



# Solar drying in sludge management in Turkey

Nezih Kamil Salihoglu\*, Vedat Pinarli, Guray Salihoglu

*Faculty of Engineering & Architecture, Environmental Engineering Department, Uludag University,  
16059, Bursa, Turkey*

Received 30 April 2006; accepted 2 August 2006  
Available online 17 November 2006

---

## Abstract

Two main wastewater treatment plants in Bursa city in Turkey will start to operate and produce at least 27,000 tons of dry solids per year by the end of 2006. The purpose of this study was to investigate an economical solution to the sludge management problem that Bursa city would encounter. The general trend in Turkey is mechanical dewatering to obtain a dry solid (DS) content of 20%, and liming the mechanically dewatered sludge to reach the legal landfilling requirement, 35% DS content. This study recommends limited liming & solar drying as an alternative to only-liming the mechanically dewatered sludge. Open and covered solar sludge drying plants were constructed in pilot scale for experimental purposes. Dry solids and climatic conditions were constantly measured. Faecal coliform reduction was also monitored. The specially designed covered solar drying plant proved to be more efficient than the open plant in terms of drying and faecal coliform reduction. It was found that, if the limited liming & solar drying method was applied after mechanical dewatering instead of only-liming method, the total amount of the sludge to be disposed would be reduced by approximately 40%. This would lead to a reduction in the transportation, handling, and landfilling costs. The covered drying system would amortize itself in 4 years.  
© 2006 Elsevier Ltd. All rights reserved.

*Keywords:* Sludge management; Solar drying; Greenhouse; Net present value

---

## 1. Introduction

Sludge disposal is an indispensable part of waste management. Sludge originates as an unavoidable waste product from the treatment process of wastewater. Due to the large

---

\*Corresponding author. Tel.: +90 224 4428177; fax: +90 224 4429148.

*E-mail addresses:* [nkamils@uludag.edu.tr](mailto:nkamils@uludag.edu.tr) (N. Kamil Salihoglu), [pinarli@uludag.edu.tr](mailto:pinarli@uludag.edu.tr) (V. Pinarli), [gurays@uludag.edu.tr](mailto:gurays@uludag.edu.tr) (G. Salihoglu).