

“Study of Physico-Chemical Parameters of Effluent from Thermal Power Plant”

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Abstract

The thermal power plant is the main source of energy for our society. In the thermal power plant huge amount of water is used for several different processes which is then discharged as a process waste. The present study is based on physico-chemical analysis of effluents from thermal power plant. The effluent was collected from thermal power plant (Koradi near Sri. Mahalaxmi mandir koradi.) Under this study the various parameters such as pH, Conductivity, TDS, TSS, DO, BOD, Chloride, Sulphate, Phosphate, Iron, Hardness, Alkalinity, and Nickel. The mean concentration of parameters is found to be beyond the permissible limits set by Indian standards set for discharge of effluent. Hence it should be closely monitored. This study clearly explains that the physicochemical parameters of effluent play a crucial role in maintaining the ecological balance and safeguarding the health of aquatic ecosystem impacted by thermal power plant operation.

Key words: Physical parameters, Chemical parameters, Thermal power plant waste water.

Introduction

A thermal power station is a type of power station in which heat energy is converted to electrical energy. In steam generating cycle heat is used to boiled water in a large pressure vessel to produce high-pressure steam, which derives a steam turbine connected to an electrical generator. The low-pressure exhaust from the turbine enters a steam condenser where it is cooled to produce hot condensate which is recycled to the heating process to generate more high-pressure steam. This is known as a Rankine cycle.

The designs of thermal power stations depend on the intended energy source: fossil fuel, nuclear and geothermal power, solar energy, biofuels, and waste incineration are all used. Certain thermal power stations are also designed to produce heat for industrial purposes; for district heating; or desalination of water, in addition to generating electrical power.

Fuel such as natural gas or oil can also be burnt directly in gas turbines (internal combustion). These plants can be of the open cycle or the more efficient combined cycle type.

Sources of effluent in a thermal power plant includecooling water: Thermal power plants use large amounts of water for cooling purposes. The cooling water absorbs heat from the power generation process and is subsequently discharged as effluent. This water can come from nearby water bodies such as rivers, lakes, or the ocean, and may contain impurities and pollutants picked up during the cooling process

Boiler Blowdown: Boiler blowdown refers to the process of removing concentrated water or steam from the boiler to control the concentration of impurities. This discharge contains dissolved solids and chemicals used in the boiler treatment process and contribute to the effluent stream.