

Water treatment

Water treatment is any process that improves the quality of water to make it more acceptable for a specific end-use. The end use may be drinking, industrial water supply, irrigation, river flow maintenance, water recreation or many other uses, including being safely returned to the environment.

Industrial water treatment - Two main processes of industrial water treatment are boiler water treatment and cooling water treatment.

(i) Boiler water treatment - This treatment is a type of industrial water treatment focused on removal or chemical modification of substances potentially damaging to the boiler. Varying types of treatment are used at different locations to avoid scale, corrosion or foaming. External treatment of raw water supplies intended for use within a boiler is focused on removal of impurities before they reach the boiler. Internal treatment within the boiler is focused on limiting the tendency of water to dissolve the boiler and maintaining impurities in forms least likely to cause trouble before they can be removed from the boiler in boiler blowdown.

(ii) Cooling Water treatment - water cooling is a method of heat removal from components and industrial equipment. Water may be a more efficient heat transfer fluid where air cooling is ineffective. In most occupied climates water offers the thermal conductivity advantages of a liquid with unusually high specific heat capacity and the option of evaporative cooling. Water cooling is commonly used for cooling automobile internal combustion engines and large industrial facilities such as nuclear and steam electric power plants, hydroelectric generators, petroleum refineries and chemical plants.

(iii) Chemical Treatment - Chemical treatments are adopted to make industrial water suitable for discharge. These include chemical coagulation, chemical precipitation, chemical disinfection, chemical oxidation, advanced oxidation, ion exchange and chemical neutralization.