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Μεταπτυχιακή διατριβή

*EVALUATION OF PATHOGENIC
MICROORGANISMS PRESENCE IN DEWATERED
ANAEROBIC SLUDGE OF DIFFERENT
TREATMENTS AT ACIDIC pH VALUES*

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Πνευματικά δικαιώματα

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ABSTRACT

The purpose of this Thesis is to identify and to enumerate the pathogens microorganisms in dewatered anaerobic sludge before and after treatment under low pH from the Moni WWTP. The monitoring of the uptake of phosphorous from dewatered anaerobic sludge and effect of different conditions of low pH values on microorganisms. : a) *Acidithiobacillus ferrooxidans* b) *Leptospirillum ferriphilum*, c) mix acidophilic heterotrophic microorganisms initially inoculated with pregnant leach solutions (pls) and with *Acidocella species*. Evaluate the methods and determine the impact of these methods on the bacterial presence.

This study aims to highlight a critical environmental issue that is the management of sludge from urban waste water treatment plants. In recent years, this issue appears to be of great concern to the global community, due to both the increasing amount of sludge produced and the stricter disposal criteria imposed by legislation. The risk of pathogen transmission from sewage sludge into human, animal or plant receptors continues to be a major concern to the public, which has been reflected in individual country regulations and codes of practice, and in the significant reduction or complete elimination of agricultural use of sewage sludge in some countries in the EU.

The purpose of disposing of sludge to the soil is to secure its return to the natural environment. All kinds of sludge (wet, semi-solid, solid and dried sludge) can be applied to the soil. However, use of any kind implies practical constraints on storage, transportation and application method.

In this research the main routes of sewage sludge disposal are going to be highlighted and discussed. Also the usage of sludge in the EU countries is outlined and especially in Cyprus. The pathogens of main concern and minor concern that are present in sewage sludge and what parameters affect their survival are presented. The ways that sludge is treated or could be treated in order to achieve stabilization and microbial content reduction. General approaches controlling pathogen in sewage sludge are given.

The last part presents and analyzes the results obtained in all experiments. Furthermore the conclusions drawn from the experimental results of this thesis are presented and finally suggestions for future research are being provided.

Keywords: Pathogenic bacteria, *Salmonella spp.*, Sewage sludge, sludge treatment, stabilization, bioleaching