino rats. Unpublished Study, Project No. MSL-10495. Monsanto Agricultural Company (2,175 pp.) EPA MRID 416438-01 (26 September 1990). *“In a long-term study conducted by Monsanto between 1987 and 1989 [15], glyphosate was found to induce a statistically significant (P < 0.05) cataractous lens formation, highest in male rats.”* Incidence and occurrence of ophthalmic degenerative lens changes by glyphosate. Table 9 Page 126: Data on unilateral and bilateral cataracts (all types) and Y-suture opacities, excluding “prominent Y suture”, following glyphosate exposure to rats.

**The increase in cataracts has been confirmed by epidemiological studies in England and by a 2016 WHO Report**

Annual rates of admission for cataract surgery in England rose 10-fold from 1968 to 2004: from 62 episodes per 100,000 population in 1968 to 637 in 2004.<sup>70</sup> A 2016 study by the WHO also confirmed that the incidence of cataracts had greatly increased:<sup>71</sup> ‘A global assessment of the burden of disease from environmental risks’ it says that cataracts are the leading cause of blindness worldwide. Globally, cataracts are responsible for 51% of blindness – an estimated 20 million individuals suffer from this degenerative eye disease.

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[health-before-pesticides](#)

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[https://www.academia.edu/17751562/Glyphosate\\_pathways\\_to\\_modern\\_diseases\\_IV\\_cancer\\_and\\_related\\_pathologies](https://www.academia.edu/17751562/Glyphosate_pathways_to_modern_diseases_IV_cancer_and_related_pathologies)

68 <http://gmwatch.org/en/news/latest-news/16515-monsanto-s-secret-studies-reveal-glyphosate-link-to-cancer>

69 <https://gmoanswers.com/ask/hi-does-senior-monsanto-scientist-dan-goldstein-still-maintain-if-ingested-glyphosate-excreted>

70 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1955650/>

71 [http://apps.who.int/iris/bitstream/10665/204585/1/9789241565196\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/204585/1/9789241565196_eng.pdf)

### **Multiomics reveal non-alcoholic fatty liver disease in rats following chronic exposure to an ultra-low dose of Roundup herbicide.<sup>72</sup>**

Overall, metabolome and proteome disturbances showed a substantial overlap with biomarkers of non-alcoholic fatty liver disease and its progression to steatohepatitis and thus confirm liver functional dysfunction resulting from chronic ultra-low dose Glyphosate-Based Herbicide (GBH) exposure. The study is the first ever to show a causative link between consumption of Roundup at a real-world environmentally relevant dose and a serious disease. NAFLD currently affects **25% of the US population** and **similar numbers of Europeans**. Risk factors include being overweight or obese, having diabetes, or having high cholesterol or high triglycerides (a constituent of body fat) in the blood. However, some people develop NAFLD even if they do not have any of these known risk factors.

### **Glyphosate, pathways to modern diseases III: Manganese, neurological diseases, and associated pathologies<sup>73</sup>**

**Abstract:** *Manganese (Mn) is an often overlooked but important nutrient, required in small amounts for multiple essential functions in the body. A recent study on cows fed genetically modified Roundup®-Ready feed revealed a severe depletion of serum Mn. Glyphosate, the active ingredient in Roundup®, has also been shown to severely deplete Mn levels in plants. Here, we investigate the impact of Mn on physiology, and its association with gut dysbiosis as well as neuropathologies such as autism, Alzheimer's disease (AD), depression, anxiety syndrome, Parkinson's disease (PD), and prion diseases. Glutamate overexpression in the brain in association with autism, AD, and other neurological diseases can be explained by Mn deficiency. Mn superoxide dismutase protects mitochondria from oxidative damage, and mitochondrial dysfunction is a key feature of autism and Alzheimer's. Chondroitin sulfate synthesis depends on Mn, and its deficiency leads to osteoporosis and osteomalacia. Lactobacillus, depleted in autism, depends critically on Mn for antioxidant protection. Lactobacillus probiotics can treat anxiety, which is a comorbidity of autism and chronic fatigue syndrome. Reduced gut Lactobacillus leads to overgrowth of the pathogen, Salmonella, which is resistant to glyphosate toxicity, and Mn plays a role here as well. Sperm motility depends on Mn, and this may partially explain increased rates of infertility and birth defects. We further reason that, under conditions of adequate Mn in the diet, glyphosate, through its disruption of bile acid homeostasis, ironically promotes toxic accumulation of Mn in the brainstem, leading to conditions such as PD and prion diseases.*

