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EDITORIAL

Developmental neurotoxicity: the case of perfluoroalkylated compounds

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Due to the extremely high strength of the carbon-fluoride bond, perfluoroalkylated compounds tend to bioaccumulate in organisms. The knowledge concerning toxicity of PFCs, however, is limited. The nervous system appears to be particularly susceptible, especially when exposure occurs during development. In this issue of the Archives of Toxicology, Espen Mariussen gives a comprehensive review on mechanisms of action and environmental relevance of perfluoroalkylated compounds (Mariussen 2012; this issue). The author gives an overview of the available animal studies that suggest perfluoroalkylated compounds may cause neurobehavioral effects. There is only limited knowledge regarding the responsible mechanisms. In this context, it seems to be relevant that perfluoroalkylated compounds affect protein kinase C signalling that is known as a key factor of cell migration (Stewart et al. 2012), a process of particular relevance during the development of the nervous system.

Neurotoxicity (Takahashi et al. 2011; Nakamura et al. 2011; Li et al. 2011; Sriram et al. 2010; Liu et al. 2010) as well as developmental neurotoxicity (Pamies et al. 2010; Frimat et al. 2010; Hardelauf et al. 2011; Kadereit et al. 2012; Kuegler et al. 2010; Hartung et al. 2011) represent cutting-edge topics in toxicology, reflected by the particularly high number of articles in this field. However, little has been published discussing the neurotoxicity of perfluoroalkylated compounds, although they are still widely used in pesticides, paints, clothes treatment, fire-fighting foams, carpets and leather products. The editors are pleased that Espen Mariussen will, therefore, address this topic with a particular focus on PFC concentrations in humans and animals, neurobehavioral studies and mechanisms of action. The review is highly recommended to anyone interested in developmental neurotoxicity.

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