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Remediation of soils polluted with lindane using surfactant-aided soil washing and electrochemical oxidation

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Highlights

- Lindane can be drained from soil by SASW using high surfactant/soil ratios
- Quality of the effluent of SASW depends strongly on the surfactant/soil ratio
- Lindane can be oxidized from SASW wastes by electrolysis with diamond anodes
- SDS is oxidized more slowly than lindane opening the possibility of re-use of the SWF

Abstract

In this work the complete treatment of soil spiked with lindane is studied using surfactant-aided soil-washing (SASW) to exhaust lindane from soil and electrolysis with diamond anodes to mineralize lindane from the soil washing fluid (SWF) waste. Results demonstrated that this technological approach is efficient and allow to remove this hazardous pollutant from soil. They also pointed out the significance of the ratio surfactant/soil in the efficiency of the SASW process and in the performance of the later electrolysis used to mineralize the pollutant. Larger values of this parameter lead to effluents that undergo a very efficient treatment which allows the depletion of lindane for applied charges lower than 15 Ah L^{-1} and the recovery of more than 70 % of the surfactant for the regeneration of the SWF.

Keywords

Surfactant-aided; soil washing; lindane; electrolysis; diamond

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