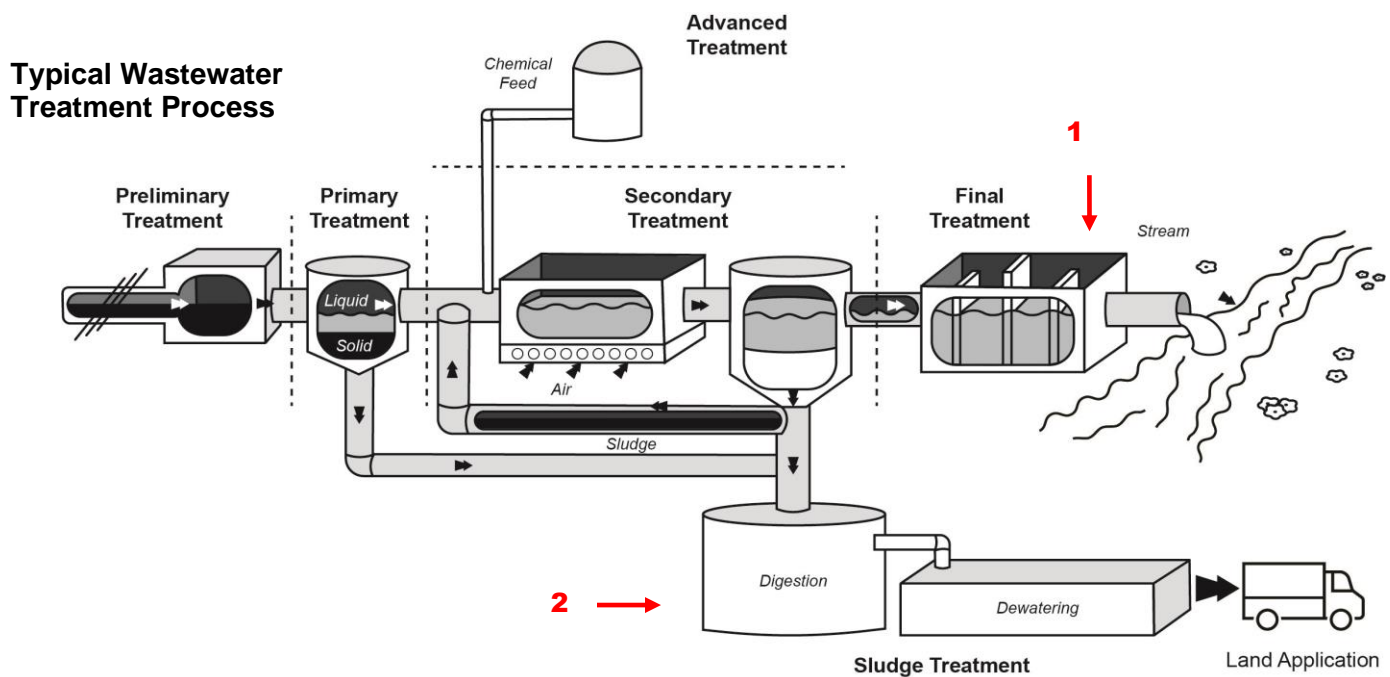


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## Urban Wastewater Systems *(continued)*

### Final and Sludge Treatment:



**1 Final treatment.** Final treatment focuses on removal of disease-causing organisms from wastewater. Treated wastewater can be disinfected by adding chlorine or by using ultraviolet light. High levels of chlorine may be harmful to aquatic life in receiving streams. Treatment systems often add a chlorine-neutralizing chemical to the treated wastewater before stream discharge.

**2 Sludge treatment.** After primary and secondary treatment, any solids remaining go through the sludge treatment. The goals of **sludge treatment** are to stabilize the sludge and reduce odors, remove some of the water, decompose some of the organic matter, and kill disease causing organisms. Primary sludge, material that settles out during primary treatment, often have a strong odor, and require treatment prior to disposal. Secondary sludges are the extra microorganisms from the biological treatment processes.

Untreated sludges are about 97 percent water. Excess water is removed through settling the sludge or by using sand drying beds, vacuum filters, filter presses, or centrifuges. This dried sludge is called sludge cake. [Aerobic and anaerobic digestion](#) are used to decompose organic matter to reduce volume. Digestion also stabilizes the sludge to reduce odors. Sludge is then treated with caustic chemicals or by heat to kill disease-causing organisms. Following the treatment, liquid and cake sludges are usually spread on fields, returning organic matter and nutrients to the soil.

Next issue: *Sludge Treatment Processes*