

2.3. Waste Water Treatment and Collection Facilities (Sewage Treatment)

2.3.1. General

- 2.3.1.1.** The requirements of this chapter provide minimum fire and life safety guidelines for Sewage or wastewater treatment facilities and associated collection systems.
- 2.3.1.2.** The principal elements of wastewater treatment are as follows: a. Preliminary treatment b. Primary treatment c. Secondary treatment d. Tertiary treatment e. Disinfection e. Sludge treatment.
- 2.3.1.3.** Preliminary treatment is the conditioning of wastewater as it enters the wastewater treatment plant. Preliminary treatment removes materials that might be harmful to or might adversely affect the operation of the treatment plant. Such material might include lumber, cardboard, rags, stones, sand, plastic, grease, and scum. The methods and equipment used to remove these materials include bar racks, bar screens, and gravity or aerated grit chambers.
- 2.3.1.4.** Secondary treatment is intended to reduce the concentrations of the remaining suspended solids and the dissolved and colloidal organic matter in the wastewater. Such material is not removed to any significant degree in primary treatment. A wastewater treatment plant having secondary treatment following primary treatment commonly can achieve removal of a total of 90 percent of the influent suspended solids and biochemical oxygen demand of the raw wastewater. Secondary treatment processes can be either biological or physical–chemical.
- 2.3.1.5.** Most municipal secondary treatment processes are biological. These processes can be classified as fixed film or suspended growth. In each process, a mixed population of microorganisms is established in the presence of oxygen. These microorganisms metabolize the dissolved organic matter in the wastewater and form a biological mass. The effluent from fixed film or suspended growth processes contains suspensions of biological solids. These solids are removed from the treated wastewater in a secondary sedimentation tank.
- 2.3.1.6.** Physical–chemical treatment includes one or more physical–chemical unit processes to treat primary effluent. Such processes might include chemical coagulation, precipitation, and filtration to remove suspended matter and activated carbon adsorption to remove soluble organics.
- 2.3.1.7.** Disinfection is necessary to destroy pathogenic bacteria, viruses, and amoebic cysts commonly found in wastewater. Disinfection processes can be chemical, such as ozonation or chlorination, or physical, such as ultraviolet irradiation. Chemical disinfection using chlorine and, infrequently, ozone are the most widely used means of wastewater disinfection.