

PHYTOTOXICITY OF GREEN STABILISED MICRO-IRON USED FOR GROUNDWATER REMEDIATION

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Treatment with granular, micro- (mFe), and nano-sized (nFe) iron showed to remove several inorganic and organic pollutants. Recently, there has been a turnaround from nFe to mFe: mFe is cheaper than nFe (i.e. 10 €/kg for mFe compared to 100 €/kg) forming less agglomerates. We reported about the potential environmental impacts of mFe considering phytotoxicity effects on four types of iron powders: A (? 600 µm particle size (ps)), B and C (? 250 µm ps) and D (? 50 µm ps). Three macrophytes (*Lepidium sativum*, *Sinapis alba* and *Sorghum saccharatum*) were investigated (OECD, 2006) (seed germination, seedling elongation, germination index and biomass inhibition) exposing organisms to 20 g/L of each mFe stabilised in 2 g/L of Guar gum (GG) in deionized water (GGmFe), spiked with Cd (CdCl₂) (1-100 mg/L). Considering real concentrations, preliminary results indicated: i) no adverse effects on *L. sativum* and *S. saccharatum* versus all GGmFe; *S. alba* showed toxicity versus C and D GGmFe; ii) biostimulation was observed in *S. saccharatum* versus all GGmFe and *L. sativum* only versus C GGmFe; iv) mFe seemed to reduce Cd effects in all sample, but with a different efficiency: C > D > A = B; v) the presence of GG seemed to increase bioavailability of Cd.