DESCRIPTION FOR THE GENERAL PUBLIC

Sewage sludge coming from municipal wastewater treatment plants is widely used in agriculture as well as in remediation of contaminated land. Current legislation specifies conditions of its use for these purposes. The main factor is the content of contaminants, mainly heavy metals. If it exceeds the threshold defined by legislation, biosolids can be applied neither on arable land nor for remediation purpose. Large part of the sewage sludge does not meet the those thresholds and cannot be used on soil. There is a growing pressure for incineration of such waste but it creates other problems with dewatering the sludge and even more toxic ash remaining after the incineration. Author of this project supposes, that large amount of the sludge, that according to the current legislation is contaminated, could be utilized at least for remediation of contaminated land after some pretreatment and thus save the cost of dewatering and incineration and mitigate the problem on contaminated soils. Simultaneously, waterworks companies and drinking water treatment stations produce some amount of drinking water treatment residues (WTR). It is a safe by-product of potable water treatment that is considered waste. The quantities of that production in Poland are virtually unknown but due to the high sorption properties it can be valuable material in pretreating of the sewage sludge with elevated levels of heavy metals. This project aims at demonstration that sewage sludge with elevated levels of heavy metals can be safely utilized for remediation of contaminated soil after the pretreatment with WTR for immobilization and neutralization of contained heavy metals. The project involve the recognition of quantity, quality and current utilization of WTR in Poland. The survey questionnaire will be send to drinking water treatment plants and waterworks companies to assess the production of WTR. Then, physical and chemical analysis of produced WTR will be conducted, with special regard to ability to immobilize and neutralize heavy metals. Then the most appropriate WTR will be selected for the tests on sewage sludge pretreatment. The optimal dose of WTR and optimal time for pretreatment will be evaluated experimentally. Finally, the pot experiment with contaminated soils and pretreated sludge will be conducted to demonstrate the positive effect of sewage sludge pretreated with WTR. The series of chemical analysis of soil and plants from the pot experiment will be then conducted to revel the process of immobilizing heavy metals, positive influence of sludge on polluted soil and lack of negative effect such as increasing of toxicity for living organisms. At the end mathematical and statistical analysis will collate all data acquired during the project.