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**A STUDY OF PHYSICAL, CHEMICAL & MICROBIOLOGICAL
CHARACTERISTICS OF AN INDUSTRIAL WASTE TREATMENT PLANT**

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ABSTRACT

Increased rate of water pollution by industrial effluent in Sri Lanka has necessitate efficient treatment of waste water before discharging into local water bodies. Sri Lankan legislation concerning the environment is also strict specially with regard to the quality of waste water to be discharged. As a result, most of the industries in Colombo has now initiated to treat their waste water prior to discharge.

Industrial waste treatment in Sri Lanka is an upcoming industry and knowledge and the information available on this subject is limited. It is therefore, appropriate to do more research studies on waste treatment.

This study was carried out to identify the bacterial flora present in activated sludge treatment in warmer climate and to evaluate the overall performance of the conventional type industrial waste treatment plant at Unilever Ceylon Limited, Colombo.

Sampling and analysis were carried out from September 1994 to March 1995. Physico-chemical parameters and microbiological qualities of factory effluent, at different stages of the treatment plant were studied. Identification of bacteria in activated sludge were also carried out.

The study reveals that the overall performance of the plant is 98% in respect of BOD removal. Dissolved air flotation technique in the physical treatment is effective and capable of removing 45% of total fatty matter in the influent. The chemical treatment has removed 14% of suspended solid related BOD and it has improved the overall efficiency of the plant. Activated sludge treatment is the most effective treatment in the plant and it has removed 86% of BOD in the effluent.

17 Aerobic bacterial strains were identified in the activated sludge. Four of them are gram positive cocci forms such as *Micrococcus sp* and *Staphylococcus*. Bacillus species identified are *Bacillus subtilis*, *Bacillus megaterium*, *Bacillus cereus*. Most predominant gram negative bacteria were *Pseudomonas aeruginosa*, *Klebsiella sp*, *Aeromonas sp*, *flavobacterium*, *Corynebactrium*, and *Vibro sp*.