

5-1 Development of New Technologies to Suppress Leachate of Heavy Metals from Sewage Sludge Incineration Ash

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ABSTRACT

Sewage sludge incineration ash (“incineration ash”) contains trace amounts of heavy metals, and leachate of arsenic (As) and selenium (Se) that often exceeds the level specified in the Environmental Quality Standards for Soil Contamination of Japan (hereinafter called the “Japanese Standard”) is one reason for the flagging rate of incineration ash recycling.

To help expand recycling of incineration ash, the Bureau of Sewerage of the Tokyo Metropolitan Government promoted development of technologies to suppress leachate of heavy metals from incineration ash and methods to reduce heavy metal contents in incineration ash, so as to alleviate the effects of heavy metals generated in the course of application of incineration ash.

1. Adding iron(II) sulfate and sodium thiosulfate to the ash, then heating it to chemically transform it into a form that hinders the leachate of heavy metals (Reagent Addition Method)
2. Adding slaked lime to the incineration ash to create a hydrothermal reaction that causes crystals to form on the surface of the ash that will physically seal the heavy metals. (Hydrothermal Treating Method)
3. Utilizing the fact that heavy metal compounds remain in a gaseous state at the temperature inside the incinerator, to collect the incineration ash with low heavy metal content from the area near the incinerator outlet where the temperature is high. (High-temperature Dust Collection Method)

Each of these methods have been used successfully to produce incineration ash that meets the requirements of the Japanese Standard by leachate of arsenic and selenium.

KEYWORDS

Sewage sludge ash, heavy metals, the environmental standard, resourcizing