

Expanding Resource Utilization of Sewage Sludge by Converting to Fuel/Fertilizer

(Research of FY 2017-2021)

1. PURPOSE

Sewerage law revised in 2015 defines that wastewater administrators should manage to recycle/utilize generated sludge as fuel or fertilizer. Besides, to promote wastewater intensive treatment, four ministries of Ministry of Land, Infrastructure, Transportation and Tourism, Ministry of Public Management, Home Affairs, Posts and Telecommunications, Ministry of Agriculture, Forestry and Fisheries, and Ministry of Environment have requested the development of the plan for the expansion and cooperation of wastewater intensive treatment in all municipalities by 2022. To utilize sewage sludge efficiently, the "Sewage Sludge Wide Utilization Manual" has been developed, and the conference configured with related local governments has been founded.

Based on the above background, this study aims to contribute to the promotion of resource utilization through R&D of sewage sludge conversion to fuel/fertilizer.

2. OUTCOMES OF THIS YEAR

Last year, a basic investigation was implemented for carbonization and drying, which is solid fuelization technology. This year, a hearing survey to municipalities, business organizations, and solid fuel consuming companies, and a field survey were carried out. Table 1 describes issues gained in the investigation and proposals.

Table 1. Issues and proposal of solid fuelization business

Stage of the project	Issues	Proposals
Preliminary study	Extract examples of intensive treatment	Since solid fuelization facilities have a big advantage of scale, consider an optimized project such as wide-area treatment
	Verify sludge property	As chlorine content corrodes a boiler, provide chlorine concentrations to business operators, and investigate the possibility of usage
Feasibility study	Set the amount of targeted sludge	Consider the optimized scale and proper operation rate adaptable to population decline.
	Set the basic conditions of the project	Secure the storage space for transferred dewatered sludge during the suspension of facilities.
The development of enforcement policy and required level	Set the initial operation rate	Consider to change the operation rate at the start of operation and after gradually
	Limit the supplemental fuel	Stable supply of supplemental fuel by combined use

3. FUTURE PLANS

More kinds of local biomass will be tested on their basic properties and methane fermentability. R&D and technology evaluation of the anaerobic digestion process which is suitable to the selected local biomass will be carried out to expand its utilization.

Keywords: Sludge fuelization, Sewage sludge as a fertilizer, PPP/PFI, Business scheme