e-Briefing on **Sludge**

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September 2016

Reduction of Sludge Volume for Disposal

Sludge is the output of municipal and sewage waste treatment plant which may contain heavy metals, organic and inorganic complexes. Sludge leads to contaminate land, air, water and may enter into the food chain if not disposed properly. So before disposal of sludge, treatment is necessary which aims to minimize the volume and organic matter of sludge. Some treatment processes of sludge are discussed below. However other treatment processes may be available.

1. Thickening

- The dry solids (DS) content of sludge is increased by reducing the water content.
- Gravity thickening is the most widespread thickening method by which the total sludge volume can be reduced by 90 % from the original volume with low energy consumption.
- Other thickening process is mechanical thickening which includes screw, drum, belt and centrifuge.

Gravity Thickener

2. Conditioning

- Sludge is generally conditioned chemically to improve the dewaterability of the sludge.
- Chemical conditioning results in coagulation of the solids and release of the absorbed water.
- Sulfuric acid, alum, chlorinated coppers, ferrous sulfate, and ferric chloride with or without lime,
- and other chemicals are used in chemical conditioning.

3. Dewatering

- Increases the dry solids content of the sludge by reducing moisture content.
- Dewatering of sludge is performed by using vacuum filters, belt filter presses, centrifuges, and membrane filter presses of which centrifuges and belt filter presses are the most popular dewatering methods due to their good operation and cost efficiency.

Belt Filter Press

4. Drying

- Most common sludge drying method is to keep the sludge in sludge pit for 2 or 3 months under the sun.
- Fluidized bed dryers, rotary dryers, and multiple hearth dryers are also used for sludge drying.

Fluidized Bed Dryer