

The Destructive Human Health and Environmental Impacts of Glyphosate Based Herbicide

UK government is currently pushing for the deregulation of genetically engineered crops. Reject Industry PR, Ban Glyphosate, Protect Public Health!

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On 9 April 2021, retired physician and health and environmental campaigner Dr Rosemary Mason wrote to the Danish Environmental Protection Agency (DEPA). She wanted to draw the agency’s attention to [the findings](#) that indicate the glyphosate-based herbicide Roundup causes high levels of mortality following contact exposure in bumble bees (glyphosate-formulated herbicides are the most widely used weedicides in agriculture across the globe).

This, Mason argued, has led to a decline of bumblebees in Denmark. She asked the agency why it had used “fraudulent science” on glyphosate from the European Commission and the European Chemicals Agency, which in turn take their ‘science’ from Monsanto/Bayer, rather than from the direct observations of The Danish Nature Agency.

Mason’s correspondence focused not only on the destructive environmental impacts of glyphosate but also on the devastating human health aspects.

In relation to sanctioning the continued use of glyphosate in Europe, Mason has previously noted that it was totally unacceptable, possibly negligent or even criminal, for the European Union to have allowed a group of plant scientists on the Standing Committee on Plants, Animals, Food and Feed (PAFF) – whose knowledge of human physiology was so lacking that they did not recognise that glyphosate has effects on humans – to make decisions that affect human health.

PAFF’s role was pivotal in the decision to re-licence the use of glyphosate in the EU in 2017.

To date, aside from the DEPA acknowledging receipt of Mason’s letter, there has been no response to the issues raised.

As a follow up, Mason has sent the latest insights to DEPA on the Monsanto-Bayer lawsuits in the US. Three cases brought by Lee Johnson, Edwin Hardeman and Alva and Alberta Pilliod have already gone to trial. In each case, the courts found that Roundup caused their cancers and that Monsanto hid the risks of its product.

Mason also forwarded information to Magnus Hennicke, the health minister, indicating the

role glyphosate plays in fuelling cancers and other diseases in Denmark. Minister for Food, Agriculture and Fishery Rasmus Prehn and Special Adviser Casper Steen Petersen also received copies of this information.

Their attention was drawn to the [Institute for Responsible Technology](#) claims that cancers caused by Roundup include non-Hodgkin's lymphoma, bone cancer, colon cancer, kidney cancer, liver cancer, melanoma, pancreatic cancer and thyroid cancer.

Mason also quoted Robert F. Kennedy Jr, the renowned environmental attorney, who [in 2018 talked of](#):

"... cascading scientific evidence [linking glyphosate](#) to a constellation of other injuries that have become prevalent since its introduction, including obesity, depression, Alzheimer's, ADHD, autism, multiple sclerosis, Parkinson's, kidney disease, and inflammatory bowel disease, brain, breast and prostate cancer, miscarriage, birth defects and declining sperm counts. Strong science suggests glyphosate is the culprit in the exploding epidemics of celiac disease, colitis, gluten sensitivities, diabetes and non-alcoholic liver cancer which, for the first time, is attacking children as young as 10."

Mason concluded her correspondence by saying:

"I will leave Prime Minister Mette Frederiksen (to whom I have also sent a copy) and other ministers to demand answers from the Danish Environmental Protection Agency. Are they or their relatives suffering from any of these diseases – Alzheimer's, Parkinson's, autism, diabetes, multiple sclerosis, etc? Until Roundup is eliminated from food and from drinking water, these conditions will continue to afflict us all. That means that farmers must stop using Roundup."

Rosemary Mason has been writing to officials in the UK and Europe about the effects of Roundup and other agrochemicals for over a decade, documenting the health and environmental impacts as well as the institutional corruption that has led to their continued use. Her many reports are littered with peer reviewed scientific literature to support her claims and can be accessed on the [academia.edu website](#).

New study

It seems that not a month goes by until some new paper or study appears and supports what Mason has been saying for a long time. For example, according to the [recent multiple author paper](#) 'In-depth comparative toxicogenomics and Roundup herbicides', glyphosate and Roundup changes gene function and causes DNA damage.

The research found that glyphosate and glyphosate-formulated herbicides activate mechanisms involved in cancer development, including DNA damage – and these effects occur at doses assumed by regulators to have no adverse effects. The study found that DNA damage was caused by oxidative stress, a destructive imbalance in the body that can cause a long list of diseases.

Writing on the [GMWatch website](#), Claire Robinson summarises the findings and the policy implications. She states that the findings, according to the EU's pesticide law, should result

in a ban on glyphosate and all its formulations.

The study was led by Dr Michael Antoniou and Dr Robin Mesnage at King's College London. It builds on the findings of a [previous study](#) by the same authors. In that study, the findings showed that glyphosate and Roundup, given at doses that regulators say are safe, result in gut microbiome disturbances and oxidative stress, with indications that the liver is affected and possibly [damaged](#).

In the new follow-up study, the researchers carried out some of the standard tests that regulators require the pesticide industry to conduct to gain market authorisation for their products – namely blood biochemistry and kidney and liver histopathology (microscopic examination of tissue).

They also carried out in-depth tests (molecular profiling) that are not demanded by regulators or typically carried out by the industry. In addition, the researchers undertook tests that can detect direct damage to DNA.

Robinson notes that, worryingly for public health, it was the non-standard molecular profiling tests that are not required by pesticide regulators that were most revealing.

Roundup was found to alter the expression of 96 genes in the liver specifically linked to DNA damage and oxidative stress as well as disruption of circadian rhythms or 'body clocks'. The findings strongly suggest that the key changes in gene function reflective of oxidative stress and DNA damage was due to glyphosate and not the additional substances (adjuvants) present in the Roundup formulation. Direct DNA damage to the liver was found to increase with glyphosate exposure.

Protect public health

Claire Robinson says that these findings potentially constitute a bombshell that could end the authorisation of glyphosate in the EU because the EU pesticide regulation (1107/2009) has what is known as hazard-based cut-off criteria.

She states:

"This means that if a pesticide active ingredient is shown to cause a certain type of harm to health at whatever dose, it must be banned. One of the named types of harm is damage to DNA. The discovery that glyphosate alone damages DNA in a living animal should, if regulators follow the law, result in a ban on glyphosate."

The study indicated that both glyphosate and its commercial formulation Roundup activate mechanisms involved in cancer development, causing gene expression changes reflecting oxidative stress and DNA damage.

The UK is currently pushing for the deregulation of genetically engineered crops and products and the non-regulation of genetically modified organisms (GMOs) derived from newer techniques like gene-editing. This in itself is worrying given the [scientific evidence](#) pointing to the health and ecological dangers associated with this technology.

At the same time, however, the government's proposed strategy would only further serve

the bottom line of the agrochemical companies while contributing to the ongoing public health crisis brought about by their products.

For instance, the recent paper '[Herbicide Resistance: Another Hot Agronomic Trait for Plant Genome Editing](#)' (in the peer reviewed journal 'Plants') says that, in spite of claims from GMO promoters that gene editing will reduce pesticide use, what we can expect is just more of the same – GMO herbicide-tolerant crops and increased herbicide use.

British Prime Minister Boris Johnson has stated that he wants to “liberate the UK’s extraordinary bioscience sector from anti-genetic modification rules”. The type of ‘liberation’ Johnson really means is the UK adopting unassessed GM crops and food and a continuation of the chemical bombardment of our food, environment and bodies.

It is time for Johnson to serve the public not the bottom line of the government’s corporate masters.

It is time for the EU to ‘follow the science’ and side-line industry influence.

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