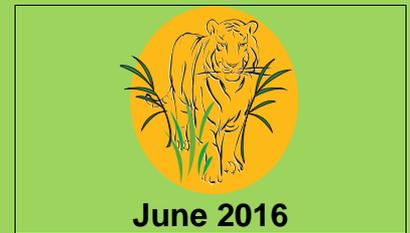


# e-Briefing on **Sludge**

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### What is Sludge?

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Sludge is the end product of wastewater and municipal waste treatment plants which is semisolid and contains concentrated levels of contaminants. Sludge is a combination of heavy metals, inorganic and organic complexes.



#### Categories of Sludge

Depending on the origin and composition of the wastewater, sludge can be classified as-

<b>Category A</b>	Municipal sludge including comparable sludge	Sludge produced in a sewage treatment plant by treating only domestic or urban waste water or wastewater comparable to domestic or urban wastewater such as food processing industry
<b>Category B</b>	Sludge from industry including sludge from CETP	Neither Category A nor Category C
<b>Category C</b>	Sludge from industry including sludge from CETP belonging to the category of hazardous waste	Sludge produced in a hazardous labelled industry e.g. textile and contains any hazardous chemical

#### Effects of Chemical Contents of Sludge

##### Heavy metals-

- Lead, Copper, Zinc, Chromium, Nickel, Mercury, Arsenic, Cadmium.
- Damage reproductive system and cause death of living organisms; cause health effects like kidney disease, lung damage, breathing problem for human beings, damage crop and vegetable growth.

##### Organic compounds

- Polychlorinatedbiphenyls (PCB), Polychlorinateddibenzodioxins (PCDD), Polychlorinateddibenzofurans (PCDF).
- Cause liver damage, stomach problems in animals and are human carcinogens.

##### Others

- Nitrogen, Phosphorus, Chloride, Sulfur, Sulphate.

#### Sludge Pre-Treatment

The main goal is to minimize the volume and organic matter for better handling and disposal, such as

- Sludge thickening by gravity thickening or flotation or by centrifugation to reduce volume.
- Sludge dewatering in a sludge drying bed or by mechanical operations (vacuum filters, filter press, or centrifuge) to reduce water content.

Bangladesh Standards and Guidelines for Sludge Management developed by Department of Environment (DoE) in collaboration with GIZ, has been approved by Ministry of Environment and Forests (MoEF) in February 2015. This guideline aims to provide practical guidance for textile and tannery units for sludge treatment, handling, storage and disposal with locally available relevant information and options.