

## I INTRODUCTION



### 1.1 General Background

Thailand is an agricultural nation and far more advanced in **fishery** technology than others in the South East Asia. World demand of fish protein, naturally, encouraged rapid growth of the fishery industry and, consequently, canned fish production. In 1977 alone, the total production was over 50 million cans which were mostly exported and brought in 200 million baht worth of foreign currency.

Understandably, the Board of Investment had strongly promoted the fish canning industry. Five factories out of ten were given official promotion. The 1978 Jan. - Feb. issue of INDUSTRY magazine claimed the scale of promotion was tipped in favour of this specific type of food production.<sup>(1)</sup>

The growth had not been without its alarming consequences. The production of a ton of fish would contribute about 10 cu.m. of wastewater with BOD strength of 2,000 - 4,000 mg/l.

Most of the factories were located in the community near by the Gulf of Thailand and discharged the wastewater that would possibly be harmful to the environment. It was required that it had to be treated before discharging to the environment. As the cost of land in the community was very high, the wastewater treatment plant should have required minimum space and the process was

preferably neither too expensive nor sophisticated.

To comply to the effluent standard of the Ministry of Industry, BOD removal efficiency of over 99 per cent was implied. Since the high organic content of the wastewater suggested the possibility of biological treatment. An activated sludge seemed to be an answer except for sophistication. Considering level of technology applied in this industry, operation of an activated sludge might not be relatively too sophisticated.

So far, there were many small factories without wastewater treatment plants and discharged the wastewater directly into rivers or drainage systems. Yet, for those with the treatment facilities, design criteria was mostly based on assumptions.

## 1.2 Purposes of Research

This research was initiated with the following purposes:

1. to study a treatability of fish cannery wastes with a laboratory-scale activated sludge process,
2. to investigate effects of such as pH, nutrients, organic loading, etc. on the efficiency of the process,
3. to find out optimum design criteria for full-scale application,
4. to evaluate technical feasibility of the process.

### 1.3 Scope of Investigation

This research presented the study of activated sludge processes. An extensive literature review on treatment of wastewater from fish cannery was studied. A pilot plant of an activated sludge process was constructed. Synthetic waste was applied to the process continuously. The purpose of this research is to investigate the efficiency of the activated sludge process in term of BOD, COD and suspended solids removal, and to find out essential coefficients used in designing activated sludge process. The results obtained were analysed and interpreted to establish optimum design parameters for full-scale application.