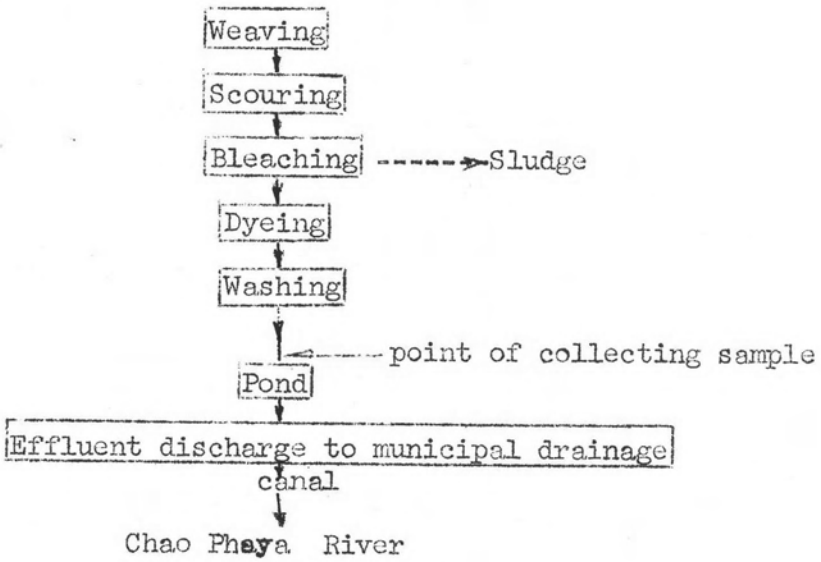
CHAPTER 6

PRINCIPLE METHOD OF INDUSTRIAL WASTEWATER TREATMENT

The principlemethod of industrial wastes treatment may be divided into 5 steps

6-1 Study of the Segregation

The quality of industrial wastes is not constant. Change in quality take place both with time and with point of process. In the study of treatment, it is necessary to study the process of the plant how to work and which points discharged the wastes. Because of the wastes of each points are not the same, some wastes are acid, some are basic, if studying through out the process. The methods of treatment are obtained, some point can be treated separately, some are treated by neutralization and some are discharged together at the same point and treating by the same method. The study of textile dyeing plant wastewater of Thailand Knitting Factory Company Limited at Soi Gluay Namthai, Sukumvit Road. This factory produced waistcoats and underwears. The process of operations are shown in flow chart diagram below



FLOW CHAI T DIAGRAM

Textile dyeing wastewater is collected from the point which dyeing wastes, scouring wastes and washing wastes are mixed together. Because the wastes from scouring has high in p^H and alkalinity, the dyeing process has highly in color but low in alkalinity than scouring and the washing process can be discharged directly to the municipal drainage. When the wastes are discharged together, the p^H and alkalinity will reduce lower than scouring wastes only. There are two methods of collecting samples. The first are grab samples the second are composite samples. The former are suitable for checking the strength and effect of each point the latter are composed of a mixture of grab samples taken at different times. The volumes of all grab samples may be the same to make up the composite, or the volume of each grab samples may be proportioned to the rate of flow at the time the sample is taken. Composite samples are important in analysis wastes because of the characteristics of waste are more likely to the actual characteristics.

Composite wastes from the textile dyeing plant wastewater of Thailand Knitting Factory Company Limited at Soi Gluay Namthai, Sukumvit Road are shown below:

p^H	Varies between	7.7-10.6
COD	"	112-408 mg/l.
alkalinity	"	230-2700 mg/l. as $CaCO_3$
color	"	400-2500 units
turbidity	"	66-550 units JTU
Suspended solids	"	122-196 mg/l.

In this plant, the goods produced about 400-500 dozen per day. Each dozen cost varies between 70-400 Bahts. The volume of ground water used about 50 m^3 per day. In each processes are states below.

1. Weaving

This process is no liquid wastes

2. Scouring

This process is prabably the most trouble some of all textile wastes because of the highly alkaline. The chemicals use in scouring are caustic soda, silicates and detergents. These chemicalsare used in scouring to prepare a clean, white cloth for finishing.

3. Bleaching

Bleaching operations use chlorine to remove natural coloring matters

4. Dyeing

Dyes used in textile plant are explained in Chapter 5. In this plant uses reactive dye, dispersed dye and direct dye. The volume of wastes in this process is large, and there is a high degree of color.

6-2 Do the Research

From step 1, when the raw characteristic of wastes is known. The method of treatment must be selected for economy. In textile dyeing wastewater may be summarized as follow:

1. Separation of wastes

2. Equalizing, also called composting or averaging

3. Screening, aeration, or other preliminary treatment

4. Mixing to cause self precipitation, also called co-precipitation.

5. Chemical precipitation

6. Mechanical filtration

7. Miscellaneous

In this research used chemical precipitation only

6-3 The Design

Having selected the method of treatment to be used, the type of tanks to be installed, and the general layout of the various plant units. In design each unit, the degree of treatment and type of operation must be considered: continuous, batch or batch continuous. The selection of consideration as follow:

1. Continuous operation

This means treating the wastes as they leave the factory processes, in the same volume of flow and with the same concentration of polluting elements and variation through the operation period in the processes of the factory. If the wastes vary considerably in volume of flow or in the concentration of compounds, constant attention will be required to compensate for the changes in treatment that will be needed. This will entail a constant sampling and analysis to change the chemical feeding apparatus for the chemicals and coagulants aids.

2. Batch operation

This method in-volves holding the wastes discharaged during a certain period, equal to or more than the average flow from the factory processes. During this period no treatment is given the wastes, but they are treated later over a given period of hours.

This method entails the use of two holding tanks for each waste line but the operation is simplified by the uniform flow of waste for treatment. (Babbitt, 1967).

3. Batch continuous treatment

This treatment is a combination of the two proceding methods.

In this research, Batch operation is suitable for textile dyeing wastewater because of the wastes are not flow continuous and the flow is more fluctuation.

6-4 The Construction

When the designer has completed the plans and specifications. The construction will work out. The designer responsible for the design of the plant should inspect and supervise this work. (Besselievre, 1969).

6-5 The Operation

Operation involves the maintenance and running of the plant. The designer should discuss the theories and practices of the methods of treatment and handing of materials that proposes to use.

The designer must detail the plant and the purpose of the various items of equipment and apparatus. The operator must maintain the plant and equipment to protect the capital investment, maintain records and make reports to prove the efficacy of the plant. (Besselievre, 1969).