Bio-particles for chromium remova



Green iron-based particles for Cr(VI) removal & ecotoxicological bioassays



Green-bio synthesis of supported iron-based particles (BioFe-MMT) Toxicity/safety of BioFe-MMT, treated Cr(VI) solutions and adsorbent after Cr(VI) removal



BioFe-MMT

Synthesis & characterization

- Bacteria consortium isolated from Delta del Paraná wetland
- Montmorillonite (MMT) clay as supporting material





R. Arenarum larvae exposed to :

$\Box Cr(VI)$ solutions **BioFe-MMT** suspensions BioFe-MMT after Cr(VI) removal (Cr-BioFe-MMT) Supernational obtained after treatment (R-S) □ Negative control (AMPHITOX)







Chromium removal results



✓ MMT removes Cr(VI) and Cr(III) by adsorption ✓ BioFe-MMT removes Cr by reduction + adsorption

Main results

R. Arenarum larvae at 96 h of exposure to:



Control



10 mg L⁻¹ Cr(VI) solution





✓ Optimal Cr_{tot} removal (97 %) after 10 min reaction by BioFe-MMT (2.4 g L⁻¹) from $[Cr(VI)]_0 = 10 \text{ mg L}^{-1}$

 \checkmark O₂ does not interfere with the Cr removal





Low-cost + green Fe-based particles remove Cr(VI) removal



BioFe-MMT and the supernatant obtained after Cr(VI) solution treatment resulted not toxic

BioFe-MMT is potentially suitable for the remediation of Cr(VI) from water



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