

Assessment of aerobic and anaerobic stabilization for biological waste sludges from leather and textile industries

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ABSTRACT

Sludges from wastewater treatment plants are considered hazardous waste unless they are adequately stabilized to decrease total and dissolved organic carbon (TOC and DOC) concentrations below the standards for disposal of wastes into landfills. There are several methods to define stabilized sludge such as specific volatile suspended solids (VSS) load or leveling off of the VSS concentration. However, evaluation of sludge stabilization may not be as straightforward as these methods suggest. In this study, aerobic and anaerobic stabilization were applied to industrial sludges from two different industries (i.e., leather and textile) to decrease organic content of the sludges below hazardous waste levels. Aerobic sludge treatment provided better organics removals compared to anaerobic sludge treatment for leather industry with a VSS removal of 38% and a TOC removal of 65%. For textile industry, both aerobic and anaerobic treatment resulted in similar decreases in VSS (~50%) and TOC (~60%) concentrations. Although aerobic sludge stabilization was established after approximately 30 days for both leather and textile industries, as suggested by specific VSS loads, organic content of stabilized sludges did not decrease sufficiently to comply with the TOC/DOC standards for landfill disposal and stabilized sludges are still classified as hazardous waste.

Keywords: Hazardous waste; Industrial wastewater; Sludge stabilization; Specific VSS load

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