



Czech University of Life Sciences Prague

**Faculty of Agrobiology,
Food and Natural Resources**

Study programme: **Exploitation and Protection of Natural Resources**

Department of: **Agroenvironmental Chemistry and Plant Nutrition**

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Topic: Thermal Treatment of Sewage Sludges Can Improve Their Properties

Hypotheses:

Sewage sludge is able to accumulate in the solid phase wide spectra of compounds released from waste water within its treatment. We can assume, that sewage sludge contains wide spectra of contaminants, and their content depends on the activities caused in the area of interest. Thermal treatment can transform or degrade contaminants and change quality of organic compounds of sludge as well availability of nutrients.

Summary:

Production of sewage sludge is steadily growing in all countries and further growth is expected due to world effort to improve quality of water and to sufficiently treat waste water from majority of population. Sewage sludge can accumulate large quantity of organic compounds, above all nutrients suitable for replacement of mineral fertilizers. Sludge can also accumulate wide spectra of contaminants with different chemical properties. Apart from intensively studied risk elements, persistent organic pollutants, pharmaceuticals, and personal care products can be present there. Some present compounds are sensitive to growing temperature they are volatilized or decomposed. With growing temperature volatilization of risks elements can occur as well transformation of organic matter and possible improvement of physical properties of original sludge.

Main goal of postgraduate study is the determination of organic matter composition and the determination of wide spectra of contaminants in several samples of sewage sludge having different history of their origin. Further goal will be an evaluation of thermal treatment mainly growing temperature on the changes of risk compounds contents as well availability of nutrients and structure of organic matter in studied sludges. Last goal will be the investigation of thermal treated sludges behaviour in the soils and their possible utilization as organic fertilizers.

Successful applicant working on the topic will be additionally supported from the identical external project besides regular scholarship.

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