

Characteristics of domestic and industrial effluents

1. Characteristics of domestic effluent

Domestic sewage/effluent carries used water from houses and apartments; it is also called sanitary sewage. Industrial sewage is used water from manufacturing or chemical processes.

Domestic sewage/effluent is the primary source of pathogens (disease-causing microorganisms) and decayable organic substances. Because pathogens are excreted in feces, all sewage from cities and towns is likely to contain pathogens of some type, potentially presenting a direct threat to public health. Putrescible organic matter

Generally domestic wastewater can be classified in two basic categories. These are:

- Brown wastewater (kitchen, bath, laundry) and the
- Black wastewater (urine, faeces and toilet paper)

Based on classical wastewater studies, the influent characteristic wastewater can be summarized in three main categories. These are:

- **Physical characteristics:** The physical characteristics of wastewater include those items that can be detected using the physical senses and simple instrumentation. They are temperature, colour, odour, and solids.
- **Chemical characteristics:** The chemical characteristics of wastewater of special concern to the research are pH, dissolved oxygen (DO), oxygen demand, nutrients, and toxic substances.
- **Biological characteristics:** The three types of biological organisms present in wastewater are bacteria, viruses, and parasites.

2. Characteristics of industrial effluent

Industrial effluents result from various types of industrial processes and disposal practices and may contain pollutants at levels that could affect the quality of receiving waters, as well as the aquatic ecosystem.

Wastewaters are generated by many industries because of their operation and processing. Depending on the industry and their water use, the wastewaters contain

- suspended solids
- both degradable and nonbiodegradable organics
- oils and greases
- heavy metal ions
- dissolved inorganics
- acids, bases and coloring compounds
- Industrial effluents are characterized by their abnormal turbidity, conductivity, chemical oxygen demand (COD); total suspended solids (TSS) and total hardness.

Industries are the major sources of pollution in all environments. Based on the type of industry, various levels of pollutants can be discharged into the environment directly or indirectly through public sewer lines.

Wastewater from industries includes employees' sanitary waste, process wastes from manufacturing, wash waters and relatively uncontaminated water from heating and cooling operations.

High levels of pollutants in river water systems causes an increase in biological oxygen demand (BOD), chemical oxygen demand (COD), total dissolved solids (TDS), total suspended solids (TSS), toxic metals such as Cd, Cr, Ni and Pb and fecal coliform and hence make such water unsuitable for drinking, irrigation and aquatic life.

Industrial wastewaters range from high biochemical oxygen demand (BOD) from biodegradable wastes such as those from human sewage, pulp and paper industries, slaughter houses, tanneries and chemical industry. Others include those from plating shops and textiles, which may be toxic and require on-site physiochemical pre-treatment before discharge into municipal sewage system.