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Sommario/riassunto

Mounting evidence shows that increasing numbers of children are being diagnosed with neurodevelopmental disorders, and it is clear that this increase cannot be explained by genetic background alone. A number of studies, including epidemiological studies, have found an association between in-utero and childhood exposure to certain chemicals, such as endocrine disruptors, psychoactive pharmaceuticals, volatile organic chemicals, persistent organic compounds and heavy metals, and children's brain development. Yet, the mechanisms by which these chemicals impair brain development and function are not fully understood. In addition, little is known about how these chemicals enter and accumulate in the brain. Experimental approaches are essential to understand how those harmful chemicals enter children's brain and pose discrete effects on specific brain sites. These approaches include the following: improvement of technologies for the detection and measurement of neuroendocrinological and behavioral changes in animal models: development of analytical methods for the identification and quantification of chemicals and their metabolites in the brain; development of in vitro cell line assays; and imaging technologies to illustrate cellular functions. In this research topic, we collected articles that provide state-of-the-art science and technologies that can help us identify environmental chemicals that influence brain development. We also included articles that lead to a better understanding of the actions and dynamics of these chemicals.

The articles in this research topics supplied novel information about harmful endpoints of environmental chemicals. The reviews demonstrated the typical and novel interactions between environmental chemicals and the developing brain. We believe that these studies would lead to further understanding of neurodevelopmental disorders caused by environmental factors.