No safe dose for the unborn

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

Concerning: New research shows a safe toxin dose for the unborn does not exist.

Dear Ms Kyriakides,

New research by Gregor Kasprian et al.[1] reveals that consumption of alcohol even in low to moderate amounts during pregnancy can change the baby's brain structure and delay brain development. Fetal MRI scans were made of 24 fetuses with a known alcohol exposure. Seventeen out of the 24 mothers drank less than one alcoholic drink per week and still harm could be observed in the fetuses.
Alcohol consumption during pregnancy can expose the fetus to a group of conditions called fetal alcohol spectrum disorders. Babies born with fetal alcohol spectrum disorders could develop learning disabilities, behavioural problems or speech and language delays. Greatest changes were found in the brain region that has a big influence on language development during childhood. This research is in line with previous studies and reviews[2] that conclude that no amount of alcohol is without health concerns.

For decades alcohol industry has been trying to play down the harms of alcohol[3] or argue for 'responsible drinking'[4]. A glass of wine per day even would be beneficial. We now know that any (single) dose can cause harm for the unborn. Fortunately, these days, most pregnant women know they should not drink any alcohol during pregnancy.

But what about pesticide residues in food? And the exposure of the unborn to these residues[5]? A recent Swedish study[6] on 1874 pregnant women shows a relation between exposure to endocrine-disrupting chemicals and language delay – an early sign of risk for other neurodevelopmental problems such as cognitive deficits and neuropsychiatric disorders (such

[1]Gregor Kasprian, Marlene Stuempflen, Daniela Prayer, Benjamin Sigl., Mariana Schuette, and Sarah Glatter, Drinking during pregnancy changes baby's brain structure, Radiological Society of North America, Annual meeting November 2022. See https://www.eurekalert.org/news-releases/971414.
[2]https://www.npr.org/2018/08/24/641618937/no-amount-of-alcohol-is-good-for-your-health-global-study-claims
[3]https://eucam.info/2017/07/02/the-myths-of-the-alcohol-industry/ and https://movendi.ngo/news/2022/03/23/the-pitfalls-of-big-alcohol-being-at-the-policy-table-dutch-alcohol-industry-derails-efforts-to-prevent-reduce-alcohol-harm/
[4]Sally Casswell, Sarah Callinan, Surasak Chaiyasong, Pham Viet Cuong, Elena Kazantseva, Tsogzolmaa Bayandorj, Taisia Huckle , Karl Parker, Renee Railton, Martin Wall, How the alcohol industry relies on harmful use of alcohol and works to protect its profits, Drug Alcohol Rev. 2016 Nov;35(6):661-664.
[5]Note the presence of neonicotinoid insecticide residues in children cerebrospinal fluids: Multiple neonicotinoids in children's cerebro-spinal fluid, plasma, and urine. Laubscher *et al.* 2022.
[6]Caporale, N., Leemans, M., Birgersson, L., Germain, P.L., Cheroni, C., Borbély, G., Engdahl, E., Lindh, C., Bressan, R.B., Cavallo, F., Chorev, N.E., D'Agostino. G.A., Pollard, S.M., Rigoli, M.T., Tenderini, E., Tobon, A.L., Trattaro, S., Troglio, F., Zanella, M., Bergman, A., Damdimopoulo, P., Jönsson, M., Kiess, W., Kitraki, E., Kiviranta, H., Nånberg, E., Öberg, M., Rantakkoko, P., Rudén, C., Söder, O., Bornehag, C.- G., Demeneix, B., Fini, J.-B., Gennings, C., Rüegg, J., Sturve, J. and Testa, G. (2022) From cohorts to molecules: Adverse impacts of endocrine disrupting mixtures. *Science*, 375(6582): 8244.

as autism). Harm is already done to the unborn, at current 'low' doses, no matter existing Regulations to protect humans. Grandjean[7] came to similar conclusions studying 87 children. He points out: "… that prenatal exposure to pesticides—at levels not producing adverse health outcomes in the mother—can cause lasting adverse effects on brain development in children". Pesticide exposure therefore may contribute to a 'silent pandemic' of developmental neurotoxicity", according to Grandjean**.** A range of scientists holds that a threshold for safety for chemicals doesn't exist or is not observed[8] [9] [10] [11] [12]**.** Just like on alcohol: a safe dose of pesticides for the unborn does not exist.

The EU has an obligation to prevent pregnant women from exposure to toxics such as pesticides. As recognised by the Children Right Committee of the United Nations: "The care that women receive before, during and after their pregnancy has profound implications for the health and development of their children."[13].

