Subject: Take independent science seriously when deciding on glyphosate

14 november 2023

Dear outgoing ministers Adema, Kuipers and members of the outgoing cabinet,

Dear ministers Clarinval, Borsus and Brouns,

Dear ministers Vandenbroucke, Crevits, Morreale and Maron,

Dear ministers Khattabi, Demir and Tellier,

Dear minsters,

On October 13, all member states in Europe voted on the renewal of the controversial weedkiller glyphosate. After repeated calls from the House of Representatives, scientists, civil society organizations and citizens to vote against, Minister Adema and Minister Clarinval abstained for respectively the Netherlands and Belgium. The EU vote did not provide clarity, so another vote will be held on Nov. 16. With this letter we, a group of 291 different disciplines, affiliated to universities and research institutes, make an urgent appeal to the cabinet, specifically to the outgoing ministers Adema and Kuipers, and ministers Clarinval, Vandenbroucke and Khattabi: take people's health and the protection of nature seriously. In your decision, weigh recent and independent scientific insights heavily, which have not been sufficiently considered in the glyphosate dossier currently before the European member states.

Include research from all scientific disciplines

Glyphosate is one of the most researched substances, but far from all existing research weighs into the European Food Safety Authority's (EFSA) assessment of glyphosate. Most of the research in the assessment dossier is funded and conducted by industry itself. Based on this assessment dossier, EFSA does identify many "data gaps," but no critical areas of concern[i]. However, the dossier is selective. Industry delayed the delivery of a relevant 2001 study showing harmfulness of a glyphosate variant on brain development such that there was no time to conduct further research[ii]. Important, independent, scientific studies are hardly included in risk assessment because they do not meet the requirements of industry studies.

An example is a study that showed that exposure to glyphosate in mice is associated with the death of nerve cells in the so-called black matter, the brain region responsible for Parkinson's disease symptoms[iii]. It is incomprehensible that such an extremely relevant study was not included in the dossier. Especially since such a crucial study, which looks specifically at damage in brain areas relevant to Parkinson's disease, is otherwise completely missing from the assessment file. As a result, serious effects and risks of glyphosate, which do surface in independent research, are not included in the risk assessment. And that while research shows that glyphosate is found everywhere in our living environment and the entire Dutch, Belgian and European population is thus exposed to this substance.

The health assessment framework is outdated

EFSA's assessment framework has serious deficiencies that lead to an underestimation of the negative effects and risks of glyphosate. For example, the current method used to arrive at an assessment is completely unsuitable for determining the relationship to a risk of Parkinson's disease. This is because it only looks at the visible effects on a test animal's motor function or behavior, but

these only arise at a late stage, when extensive damage has already occurred in the brain region relevant to Parkinson's. The possibility of less pronounced brain damage is completely missed in this way. This shortcoming has been recognized for years by international experts from independent research institutes. Meanwhile, EFSA itself also speaks of a knowledge gap in the assessment of agents in the field of Parkinson's and other neurodegenerative diseases, including Alzheimer's and ALS[iv]. This knowledge gap is in itself a sufficient reason not to simply renew glyphosate. On top of this, there is evidence in the literature that shows a so-called biologically plausible link between exposure to glyphosate and the risk of Parkinson's[v]. This obvious knowledge gap regarding the risk of Parkinson's and other neurodegenerative brain diseases should be explicitly identified as a "data gap" and included in EFSA's review framework.

The same goes for adverse effects on our lungs, our intestines and the alleged carcinogenicity of glyphosate. Again, EFSA indicates that there are no or insufficient good methods that can scientifically validly determine the direct relationship between glyphosate and disease, or that information in the dossier is lacking to properly assess the risk. Nevertheless, independent studies do indicate a potential carcinogenic effect of glyphosate[vi]. However, recent research showed that the European Chemicals Agency (ECHA) did not include in its assessment the oxidative stress - a recognized mechanism that can lead to cancer, among others - that glyphosate causes[vii]. Glyphosate was therefore incorrectly classified as not carcinogenic, and this was adopted by EFSA. Indications of deteriorated lung[viii] and intestinal health[ix] are also emerging from several studies, and behavioral changes[x] have also been reported in laboratory animals. These are alarming indications that increase the need for further thorough and independent research.

Furthermore, EFSA's models invariably underestimate human exposure to glyphosate. Only exposure by individual substance through food and water is included. Independent studies show that glyphosate adheres to dust particles, moving long distances and accumulates in house dust. This leads to exposure through the skin and respiration. The actual exposure is therefore greater than the methods used for assessment show[xi]. Research shows that glyphosate can be found in the feces of 70% of the participants in the European Pesticide Study[xii].

Biodiversity assessment framework falls short

For biodiversity, the assessment framework also falls short and not all aspects are examined. In the glyphosate dossier, EFSA reports that assessing effects on biodiversity is very complex and there are no harmonized methods for this. Yet no critical concern about biodiversity emerges from the risk assessment. This is serious since robust biodiversity is the basis of life. Glyphosate acts on plant protein formation, and therefore kills all plants. What is less known, and not part of the review framework, is that it kills fungi and bacteria via the same action. This takes place in the soil particularly in beneficial bacteria and fungi, causing the pathogenic species to prevail. Thus, the soil, as the basis of our nature and agricultural crops, is affected[xiii]. Residues of glyphosate may also affect the bacteria in people's lungs and intestinal flora. This can reduce resistance, increasing susceptibility to disease. It is also possible that such impairment of gut flora could lead to a cascade of neurodegenerative processes. These negative effects on the gut microbiome and overall health are also evident in independent studies of honeybees[xiv] and birds[xv]. For example, exposure to glyphosate can also lead to a decrease in egg production and lower egg hatching rates.

