

Special Issue on Sewage Sludge: Latest Advances and Prospects

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1. Introduction

To solve problems about sewage sludge production, management and minimization, research plays an essential role. It is estimated that the rapid growth of the world population will lead to an increase in the treatment of wastewater and the production of sewage sludge. The question concerning the management of sewage sludge produced in wastewater treatment plants is also becoming increasingly important due to the evolution of legislation which imposes greater attention to the minimization of the production and the recovery of the resources contained therein.

This Special Issue aims to collect up-to-date papers that explore the latest advances and prospects for sewage sludge. Potential topics included but were not limited to the following: chemical–physical and microbiological characterization; treatments and valorization; advanced processes; minimization; options for reuse; technical and application solutions; contaminants of emerging concern; and modeling.

In total, six works (all research papers) have been collected in this Special Issue. The main topics covered by the published works are: sludge as an alternative adsorbent, sludge quality and management, rheological properties of sludge, advanced treatments for sludge minimization, and sludge pollutants.

2. Contributions

Seo et al. [1] explored the potential use of sewage sludge as a biosorbent for the removal of various metals and metalloids from polluted wastewater highlighting the adsorption capacity of rod-shaped chitosan-immobilized sludge with respect to anions and cations.

Domini et al. [2] developed a methodology to extract and analyze quantitative data on sewage sludge production and management in order to assist and guide decision-makers in developing future strategies for the management of sewage sludge at a regional level.

Collivignarelli et al. [3] focused on the thermophilic biological process and the monitoring of a full-scale plant. Moreover, models to predict the load of fed pollutants and performances and an in-depth investigation of nitrogen transformations in the thermophilic biological reactor were reported.

Collivignarelli et al. [4] evaluated the influence of diverse non-volatile media on the rheological properties and the thixotropic behaviour of thermophilic biological sludge. In the study, they separately added calcium carbonate, sand, and sodium bentonite to the sludge in order to evaluate the effect of concentration and of the type of non-volatile solids.

Facchini et al. [5] proposed a decision model to identify the most effective sludge management strategy in economic terms identifying the suitable sewage sludge treatment based on multiple factors.

Considering that wastewater, sewage sludge, manures, and slurries represent the major route for antibiotic spread into soils and environment, Cela-Dablanca [6] studied the adsorption and desorption of the antibiotic cefuroxime in several agricultural and forest soils.

Despite submissions for this Special Issue having been closed, more in-depth research in the field of water, air, and waste management and treatment are needed to address the main problems that we are currently facing.



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