



Parkinson's disease

Brussels, 25-2-2022

Contact : Hans Muilerman

hans@pan-europe.info

tel. 0031655807255.

To: Ms. Kyriakides
European Commissioner for Health and Consumer Policy
European Commission
B-1049 Brussels.

Concerning: Neurotoxic effects of pesticides

Dear Ms. Kyriakides, In 2010 a study was published¹ that concluded: "A large body of experimental animal research on the neurotoxic effects of certain environmental chemicals provides evidence of a cascade of neurobehavioural effects including learning deficits, hyperactivity, anxiety, depression, lack of motivation, increased aggressiveness, altered maternal care and bonding, and an over-reaction to small stressors. For a number of years, scientific meetings and reports have recommended that assessing risk in chemical safety evaluations should include tests for developmental neurotoxicity (DNT) to uncover the potential of chemical substances to affect the developing brain. However, DNT testing has been required only in rare circumstances, and for some classes of neurotoxic pesticides. The role of developmental neurotoxicants as causative or contributory factors in children's learning and behavioural disorders warrants more attention in both research and policy".

Now, 12 years later, progress on protecting humans and the environment against the harms of neurotoxic pesticides is close to zero. Less than 10% of the pesticides have been tested only and our citizens put at risk by being exposed to potential neurotoxic pesticides. This is the more irresponsible since chronic neurologic diseases like Parkinson are observed in agricultural areas^{2,3} just as children's brain damage like autism, ADHD and other brain damage is a risk of pesticide exposure⁴. DNA changes could be involved, if you look at current scientific insights. Epigenetic dysregulation may induce the development of neurological disorders like Parkinson's disease, Huntington's

¹ Barbara McElgunn, The Developing Brain: A largely overlooked health endpoint in risk assessments for synthetic chemical substances, *International Journal of Disability, Development and Education*, Vol. 57, No. 3, September 2010, 315-330

² Sofiane Kab, Johan Spinosi, Laura Chaperon, Aline Dugravot, Archana Singh-Manoux, Frédéric Moisan, Agricultural activities and the incidence of Parkinson's disease in the general French population, *Eur J Epidemiol*, 2017 Mar;32(3):203-216, doi: 10.1007/s10654-017-0229-z. Epub 2017 Feb 9.

³ E Ray Dorsey, Todd Sherer, Michael S Okun Bastiaan R Bloem, The emerging evidence of the Parkinson pandemic, *J Parkinsons Dis* 2018;8(s1):S3-S8, doi: 10.3233/JPD-181474.

⁴ Robert B. Gunier, Asa Bradman, Kim G. Harley, Katherine Kogut, and Brenda Eskenazi, Prenatal Residential Proximity to Agricultural Pesticide Use and IQ in 7-Year-Old Children, *Environmental Health Perspectives* 057002-1, 2017, <https://doi.org/10.1289/EHP504>

disease, and mood disorders (including depression and anxiety). Growing evidence indicates that environmental neurotoxicants are involved in the development of various forms of neurodegenerative and neurological diseases through trigger epigenetic changes and inducing disruption of the epigenome⁵.

You are very well aware that France classified Parkinson's disease as an agriculture-related disease, while many citizens organisations in Europe ask for action. The first step should be to change the pesticide data requirements and include an obligation for every active substance to be tested for neurotoxicity. The current OECD testing guideline 426 is very well equipped to identify the harmful substances⁶ while including additional endpoints, based on current scientific insights, such as anxiety and behaviour could increase the reliability of the test.

We refer to the letter you received from the Netherlands on March 9, 2020⁷ to standardly require applicants of pesticide active substances to perform a chronic neurotoxicity test. Dutch RIVM published a report⁸ concluding that "There are indications that persons with a past history of working over a long period of time with chemical substances, such as growers who work with pesticides, are at greater risk of developing diseases that damage the nervous system (neurodegenerative diseases), such as Parkinson's disease and Alzheimer's disease" and "The data requirements for active ingredients in pesticides do not include standard information regarding the effects of these substances on the nervous system. The current testing guidelines also do not provide sufficient insight into whether a substance can cause small inconspicuous changes in the brain that can lead to diseases such as Parkinson's.", as well conclude to standardly include chronic neurotoxicity testing.

We urge you not to wait for non-animal testing strategies for neurotoxicity such as promoted by Food Authority EFSA⁹. These testing strategies could be a help in future but are by now far from ready for testing¹⁰. Additionally ideology is involved. Not for the first time EFSA embraces an external initiative that is supported by industry and industry-linked experts^{11, 12}. At the minimum you should never accept a strategy or method that not independently validated. A requirement that also counts for every OECD-test.

In your December 2020-letter¹³ a well-argued reaction to our proposal for updating the data requirements is missing. Claims like "The data requirements for pesticides already include the need for the consideration of immunotoxicity, endocrine

⁵ Guangxia Yu, Qianqian Su, Yao Chen, Lingyan Wu, Siying Wu and Huangyuan Li, Epigenetics in neurodegenerative disorders induced by pesticides, *Genes and Environment* (2021) 43:55.

⁶ Susan L. Makris, Kathleen Raffaele, Sandra Allen, Wayne J. Bowers, Ulla Hass, Enrico Alleva, Gemma Calamandrei, Larry Sheets, Patric Amcoff, Nathalie Delrue, and Kevin M. Crofton, A Retrospective Performance Assessment of the Developmental Neurotoxicity Study in Support of OECD Test Guideline 426, *Environmental Health Perspectives* • volume 117 | number 1 | January 2009

⁷ letter to Ms. Julicher, DGA-PAV / 20063866

⁸ H.Heusinkveld et al., Gewasbeschermingsmiddelen en neurodegeneratieve ziekten: mogelijkheden om de toelatingsvereisten te verbeteren, RIVM-briefrapport 2021-0153

⁹ <https://www.efsa.europa.eu/en/supporting/pub/en-1191>

¹⁰ See PAN Europe report, [PAN on AOP](#)

¹¹ The experts Wilks and Crofton worked in the past for industry lobby group ILSi while the expert Fritsche worked for CEFIC

¹² See Pan Europe report [EFSA, science or ideology](#)

¹³ Your letter dated December 17, 2020, SANTE/E4/ZK/df (2020) 8651048

disruption and developmental neurotoxicity. Even if not systematically required in all cases, there are triggers for when the relevant tests have to be provided, taking into account the properties of the substance”, are quite baseless. How do you know for the 90% + actives you did not require testing for neurotoxicity and still approved, that these effects will be absent? Effects can in many cases not be predicted from properties and this is especially the case for new actives, since industry will not provide them voluntarily and academics didn't have the chance to investigate the new chemicals.

Over and over again it is demonstrated that pesticides are on the market for decades based on the limited (and potentially biased) data from industry and it turns out that approval was a mistake. This was the case for Chlorpyrifos, in spite of warnings from scientists for many years, for Imidacloprid and the entire group of neonicotinoids (brain damage), for Mancozeb (carcinogen and endocrine disruptor) and we can continue listing these non-thoroughly tested pesticides for some time. It seems that the 'precautionary principle' is put upside down in the data requirements. No data creates access to the market.

We thus ask you to include, without delay, the standard requirement for chronic neurotoxicity testing in the pesticide data requirements, and require that every approved pesticide is tested in 3 years time, and not wait till a future reassessment. We are looking forward to receiving your (detailed) reaction to all the recommendations we made,

Sincerely yours,

A handwritten signature in black ink, appearing to be 'Hans Muilerman', written in a cursive style.

Hans Muilerman,

Pesticide Action Network, Brussels.