

(ii) **Secondary or Biological Treatment:** The biological process of sewage is a secondary treatment involving removing, stabilizing and rendering harmless very fine suspended matter, and solids of the waste water that remain even after the primary treatment has been done. Since much of the organic material in waste water may be colloidal or dissolved, the primary treatment processes are largely ineffective in removing it. The organic matter still represents a high demand for oxygen which must be reduced further so that the effluent may be rendered suitable for discharge into the water bodies.

**Process:** (i) Activated Sludge Process; and (ii) Trickling Filters.

(iii) **Tertiary or Advanced Waste Water Treatment:** Usually the primary and secondary treatments are sufficient to meet waste water effluent standards. However, if water produced is required to be of higher water quality standards (in case the water to be put to some direct reuse) then advanced waste water treatment is carried out.

A wide variety of methods are used in advanced waste treatment, which include the removal of (a) suspended solids; (b) BOD; (c) Plant nutrients; (d) Dissolved solids; and (e) toxic substances. These methods may be introduced at any stage of the total treatment process as in the case of industrial waste waters or may be used for complete removal of pollutants after the secondary treatment.

The waste water treatment processes are basically concentrating or thickening processes on which the suspended solids are removed as sludges. The impurities in the waste water are concentrated into solid form and are then separated from the bulk liquid. This concentrated form is referred to as sludge. Whereas the dissolved solids are first converted into suspended solids which are subsequently removed as sludges.