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Nano/bio treatment of polychlorinated biphenyls with evaluation of comparative toxicity

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Abstract

The persistence of polychlorinated biphenyl (PCB) Aroclor 1248 in soils and sediments is a major concern because of its toxicity and presence at high concentrations. In this study, we developed an integrated remediation system for PCBs using chemical catalysis and biodegradation. The dechlorination of Aroclor 1248 was achieved by treatment with bimetallic nanoparticles Pd/nFe under anoxic conditions. Among the 32 PCB congeners of Aroclor 1248 examined, our process dechlorinated 99%, 92%, 84%, and 28% of tri-, tetra-, penta-, and hexachlorinated biphenyls, respectively. The resulting biphenyl was biodegraded rapidly by

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