

No evidence for autistic disorder as a result of pesticide exposure in the womb

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The Federal Institute for Risk Assessment (BfR) has issued an opinion on the CHARGE study (Childhood Autism Risks from Genetics and Environment), which was published in the USA in 2014 and investigated possible connections between agricultural use of pesticides and neurological developmental disorders such as autism in children. In the opinion of the BfR, insufficient evidence exists for the conclusion of the study that the children of mothers living close to agricultural areas where pesticides are used have an increased risk of neurological developmental disorders.

The main flaw of the study is the fact that the actual degree of exposure is not known and cannot be sufficiently quantified, since the study investigated neither pesticide residues in the apartments and / or residential areas nor biochemical markers in the test persons. Exposure is also significantly influenced by the frequency of pesticide use as well as certain drift-relevant parameters such as wind direction and wind speed on the days of pesticide use. It appears that this information was not gathered or not considered in the analysis. Moreover, exposure to pesticides or other chemicals from non-agricultural applications was not taken into account.

The authors' conclusion is difficult to follow: from the data directly collected, no influence of the use of pesticides during pregnancy on the development of children can be inferred without weighting of the results. Indeed, the connection between pesticide exposure and neurological developmental disorders postulated by the authors is instead based on the second step of the study where, in weighting the statistical data, they took into consideration socioeconomic differences between case and test groups. Only after further revision of the data can an increase in neurological disorders be postulated in connection with the exposure to individual substances (e.g. to pyrethroids) . However, since the precise methodology applied in reweighting the statistical data is nowhere explained, the conclusion of the study is not comprehensible from a scientific point of view.

From a regulatory viewpoint, no direct implementable consequences arise from this study with regard to the use of pesticides in Germany. The reason for this is that the study contains considerable flaws both in terms of its execution and reporting. In particular, the reported diagnoses can be correlated neither with the exposure of pregnant women to pesticides in general nor with the exposure to individual active substances or formulations. As long as the listed weaknesses of the study are not addressed, it cannot provide the basis for any regulatory changes.

The full version of this BfR opinion is available in German on <http://www.bfr.bund.de/cm/343/kein-nachweis-fuer-autistische-stoerungen-in-folge-von-pestizidexposition-im-mutterleib.pdf>