

# Development of Resource Elements Recovery/Utilization Technology from Wastewater

(Research of FY 2017-2021)

## 1. Purpose

While sewerage has many potential renewable energy resources, they are not enough utilized still now. This study aims to investigate the feasibility of the recovery and utilization of rare metals from sewerage and develop the technology for their future practical application.

## 2. Outcomes of This Year

### (1) Selecting WWTPs to be investigated and elements to be analyzed

This research focuses on the local characteristics as the cause of containing rare metals. Researchers selected WWTPs expected to have high content rates of rare metals in their sewage sludge, such as in the density area of manufacturers. To study the differences by the water content rate of sewage sludge, they investigated dewatered sludge, incineration ash, solid fuel converted from sewage sludge, and molten slag.

Selected seven elements for analyze are gold having high profitability, hafnium, palladium, gallium, tantalum, silver, and phosphorus expected to utilize as fertilizer.

### (2) Results of investigation

Figure 1 describes the content rate of each element in sewage sludge and recyclable limited amounts based on its cost-effectiveness. As it shows, the minor metal in sewage sludge has low profitability at their concentration except for some WWTPs.

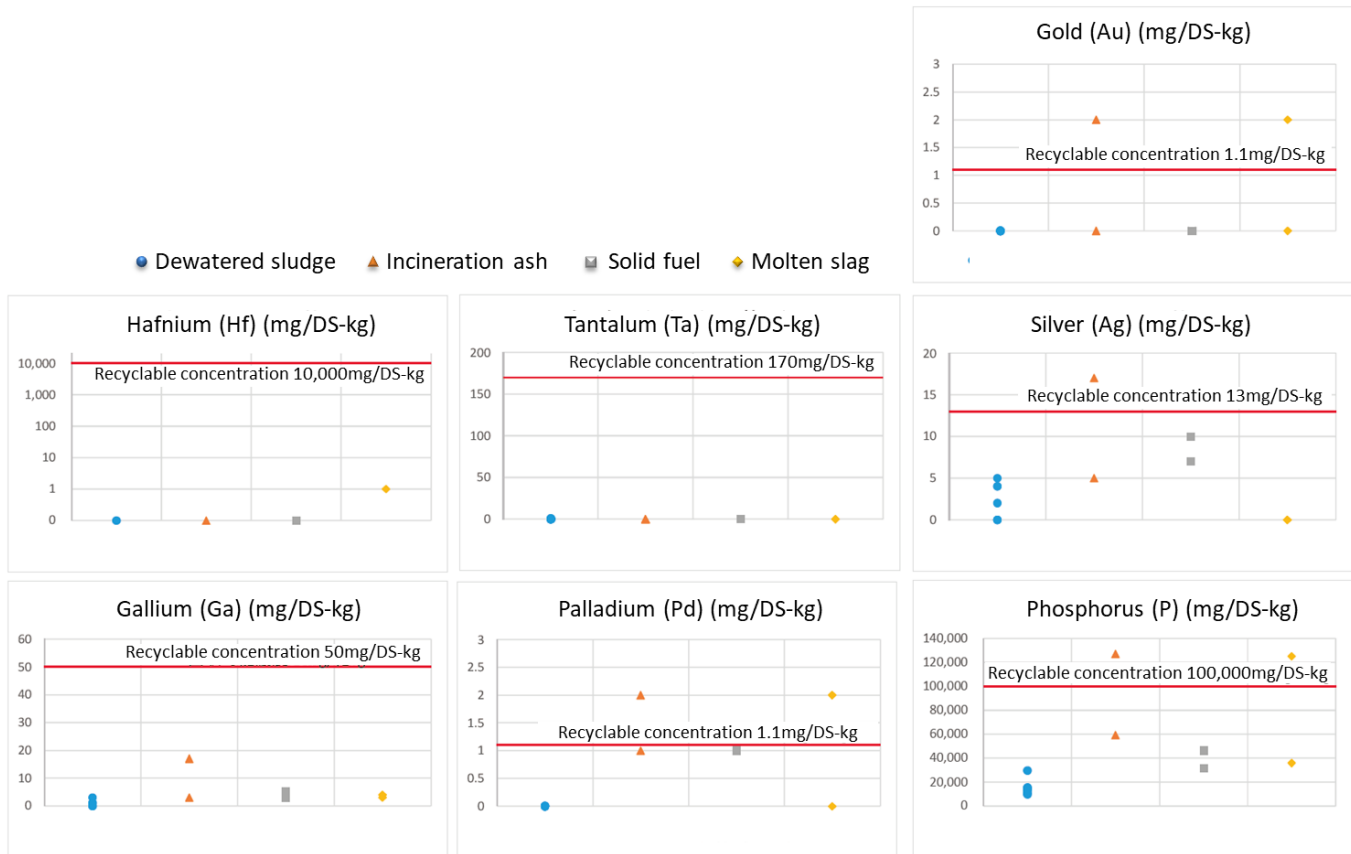


Figure 1. Content rate of each rare metal

### 3. Conclusion (Future Issues)

For the future utilization of rare metals in sewage sludge, promoting R&D of thickening and selective recycling technology is required to recycle rare metals efficiently.

*Keywords: Rare metals, Resource utilization, Resource recycle*

