

Children's low-level pesticide exposure and associations with autism and ADHD: a review

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Abstract

Pesticides are chemicals that are designed specifically for the purpose of killing or suppressing another living organism. Human toxicity is possible with any pesticide, and a growing body of literature has investigated possible associations with neurodevelopmental disorders. Attention deficit disorder with or without hyperactivity (ADHD) and autism spectrum disorder (ASD) are two of these specific disorders that have garnered particular interest. Exposure to toxic chemicals during critical windows of brain development is a biologically plausible mechanism. This review describes the basic laboratory science including controlled pesticide dosing experiments in animals that supports a mechanistic relationship in the development of ADHD and/or ASD. Epidemiological relationships are also described for low-level pesticide exposure and ADHD and/or ASD. The available evidence supports the hypothesis that pesticide exposure at levels that do not cause acute toxicity may be among the multifactorial causes of ADHD and ASD, though further study is needed, especially for some of the newer pesticides.