

Laboratory of Solid Waste and Resource Engineering

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Outline of research

The Laboratory of Solid Waste and Resource Engineering is responsible for developing and verifying waste treatment technologies that allow for environmental protection, and are highly energy and cost efficient. We also consider regional characteristics in the implementation of various waste treatment technologies.

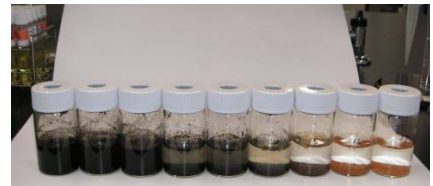
Research theme

➤ **Accelerating stabilization of waste in a landfill layer**

Accelerating stabilization of waste reduces landfill facilities' maintenance costs as well as the risk of environmental pollution. The main process responsible for stabilization of a landfill layer is the microbial decomposition of organic matter, which can be facilitated by ensuring sufficient air supply into the waste layer.

➤ **Preventing generation of hydrogen sulfide gas from the waste layer**

Landfill waste containing gypsum generates hydrogen sulfide gas through anaerobic microbial reactions. These reactions can be prevented by creating an aerobic environment. Installation of gas vent pipes or injection of an oxidizing agent into the waste layer would also solve this problem; however, these methods are relatively expensive. Our research evaluates the reaction prevention efficiency attributed to nitrates generated from organic waste or wastewater.



➤ **Separation of valuable and/or hazardous materials from mixed fine construction and demolition waste**

Our lab examines methods for separating valuable and/or hazardous materials from waste using inexpensive dry density separation techniques, such as air separation. We are also working on the adaptation of fluidized bed separation methods for use with mixed fine construction and demolition waste with our primary goal being the removal of gypsum particles.



➤ **Removal of materials containing asbestos from mixed construction and demolition waste**

Currently, no instruments capable of removing materials containing asbestos from mixed construction and demolition waste exist. Our lab evaluates the efficiency of manually presorting these materials.

