



Photodegradation of organophosphorus pesticides in water, ice and snow

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Organophosphorus pesticides (OPs) represent more polar compounds with better water solubility and higher degradation rates than organochlorine pesticides, which makes them attractive for a wide application in the agriculture. A fact, that they have been detected in the polar regions, suggests that even though they can be degraded, they still belong to the group of compounds capable of long-range transport. In the cold regions, snow and ice affect the processes of OPs deposition, accumulation and transformation and they can significantly alter their life-times, degradation and elimination rates. However, our knowledge on photodegradation processes of OPs in the matrices of ice and snow is still very limited.

This study is focused on the photochemical behaviour of fenitrothion and methyl-parathion as two currently used organophosphorus pesticides. Methyl-parathion is one of the most extensively applied pesticides and both, methyl-parathion and fenitrothion are susceptible to a direct photolysis. Photodegradation is considered to be an important transformation process for both, but the mechanism of degradation in the cold environments has not been studied yet. Filling this gap is crucial for an enhancement of our understanding to the fate of the organic compounds in pristine arctic environments.