Survey on Landfill Minimization through Improvement of Waste Management Streams(I)

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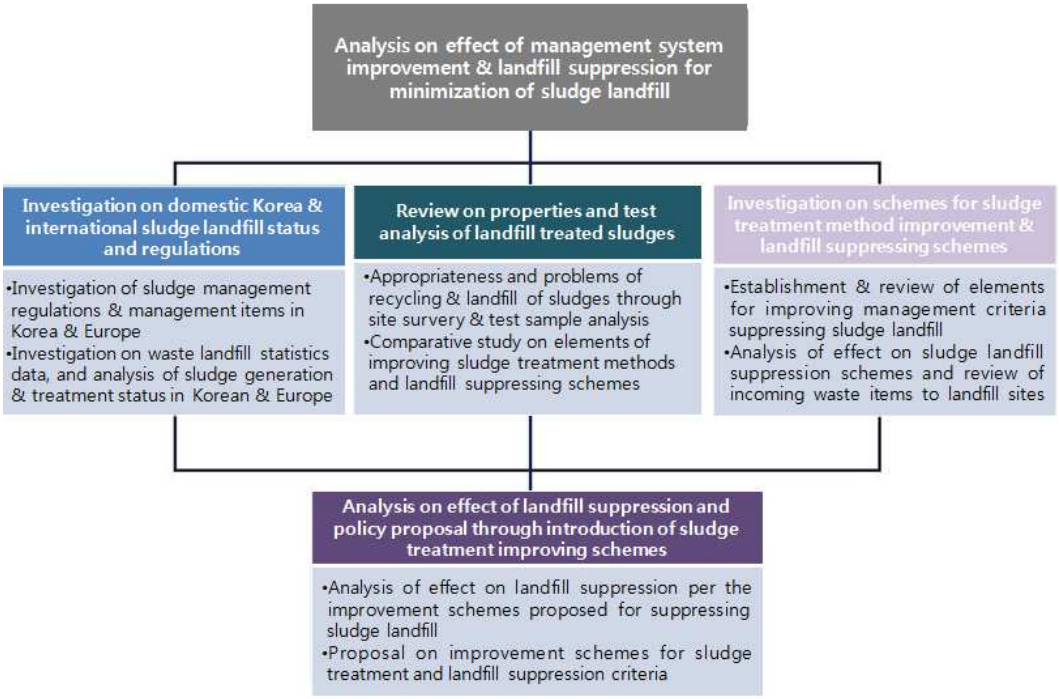
1. Purpose of Research

- The Government and Ministry of Environment of Korea move ahead with the plan for zero landfill of waste materials left behind as a core national agenda establishing a policy goal intending to reduce the rate of waste material landfill up to 1.0% phase by phase until 2035 in the 4th 'Comprehensive National Environment Plan'.
- The present survey intends to identify the properties of sludges with a characteristic analysis sorting the organic & inorganic sludges by each discharge site and industry, calculate the reduction volume per the setting of conditions such as the landfill related economic incentives, regulation of incoming of wastes and recycling activation scheme, and investigate the landfill suppressible volume by the landfill suppressing effect attributable to economic incentives together with the application of direct waste incoming criteria.

2. Major Aspects

- Survey on status of organic & inorganic sludge management in Korea
- Status of sludge landfill & recycling and trends of policies in domestic Korea and overseas
- Collecting test samples from the investigation target discharging facilities and surveying on major implications
- Analysis of domestic Korea and international organic & inorganic sludge characteristics
- Estimation scenarios on probable reduction volumes of landfill sludges and landfill.
- Investigation of management items for incoming sludges to landfill sites



3. Results

- The result of investigation conducted on the waste treatment status of Korea showed that the rates of recycling was in 2014 was 83.9 %, 6.1 % of incineration & 9.4 % of landfill, with which the amount of organic & inorganic sludge landfill was 8,230 tons/day taking 3.6% of total waste landfill volume from discharging site facilities. The amount of landfill investigated is regarded as the major target to be reduced in order to accomplish the 1.0 % goal of phased waste landfill rate by 2035.

- In connection with the reducing landfill treatment of waste materials inclusive of sludges, the effect of expanding policies for recyclable waste type through application of Waste Material Treatment Charge System (Article 21) for incinerating or landfill treatment based on the Framework Act on Resource Circulation established (May 2016) and the criteria for classifying the waste material resources (Flammable content >25%, Wet content <50%, Incinerating content <40%) were introduced as major elements for suppressing landfill.
- The energy recovery after incineration as fuel is a solution with highly effective reduction of sludge landfill, of which the incoming criteria of sludges to landfill sites with HHV 1,50kcal/kg (≅ VS 40%, TC 18%) level is regarded as appropriate.
- According to the result of calculation on probable amount of sludge landfill reduction, approximately 40% of total sludge landfill amount in 2015 is estimated as the amount which could be reduced through proactive recycling like drying, energy recovery & etc. in line with the reinforcing economy related suppression policy of indirect waste material treatment charge & etc., and also expected approximately 73% of total 2015 sludge landfill amount could be reduced through executing active reduction programs such as thermal energy reduction applying direct incoming waste criteria (5% or 10% of ignition loss).

4. Applications

- The most of criteria established in Korea for landfill suppression and recycling of sludges are of those for water contents, employing the recycling technologies of producing composts, soil conditioners, blacking mail, forest topsoil, landfill cover materials, heat recovery & etc. for organic sludges and the bank materials, sub-base layer materials, road base layer materials, landfill cover materials & etc. for inorganic sludges.
- Yet, as the present status of effect in using sludges as biological applications including soil conditioners & etc. is insignificant, the thermal treatment schemes such as reduction through pretreatment of wet content and incineration for energy recovery is regarded to demonstrate the high effect of reducing the sludge landfill rate.

5. Source

- National Institute of Environment Research (www.nier.go.kr)