Chapter I

INTRODUCTION

General Introduction

There are many soya - bean factories in Thailand. Generally, large amount of water is used in the processing but only a small portion is in the product, the rest is wastewater. The wastewaters contain organic matters exerting a strong demand of oxygen that cause anaerobic conditions, smell and fly-nuisance. This problem can be solved by treating the waste before discharging it into recieving bodies of water.

Soya - bean cake factories are found only in Asian countries. In Thailand, the studies of soya - bean cake waste water treatment has never been performed before. An investigation of waste treatment is performed by industrial waste survey and determination of raw characteristics of wastewater. After analysis of data, the suitable treatment processes are suggested

Purpose of Research

In Thailand, the studies of the treatment of soya - bean cake wastewater has never been performed. Unstandardize effluents or untreated wastewaters consume much oxygen and cause anaerobic conditions and putrefaction in surface water which

play an important role in the life of Thai people. The purpose of this research is to conduct:-

1. An inplant study of water use and wastewater generation, in order to minimize the release of polluting material and reducing the quantity of waste water discharge.

2. An evaluation of the quantity of wastewater discharges and analysis of physical and chemical characteristics of waste water at different times, and evaluate in unit emission rate for engineering design.

3. The study of the efficiency of alternative feasible waste treatment process in order to evaluate the method of treatment which should be installed to meet the effluent standards imposed by the Ministry of Industry.

The advantages of this research are the application of the efficient treatment process to soya - bean cake factories and other industries producing similar wastes.

Scope of Study

1. In - Plant Study

An inplant study of processing line, water use and waste water generation will be carried out in the first step of this research. In - plant study indicates an economical solution to the waste treatment problems by eliminating or

reducing the quantity of waste matter or waste water.

2. Waste water Sampling and Analysis

Composite samples **were** collected every hour during 6 - hrs operation at the same point.

Samples **were** analysed for

a. Chemical oxygen demand (COD)

b. Biological oxygen demand (BOD_5)

c. Solids

- Total solid
- Settleable solid
- Suspended solid

d. Nitrogen

- Ammonia nitrogen
- Organic nitrogen

e. Phosphorus

f. pH

Evaluate some characteristic to unit emission rate for analysis of treatment alternative and further design.

3. Analysis of Treatment Alternatives

Having determined the nature of the problem, the treatment requirements, the raw wastewater characteristics, and where possible, having made modification in unit processes of treatment plant.

Normal unit processes consist of

a. Primary treatment

b. Secondary treatment

4. Laboratory Evaluation

The objective of these studies are two folds.

a. to determine whether or not the wastewater is amenable to treatment with the proposed process

b. to obtain data that may be used for designing and operating pilot or full scale facilities

In this research, after consideration of wastewater characteristics, plain sedimentation was studied as primary treatment, and biological treatment as secondary treatment.

Laboratory evaluations on biological treatment consist of:-

Treatability study

Batch activated sludge study

Continuous - fed activated sludge study.