Studies always find multiple pesticide residues in water, soil, as well as in food, air, house dust and the human body. Studies show that certain combinations (of glyphosate with other substances) lead to higher toxicity than individual substances[xvi]. The possible amplifying effect of these so-called cocktails on health and biodiversity is missing from the review framework[xvii].

Urgent call

In short, the current assessment framework has serious shortcomings both for the determination of effects on human health and biodiversity. We are therefore of the opinion that it is not possible, with the current EFSA assessment framework, to determine whether glyphosate is safe. We call on the cabinet and specifically the outgoing ministers Adema and Kuipers, and the ministers Clarinval, Vandenbroucke and Khattabi, to heed the voice of concerned citizens and to let the insights from independent science weigh heavily in your decision and in future policy.

And in addition:

- Insist on an improved pesticide authorization procedure in Europe in which the mentioned shortcomings are taken into account. Make sufficient financial resources available for this in the Netherlands and in Belgium.

- Also free up resources for thorough research, both in the field of parkinson's disease and the effects on nature. If this research shows harmful effects, ensure that glyphosate is banned immediately.

- Direct that independent research on the effects on health and biodiversity be included in the risk assessment with sufficient weight.

- Accelerate the development of non-chemical alternatives and monitor and regulate the use of chemical-synthetic alternatives to ensure that there is no shift to more harmful alternatives (so- called regrettable substitution).

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246	Julien Péters	ULiege	Ecology	PhD student
247	Thierry Hance	UClouvain	Ecology and Biodiversity	Prof. Dr.
248	Nicolas Schtickzelle	UCLouvain	Ecology and Biodiversity	Prof. Dr.
249	Sara Denayer	UGent	Biology	Teaching assistant
250	Annemieke Verbeken	Universiteit Gent	Biology	Prof. Dr.
251	Koen Sabbe	Universiteit Gent	Biology	Prof. Dr.
252	Johan Michaux	Université de Liège	Biology	Prof. Dr.
253	Marc David	Universiteit Antwerpen	Toegepaste Wiskunde	Em. Prof.
254	Jeroen De Man	Universiteit Antwerpen	Public health	Dr.
255	Cas Jorissen	Universiteit Antwerpen	Biology	PhD student
256	Jana De Ridder	UGent	Biology	PhD student
257	Maja Mielke	UAntwerpen	Biology	PhD student
258	Adrien Delforge	ULiège	Ecology	Ir.

259	Jean-Claude Grégoire	Université libre de Bruxelles	Ecology	Em. Prof.
260	Nina Leclef	Uliège	Ecology	PhD student
261	Samuel Bouchoms	ULiège	Geography / Ecology	Dr.
262	Marie Patinet	Uliège	Ecology	Biologist
263	Jelle Demeestere	KU Leuven	Neurologie	Dr
264	Geert Vandensande	KU Leuven	Electromechanic Engineer	Ir.
265	Jürgen Magerman	UGent	Verpleegwetenschappen/Orthopedagogiek	PhD student
266	Justine Dewaele	UMONS	Ecotoxicology	PhD student
267	Lucie Rivière	Uliège	Ecology	Ir. PhD student
268	An Cliquet	UGent	Milieurecht	Prof. Dr.
269	Marius Buydens	UGent	Biology	PhD student
270	Bernard Feltz	UCLouvain	Philosophy of Biology	Emeritus Professor
271	Frederik De Laender	Université de Namur	Theoretical ecology	Prof. dr. ir.
272	Sara Reverte	UMONS	Ecology	Dr.
273	Els Laenens	UAntwerpen	Computer Science	prof.dr.
274	Iene Herman	UGent	Biology	PhD student
275	Marie-Stéphanie Samain	UGent	Biology	Visiting Professor
276	Wim Bert	UGent	Biology	Prof. dr.
277	Willem De Smet	Universiteit Antwerpen	biology	Prof. dr.
278	Tom Moens	UGent	Biologie, Mariene Ecologie	Prof. Dr.
279	Sandra Rousseau	KU Leuven	Environmental economics	Prof. Dr.
280	Ioanna Graviilidi	Universiteit Antwerpen	Biology	Dr.
281	Jonas Nicolaï	KU Leuven	Sociology	Dr.
282	Marc Van Orshoven	OLV Hospital/Aalst	Neuroloog	Dr.

283	Falk Mielke	Universiteit Antwerpen	Biology	PhD student
284	Alice Nieuwboer	KU Leuven	Revalidatiewetenschappen	Prof. Dr.
285	Marc Craps	KU Leuven	Duurzaam Ondernemen	Prof. Dr. (em.)
286	Nico Koedam	Em. VUB, affiliated UGent, UHasselt, ULB	Biology	Prof. Dr. (em.)
287	Alexander Mangold	Meteorologisch Instituut België	Atmospheric Chemistry and Physics	Dr.
288	Myriam Dumortier	UGent INBO	Ecology	Prof Dr ir
289	Barbara Van Dyck	Centre for Agroecology, Water and Resilience, CU	Agroecology	Prof dr ir
290	Goeyens Leo	VUB	Chemistry	Prof Dr Em
291	Els Du Bois	Universiteit Antwerpen	Ecodesign / product development	Prof. dr.

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