

炭化汚泥による脱臭剤利用の検討

堀尾明宏^{*1}, 奥村訓章^{*2}, 武川哲祐^{*2}
中西元志^{*1}, 梶川正勝^{*1, *3}

- *1 財団法人岐阜県環境管理技術センター
- *2 岐阜県環境整備事業協同組合
- (*3 現・岐阜県保健環境研究所)

概 要

下水処理から発生する脱水汚泥は、保管、運搬及び処理等の工程時に容易に悪臭を発生することから、悪臭対策が課題になる。そこで、炭化汚泥の脱臭剤としての有効利用性を検討するために、汚泥処理過程を想定した脱臭効果の室内実験を行った。評価対象にした悪臭物質は、下水処理で代表される H_2S (硫化水素), MM (メチルメルカプタン), DMS (硫化メチル), DMDS (二硫化メチル), NH_3 (アンモニア)の5項目とした。実験に用いた2施設の脱水汚泥からは、MM, DMS, DMDSのS系の悪臭物質やN系の NH_3 の発生が認められたが、性状や凝集剤の違いから、臭気の発生状況は異なった。臭気袋内に脱水汚泥を入れ、その中に一定量の炭化汚泥を添加し1週間実験したところ、 H_2S , MM, DMDSが低減され、脱臭効果が認められた。種々の条件で炭化汚泥を添加し、脱臭効果の比較実験を行ったところ、MM, DMDSで臭気の発生を抑えることができたが、 NH_3 , DMSでやや劣る結果となった。閾希釈倍数による比較からDMSの抑制が今後の課題といえる。炭化汚泥を充填剤とした脱臭効果の比較実験では、S施設の炭化汚泥が活性炭よりやや劣るものの、高い脱臭性能を有した。

キーワード

炭化汚泥, MM, DMS, DMDS, NH_3 , 閾希釈倍数

A study on carbonized sludge for deodorization of dehydrated sludge

Akihiro Horio^{*1}, Noriaki Okumura^{*2}, Tetuhiro Takekawa^{*2}, Motoshi Nakanishi^{*1}, Masakatu Kajikawa^{*3}

*1 Gifu Prefectural Environmental Conservation Center

*2 Gifu Prefectural Environmental Cooperative

*3 Gifu Prefectural Research Institute for Health and Environmental Sciences

Abstract

Dehydrated sewage sludge generated in wastewater treatment usually gives off offensive odors in the process of storage, transportation and disposal. To resolve this problem, the sewage sludge was carbonized, and the effectiveness of the carbonized sludge for deodorization was examined experimentally. The measurement items for investigation were the 5 items of MM(Methyl mercaptan), DMS(Dimethyl sulfide) and DMDS (Dimethyl disulfide), and NH₃ as a typical odors offensive odor substances in sewerage treatment. Sulfur-based odor substances, such as MM, DMS,DMDS and NH₃ were detected from the dehydrated sludge of two facilities (S-facility and N-facility).However, the situation of offensive odor concentrations of the two kinds of sludges were found to be quite different from each other by the deference of properties of the dehydrated sludge and the flocculant.H₂S, MM and DMDS were reduced in the experiments of putting carbonized sludge with the dehydrated sludge in a plastic bag for a week. It was found that carbonized sludge has a significant effect on decreasing MM and DMDS, when putting it with the dehydrated sludge in a plastic bag under the various conditions (A static adsorption experiments).However, the effect was less remarkable for NH₃ and DMS. As carbonized sludge was found to have little effect on decreasing DMS in a series of experiments by comparing the dilution ratio by threshold, how to decreasing DMS remains an issue. In a comparison experiments of deodorization effect of the dehydrated sludge that was used as filling material(A dynamic adsorption experiments),The carbonized sludge of S-facility was found to have high deodorizing functions, which seems to be slightly inferior to that of activated carbon.

Keywords

Carbonized sludge, MM, DMS, DMDS, NH₃, dilution ratio by threshold