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ADMISSION TO PHD STUDIES FOR THE YEAR 2021

DOCTORAL RESEARCH TOPIC:

Material changes and resource recovery feasibilities in the landfills

RESEARCH FIELD:

Environmental Engineering (T 004)

BRIEF DESCRIPTION OF RESEARCH TOPIC:

The implementation of the principles of the circular economy is of global interest in the possibilities of recovering resources from landfills. 2017 The European Parliament adopted an amendment to the EU Landfill Directive, which introduced the recovery of materials, energy and space from landfills. This directive, which has yet to be approved by the EU Council of Heads of State, obliges EU member states, including Lithuania, to create databases on the location of all landfills and the resources accumulated in them by the end of 2025 on the basis of the Geographic Information System (GIS).
The aim of the proposed research is to develop a model for assessing of changes of landfilled waste and technical, economic and environmental feasibilities for recovery of material and energy resources from landfills. On the basis of this model, software could later be developed for the practical assessment of these feasibilities. The results of the research would be useful for the Lithuanian Regional Waste Management Centers (RATC), which have operating regional and closed landfills, as well as municipalities and the Ministries of Environment, Economy and Innovation and Energy.

The main tasks of this work:

- to evaluate the quantities and composition of landfilled waste in operating and closed Lithuanian landfills using official statistics and back-forecasting methods;
- to develop an initial scheme and algorithm of the developed model for estimating the change of waste and the potential of resources to be recovered;
- to study the granulometric, morphological, mineralogical and elemental composition and calorific value of the waste in different layers of the selected landfills;
- after evaluating the obtained results, to verify the developed algorithm;
- to evaluate the potential of materials and energy recovery in Lithuanian landfills with the help of the developed algorithm.

SCIENTIFIC SUPERVISOR:

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