

## Studies on the Use of Sewage Sludge in Agriculture or in Incinerators

**Authors :** Catalina Iticescu, Lucian Georgescu, Mihaela Timofti, Dumitru Dima, Gabriel Murariu

**Abstract :** The amounts of sludge resulting from the treatment of domestic and industrial wastewater can create serious environmental problems if no solutions are found to eliminate them. At present, the predominant method of sewage sludge disposal is to store and use them in agricultural applications. The sewage sludge has fertilizer properties and can be used to enrich agricultural soils due to the nutrient content. In addition to plant growth (nitrogen and phosphorus), the sludge also contains heavy metals in varying amounts. An increasingly used method is the incineration of sludge. Thermal processes can be used to convert large amounts of sludge into useful energy. The sewage sludge analyzed for the present paper was extracted from the Wastewater Treatment Station (WWTP) Galati, Romania. The physico-chemical parameters determined were: pH (upH), nutrients and heavy metals. The determination methods were electrochemical, spectrophotometric and energy dispersive X-ray analyses (EDX). The results of the tests made on the content of nutrients in the sewage sludge have shown that existing nutrients can be used to increase the fertility of agricultural soils. The conclusion reached was that these sludge can be safely used on agricultural land and with good agricultural productivity results. To be able to use sewage sludge as a fuel, we need to know its calorific values. For wet sludge, the caloric power is low, while for dry sludge it is high. Higher calorific value and lower calorific value are determined only for dry solids. The apparatus used to determine the calorific power was a Parr 6755 Solution Calorimeter Calorimeter (Parr Instrument Company USA 2010 model). The calorific capacities for the studied sludge indicate that they can be used successfully in incinerators. Mixed with coal, they can also be used to produce electricity. The advantages are: it reduces the cost of obtaining electricity and considerably reduces the amount of sewage sludge.

**Keywords :** agriculture, incinerators, properties, sewage sludge

**Conference Title :** ICSRD 2020 : International Conference on Scientific Research and Development

**Conference Location :** Chicago, United States

**Conference Dates :** December 12-13, 2020