Roundup is associated with neurodegenerative disorders such as Dementia, Alzheimer's Disease, Parkinson's Disease, Motor Neurone Disease and Multiple Sclerosis.<sup>74</sup>

**A report by 'Children with Cancer UK' in 2016** said there were 1,300 more cases per year of cancers in children, particularly in young adults, compared with 1998. The medical correspondent from *The Telegraph* mentioned pesticides as a possible cause but a spokesperson from CRUK said there was no evidence of environmental factors, but the cancers could be caused by radiation or genetic factors. **Colon cancer** in young adults had risen by 200%; **thyroid cancer** doubled; **ovarian cancer** up by 70% and **cervical cancer** up by 50% since 1998.<sup>75</sup>

### **Declines in educational attainment in Britain over recent years**

The UK ratings have declined significantly in the Programme for International Student Assessment. PISA is a worldwide study by the Organisation for Economic Co-operation and Development (OECD) in member and non-member nations of 15-year-old school pupils' scholastic performance on

<sup>72</sup> <http://www.nature.com/articles/srep39328>

<sup>73</sup> [http://www.surgicalneurologyint.com/temp/SurgNeuroInt6145-4381109\\_121011.pdf](http://www.surgicalneurologyint.com/temp/SurgNeuroInt6145-4381109_121011.pdf)

<sup>74</sup> [http://people.csail.mit.edu/seneff/2018/Roundup\\_and\\_Neurodegenerative\\_Disorders\\_RosemaryMason.pdf](http://people.csail.mit.edu/seneff/2018/Roundup_and_Neurodegenerative_Disorders_RosemaryMason.pdf)

<sup>75</sup> <http://www.telegraph.co.uk/science/2016/09/03/modern-life-is-killing-our-children-cancer-rate-in-young-people/>

mathematics, science, and reading.<sup>76</sup> PISA was first performed in 2000 and then repeated every three years. It is done with a view to improving education policies and outcomes. It measures problem solving and cognition in daily life.

The UK is falling behind global rivals in international tests taken by 15-year-olds, failing to make the top 20 in mathematics, reading and science (3 December 2013). Although not directly comparable, because there have been different numbers of countries taking part, this marks a sustained decline, with the UK having ranked 4<sup>th</sup> in the tests taken in 2000.

In 2016 an OECD study showed that in England the young have lower basic skills than their counterparts in Europe.<sup>77</sup> But adults approaching retirement age (55-65-year-olds) in England compare reasonably well with their counterparts in other countries. The study says: *“The priority of priorities is therefore to improve the standard of basic schooling in England, improving both average and minimum standards (which are especially weak in England).”*

#### **UK Mortality rates from 2014 the highest for 50 years: they continue to rise<sup>78</sup>**

The period July 2014 to June 2015 saw an additional 39 074 deaths in England and Wales compared with the same period the previous year. While mortality rates fluctuate year-on-year, this was the largest rise for nearly 50 years and the higher rate of mortality has been maintained throughout 2016 and into 2017.

#### **Samsel gave Testimony to the California Environmental Protection Agency**

*“There are no safe levels of glyphosate. Glyphosate is a synthetic amino acid and analogue of our canonical amino acid glycine and participates in plant and animal biology.*

*One microgram of glyphosate technical acid (N-phosphonomethyl glycine) contains 3.561 trillion molecules each capable of integrating with a protein altering shape, folding and function.*

*I am a US scientist and hazardous chemicals materials consultant and expert on the subject of Glyphosate. I am one of few people to have received all of the Monsanto’s trade secret sealed studies on glyphosate from the US EPA. The federal agency supplied these documents in excess of 100,000 pages to me under the FOIA with special consideration for my research into this chemical. I now have six peer-reviewed papers on the subject of glyphosate and several more papers on the glyphosate in progress, a short list to some of these studies links are appended. The full series of peer-reviewed glyphosate papers may be found at ResearchGate in the author file under Anthony Samsel.*

Rosemary Mason  
26/04/2018

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<sup>76</sup> [http://www.cmec.ca/252/Programs-and-Initiatives/Assessment/Programme-for-International-Student-Assessment-\(PISA\)/PISA-2012/index.html](http://www.cmec.ca/252/Programs-and-Initiatives/Assessment/Programme-for-International-Student-Assessment-(PISA)/PISA-2012/index.html)

<sup>77</sup> <http://www.oecd.org/unitedkingdom/building-skills-for-all-review-of-england.pdf>

<sup>78</sup> <http://jech.bmj.com/content/71/11/1068>