The basic processes for sludge treatment are as follows:

- **Thickening:** Convert sludge using gravity or f_________ methods. Primary sludge can be thickened to a maximum of about 10% solids and secondary sludge to a maximum of about 6% solids.

- **Stabilization:** Converting the o_________ in the sludge to more stable (inert) forms so they can be handled more easily (more d_________, less potential for odors) and used as soil conditioners. Typically stabilization involves anaerobic or aerobic digestion. During digestion considerable v_________ s_________ destruction occurs.

- **Conditioning:** Addition of c___________ to allow better separation of the water and the solids. Ferric c_________ and organic and inorganic p___________ are frequently used for sludge conditioning.

- **Dewatering:** V______, pressure, or drying methods for removing w_________ from the solids. Typically about 25 to 35% solids can be achieved.

- **Volume Reduction:** Drying and p________________, C___________, or I____________________ of sludge with ash residual for ultimate disposal.

**Biosolids** are t_________ s_________; there are two different classes:
- Class A: no detectable levels of p_________ and meets m______ regulations, requires controlled treatment process involving high pH, temperature, or both; no permit required for land application
- Class B: have been t______ but may contain some pathogens and metals, requires p_______ for land application

Processes for generating Class A biosolids:
- sludge p___________
- t________________ treatment (55°C for 24 h)
- temperature p________ anaerobic digestion, TPAD (55°C digester followed by 35°C digester) developed at ISU