Unfortunately, the current pesticide risk assessment will not capture the potential harms to the unborn. Top-level scientists (Benbrook et al.[14]) note that "*conventional pesticide risk assessment does not adequately consider the impacts of exposures in early fetal development when the timing of exposure may be as important, or even more important, than dose*". Research also shows[15] that the amount of toxic chemical linked with the development of a disease or death -which is central to determining "safe" or "hazardous" levels- is proportionately greater at the lowest dose of exposure.
In reality, we know little about low-dose toxicity and 'windows of susceptibility' for the unborn. The current high-dose OECD testing protocols applied for pesticides are not informative on the health effects on the unborn. WHO-UNEP[16] reminds: "The doses declared safe are not actually tested, nor are the mixtures". A lack of considerations on timing of exposure, a lack of low-dose testing, lack of relevant endpoints (brain damage), limitations on analysis sensitivity and outdated protocols create a false sense of safety. This leads to the conclusion that the most important and sensitive life stage is in fact not protected in pesticide approvals. This is a clear violation of Art. 4 of Regulation 1107/2009 that no harmful effects shall occur and that provides that approvals are based on "current scientific insights and knowledge".

Shouldn't we put the 'safe dose' theory for pesticide residues where it belongs, in the myth box? Given the lack of knowledge, the 'safe dose paradigm' is not more than that, an unproven assumption. This is especially the case for the unborn, the most sensitive stage of human development. As is the assumption that the many cocktails of pesticide residues the entire population is exposed to[17] are safe. Though it remains a convenient assumption for the pesticide industry for sure.

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[7]Raul Harari, Jordi Julvez, Katsuyuki Murata, Dana Barr,David C. Bellinger, Frodi Debes, and Philippe Grandjean, Neurobehavoral Deficits and Increased Blood Pressure in School-Age Children Prenatally Exposed to Pesticides, volume 118 | number 6 | June 2010 • Environmental Health Perspectives

[8]Edward J. Calabrese, John W. Staudenmayer, Edward J. Stanek III, and George R. Hoffmann, Hormesis Outperforms Threshold Model in National Cancer Institute Antitumor Drug Screening Database, TOxICOLOGICAL SCIENCES 94(2), 368–378 (2006)

[9]Daniel M. Sheehan, No-threshold dose–response curves for nongenotoxic chemicals: Findings and applications for risk assessment, Environmental Research 100 (2006) 93–99

[10]W. Slob, What is a Practical Threshold?, Toxicologic Pathology, 35:848–849, 2007.

[11]Anna Beronius och Annika Hanberg IMM, karolinska Institutet, kEMI, Sweden, 2013

[12]Conolly, R.B., Lutz, W.k., 2004. Nonmonotonic dose-response relationships: mechanistic basis, kinetic modeling, and implications for risk assessment. Toxicol Sci 77, 151-157.

[13]CRC General Comment no. 15: The right of the child to the enjoyment of the highest attainable standard of health, 2013. Available at http://www2.ohchr.org/english/bodies/crc/docs/GC/CRC-C-GC-15_en.doc

[14]Charles Benbrook , Melissa J. Perry, Fiorella Belpoggi, Philip J. Landrigan, Michelle Perro, Daniele Mandrioli, Michael N. Antoniou, Paul Winchester and Robin Mesnage, Commentary: Novel strategies and new tools to curtail the health effects of pesticides

[15]Lanphear BP (2017) Low-level toxicity of chemicals: No acceptable levels? PLoS Biol 15(12): e2003066. https://doi.org/10.1371/journal.pbio.2003066

[16]State of the Science of Endocrine Disrupting Chemicals 2012, Edited by Åke Bergman , Jerrold J. Heindel, Susan Jobling, karen A. kidd, R. Thomas Zoeller, WHO-UNEP.

[17]See PAN Europe letter to Commissioner Andriukaitis, 30-09-2019.

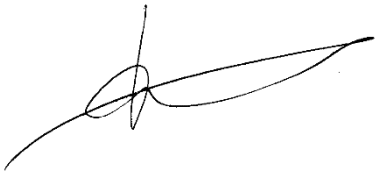
Also: why would the MRL for pesticide residues for baby food be set at the limit of detection, while pregnant women could eat food that is contaminated with several pesticides, including neurotoxic or suspected endocrine disruptor ones?

What we've seen is that the pesticide industry, just like the alcohol industry, is pushing very hard to argue for safe doses. Also by writing its own rules in pesticide guidelines[18] and by trying to get seats in EFSA panels[19]. At the minimum the precautionary principle should be applied: as long as good data are lacking on the risks for the unborn and serious risk of harm is likely, the unborn should not be exposed to pesticide residues. No contact, just like the classified pesticides that are part of the 'hazard approach'.

On top of avoiding smoking and drinking alcohol during pregnancy, a pregnant woman should also be prevented from being exposed to pesticide residues. We propose you draft a Regulation that provides that every food item that is produced with the help of pesticides shall have a label in every distribution centre and shop stating "**not suitable for pregnant woman**". This would in the short term be the best way to protect pregnant women and future children rights to "the highest attainable standard of health"[20] and to healthy food and water[21], as acknowledged by the United Nations.

We hope for your support and your reaction to help create a healthy future generation that is currently put at great risk.

Sincerely yours,



Hans Muilerman,
Pesticide Action Network, Brussels.

[18] Writing IOR
[19] EFSA, science or ideology?
[20] Children Right Convention (arts 6,191 24)
[21] Children Right Convention (art 24.2(c))