

CHAPTER - I

Introduction

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Control, abatement and treatment of pollution caused by the tanning industry in South East Asia has gained a great deal of attention in the recent past. Stricter enforcement of discharge norms by the pollution control authorities, increased public awareness of the impact of pollution and growing pressure from the global buyers of the leather products have all contributed to the improved response of the industry in respect of tannery waste treatment. Many common and individual effluent treatment systems have been set up or are being set up by a number of tanneries throughout the world.

The wastewater from tanneries normally contains high level of organic matter and hence the normal effluent treatment system adopted involves aerobic activated sludge treatment as the secondary stage biological treatment. Needless to say, the efficacy of this treatment depends on the efficiency of the microbes used in the aeration system. The aerobic activated sludge treatment system contains thousands of varieties of micro-organisms (predominantly bacteria). It is quite possible that the hyperactive organisms are in minority. Therefore it is considered beneficial, if the more active varieties are isolated and developed to have their enriched population in the activated sludge. While formulations containing speciality bacteria with higher rate of growth are commonly available in the market, most of the formulations are designed in such a way that the hyperactive varieties die off after some time with marked reduction in performance of the system, prompting periodical dosage of the formulation for re-moculation. This strategy is adopted by the manufacturers obviously due to trade considerations and has earned the product the nickname 'terminator bacteria'. The costs of such commercially available products are so high that most of the CETPs (Common Effluent Treatment Plant) in the region have not tried the same. Further, the effectiveness of these bacterial

formulations, primarily designed for colder climates, is not known in tropical regions.

In this background, it is felt that an attempt to find out and isolate hyperactive bacteria could be beneficial to the tannery FTPs (Effluent Treatment Plant) of this country. While the development of a speciality bacteria involves complex procedures and much more intensive research work, a more practical approach would be to identify a colony from existing activated sludge system with faster rate of degradation. The aim is to study the physico-chemical properties of tannery effluent, identification of effective bacterial colonies in the activated sludge, and the ability of different bacteria to reduce the BOD (Biological Oxygen Demand) of the sludge so that the treated effluent can be discharged without much detrimental effect on the environment.