Effluent Treatment Plant

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Abstract

Most of the river basins are closing or closed to severe water shortages, brought on by the simultaneous effects of agricultural growth, industrialization and urbanization. Performance of state owned sewage treatment plants, for treating municipal waste water, and common effluent treatment plants, for treating effluent from small scale industries, is also not complying with prescribed standards. Thus, effluent from the treatment plants, often, not suitable for household purpose and reuse of the waste water is mostly restricted to agricultural and industrial purposes. The development of innovative technologies for treatment of wastewaters from various industries is a matter of alarming concern for us. Although many research papers have been reported on wastewater pollution control studies, but a very few research work is carried out for treatment of wastewater of steel industries, especially in reference to development of design of industrial effluent Treatment Plants (ETP) system. Another beneficial aspect of this research work will be recycling, reuse of water and sludge from steel industry The whole technologies for treating industrial wastewater can be divided into four categories: - Chemical, Physical, Biological and mathematical approaches.

INTRODUCTION

Water is one of the most vital natural resources for all life on Earth. The availability and quality of water always have played an important part in determining not only where people can live, but also their quality of life.Total utilizable water resource in the country has been estimated to be about 1123 BCM (690 BCM from surface and 433 BCM from ground), which is just 28% of the water derived from precipitation. About 85% (688 BCM) of water usage is being diverted for irrigation (Figure 1), which may increase to 1072 BCM by 2050. Major source for irrigation is groundwater. Water use can mean the amount of water used by a household or a country, - Commercial water use includes fresh water for motels, hotels, restaurants, office buildings, other commercial facilities, and civilian and military institutions. Domestic water use is probably the most important daily use of water for most people. Domestic use includes water that is used in the home every day, including water for normal household purposes, such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens .

Effluent Treatment Plants (ETP):

Effluent Treatment Plants or (ETPs) are used by leading companies in the pharmaceutical and chemical industry to purify water and remove any toxic and non toxic materials or chemicals from it. These plants are used by all companies for environment protection. An ETP is a plant where the treatment of industrial effluents and waste waters is done. The ETP plants are used widely in industrial sector, for example pharmaceutical industry, to remove the effluents from the bulk drugs

Need of ETP –

- To clean industry effluent and recycle it for further use.
- To reduce the usage of fresh/potable water in Industries.
- To cut expenditure on water procurement.
- To meet the Standards for emission or discharge of environmental pollutants from various Industries set by the Government and avoid hefty penalties.
- To safeguard environment against pollution and contribute in sustainable development.

Treatment Levels & Mechanisms of ETP –

- Treatment levels: Preliminary
- Primary
- Secondary

Primary Treatment Level Purpose: Removal of floating and settleable materials such as suspended solids and organic matter. • Methods: Both physical and chemical methods are used in this treatment level. • Chemical unit processes: Chemical unit processes are always used with physical operations and¬ may also be used with biological treatment processes. Chemical processes use the addition of chemicals to the wastewater to¬ bring about changes in its quality. Example: pH control, coagulation, chemical precipitation and oxidation. pH Control: To adjust the pH in the treatment process to make wastewater pH neutral.¬ For acidic wastes (low pH): NaOH, Na2CO3¬ , CaCO3or Ca(OH)2. For alkali wastes (high pH): H2SO4¬ , HCl. Chemical coagulation

CONCLUSIONS:

The problems associated with wastewater reuse arise from its lack of treatment. The challenge thus is to find such low-cost, low-tech, user friendly methods, which on one hand avoid threatening our substantial wastewater dependent livelihoods and on the other hand protect degradation of our valuable natural resources. The use of constructed wetlands is now being recognized as an efficient technology for wastewater treatment. Compared to the conventional treatment systems, constructed wetlands need lesser material and energy, are easily operated, have no sludge disposal problems and can be maintained by untrained personnel. Further these systems have lower construction, maintenance and operation costs as these are driven by natural energies of sun, wind, soil.

REFERENCES:

[1] Dean J. G., F. L. Basqui and Lanouette, 1972, Removing heavy metals from wastewater Env. Sci. Tech. 6:518

[2] Huang C. P. 1977, Removal of heavy metals from industrial effluents J. Env . Eng. Division, ASCE 118 (EE6): 923-947.

[3] Loomba, K. and G. S. Pandey 1993, Selective removal of some toxic metals ions (Hg(II), pb (II) and Zn(II)) by reduction using steel plants granulated slag. Indian J. Env., Health A:20:105-112.