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An Evaluation of Formic Acid as an Electron Donor For Palladium Catalyzed Destruction of Nitroaromatic Compounds

By Mark R. Stevens

Biblioscholar Nov 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x11 mm. This item is printed on demand - Print on Demand Neuware - The Department of Defense is responsible for over 2,000 hazardous waste sites containing nitroaromatic compounds (NACs) such as 2,4,6-TNT, 2,4- and 2,6-DNT that resulted from the production and use of munitions throughout the nation and world. NACs are typically persistent in natural environments, though they can be oxidized or reduced under engineered conditions. NACs and their reduction products are toxic chemicals and suspected human carcinogens. Both TNT and 2,4-DNT are listed as priority pollutants by the U.S. EPA. This study investigates the effectiveness of using a palladium (Pd) catalyst in concert with formic acid as an electron donor to reduce NACs. If the reduction reaction is rapid and complete, without producing hazardous daughter products, the process may have application as an in situ treatment technology to remediate NAC-contaminated groundwater. In this study, formic acid was added into NAC-contaminated water flowing through a laboratory column filled with Pd catalyst. Experimental results using 2,4-DNT as a model NAC indicate reduction rates are dependent on pH, formic acid concentrations, and NAC concentrations. 188 pp. Englisch.



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