
Ecotoxicology of Rare Earth Elements (REE) in freshwater systems: behaviour and biological effects

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Rare Earth Elements (REE) are essential to produce efficient permanent magnet used in high-technology. Their increasing production and use have led to the release of anthropogenic REE in the environment including aquatic systems. However, little is known about the ecotoxicology of REE, particularly in complex systems. To understand better the behaviour and biological effects of REE, we conducted two ecotoxicological assays which aim to study the capacity of REE to inhibit the mobility of the crustacean *Daphnia magna* (ISO 6341, 2012) and the growth of the green microalga *Raphidocelis subcapitata* (ISO 8692, 2012). We test three REE: neodymium (Nd), gadolinium (Gd) and ytterbium (Yb) alone and in mixture. The assays were performed in absence and presence of dissolved organic matter (DOM: 8 mg/L of dissolved organic carbon including 6.8 mg/L fulvic acid). First results on *D. magna* show similar effective concentration (EC_x) of mobility inhibition for Nd, Gd and Yb, which suggests a similar toxicity pattern among all REE. The presence of DOM tends to decrease the toxicity of REE. This result was probably caused by the complexation of REE (trivalent metals).