



Industry Plant

SEWAGE SLUDGE REMOVE FACILITY



What is Sewage Sludge

Sewage sludge can be divided into active sludge in the emitting facility, surplus sludge, mixed sludge, enriched sludge, digested sludge and dehydration sludge according to the regulations in the [Waste Management Act].

- **Active sludge** : as a sludge occurring after precipitation in the first precipitation site. It is grey and has a very bad smell due to the stickiness
- **Surplus sludge** : as a sludge that was precipitated in the secondary precipitation tank through the water processing process (abandonment), it is brown. It smells of soil and can be digested by mixing with active sludge
- **Mixed sludge** : as sludge with active and surplus sludge mixed, it is made when mixed in the enriched distribution tank
- **Enriched sludge** : it is a sludge that has reduced active, surplus and mixed sludge in the enrichment tank
- **Digestion sludge** : as a sludge that has been enriched and decomposed during aerobic and anaerobic digestion, it is dark brown or mud brown and contains a lot of gas
- **Dehydration sludge** : a dehydrated sludge that makes transportation, incineration and final disposal easy

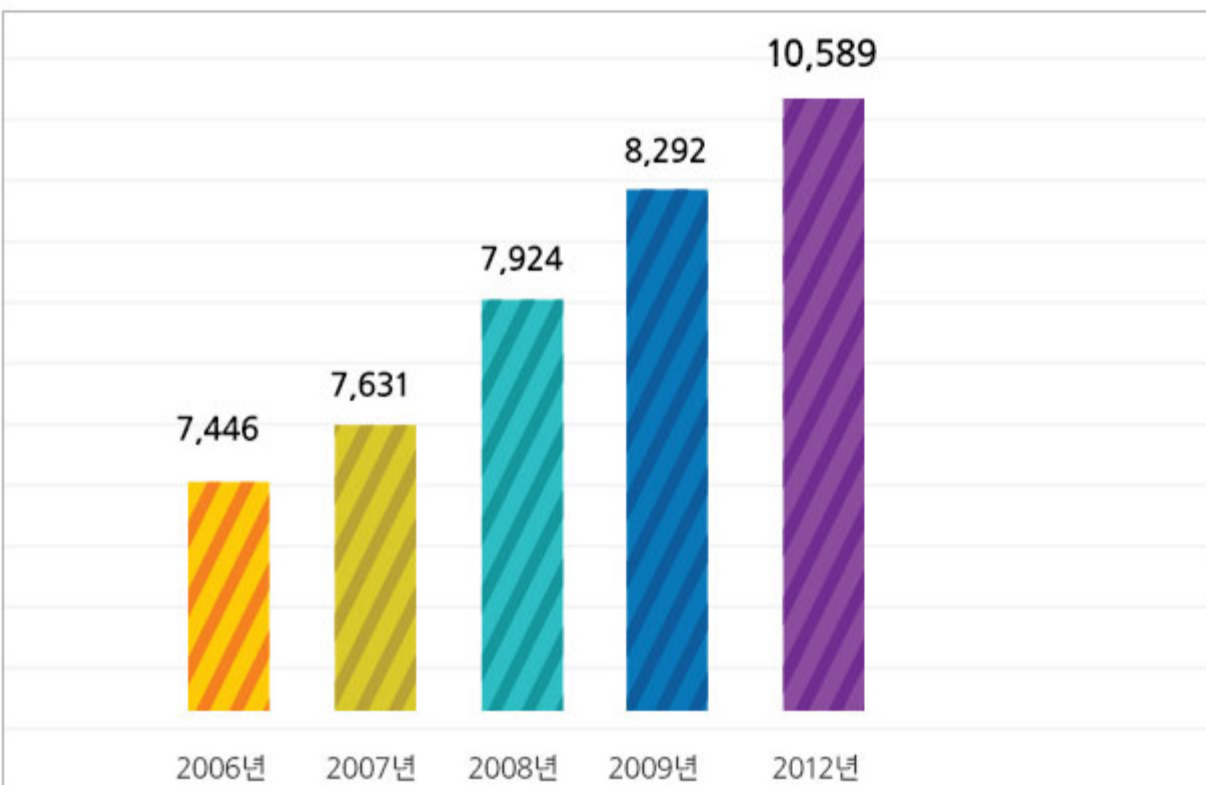
The sewage sludge that has experienced dryer at the terminal disposal plant of the sewage has a slight difference according to its type.

It contains moisture of around 80% and organic quantity is 40~60% (dry measure standard)

It is about 2,600 Kcal/kg calorific value if dried and is about 1/2-2/3 of coal

The advantage of sludge fuel is reduction of fuel cost and disposal of stable sludge

Domestic Sewage Sludge Occurrence and Disposal State



Sludge Occurrence Trend (Ton/Day)

- Sewage sludge occurrence maintenance is expected to increase due to new construction and extension of sewage disposal plant, sewage appurtenance equipment and discharge water quality standard strengthening
- Sewage sludge increased from 7,446 ton/day in 2006 to 10,589 ton/day in 2012

Sewage Sludge Disposal Facility

In the future, due to the low disposal costs, it was directly reclaimed or thrown into the sea, but due to the problem of underground/surface water pollution or leachate, the securing of reclaimed land is difficult. Also, with disposal at sea being banned worldwide, sludge disposal facilities are now required.

Furthermore, due to the government's resource reuse policy using low carbon green growth, climate change response, renewable energy and waste, solidification of fuel using 'organic sludge' that can replace the disposal at sea or energy related technology development has become urgent. This has been selected as a national task and currently R&D is being actively conducted.

Methods to Dispose of Sludge

Heat decomposition, liquefaction, solid fueling, composting, foddering, making it into methane gas, making it into aggregate, making it into stone block, molten slug, energization

Use of Recycled Sludge

Agricultural fertilizer, material for covering seed with soil, fodder, industrial cement, development use alternative fuel

Sewage Sludge Energization Equipment

By transporting and inserting sludge to kiln in the cement manufacturer during sewage sludge, it directly gets rid of it by burning. It is sewage [sludge energization equipment](#) that reduces fuel costs of the company and disposal costs are much cheaper compared to other disposal facilities. There is almost no secondary pollution and the maintenance costs are cheap. It is a resource reuse method with a lot of advantages.

Since high temperature of 1,450 is maintained in the cement kiln to boil the limestone, it is of structure that burns (degenerates) with the inserted fuel. The combustibility material is all burn at high temperature (all combusted) to play the role of fuel and the inflammable material loses its original property to become the cement's raw material. The kiln uses bituminous coal as main fuel to gain high temperature heat.

The waste tire inserted through assisting fuel produces dioxin in general incinerators, but toxicity is removed by decomposition of high temperature heat in the kiln. The cement industry says that the sewage sludge is of the same principle. The sewage sludge is a mud lump that contains a lot of decomposable organics. Of these, the organics are gone by being burnt from fuel and the remineralization becomes part of the cement's raw material.

An official from the Korea Cement Association has paid attention to the fact that the inorganic substances contained in the sewage/waste water sludge is clay substance and has been reusing this for 10 years. It is also being recognized as an alternative to disposal at sea and contributes to the preserving of the natural environment. The Ministry of Environment and Ministry of Maritime Affairs and Fisheries are also seeing this as a plausible alternative to the disposal at sea method.

[The sewage sludge energization equipment](#) moves the sludge of the sludge storage tank through the transportation pipe to the kiln and is equipment that can be used as fuel of the kiln.

