

PEOPLE'S PARTICIPATION IN WASTEWATER MANAGEMENT IN FOOD INDUSTRY IN NONTHABURI PROVINCE

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Introduction

Statement and Significant of the Problem

National strategy 20 years (2018-2037) is the goal of sustainable development of the country which focuses on balancing development of economic, social, and environmental security with the participation of all sectors section, especially the development economy of that country It is necessary to consider the impact on the environment. It is important to create a good image. Including raising standards production and export empowerment in competition in the world market by focusing on promoting entrepreneurial awareness in the industrial sector to produce. Environmental and Community Responsibility to drive the economy along with efficient use of resources. Efficiency using environmentally friendly production processes. as well as creating awareness for the region people know own duty Be responsible to society and others. which will lead to the strengthening of communities to be self-reliant to manage and participate in audits. as well as solving the problem of pollution.

directly affect the community for the factory Industry and community can coexist peacefully.

Reduce complaints between communities and industrial establishments. by creating a monitoring mechanism and to monitor the impact of pollution systematically and efficiently on the environment through the cooperation of all sectors for sustainable industry development (20-year National Strategy, 2018) where the industrial sector is a key component of the country's economic development strategy. Because it creates value added (Value Added) to almost one-third of the country's gross domestic product. and has the highest labor productivity (Labor Productivity) compared to the agricultural and service sectors It also has a share in the value of more than 80 percent. of total export value Including important in terms of employment, with 1 in 4 of all workers having their main source of income from working in the industrial sector (Chutika Kiatruengkrai and others, 2020). It also drives the country's development and technology drive. Therefore, the policy the development of Thailand in every era has therefore focused on increasing the gross domestic product (GDP) with the distribution of income to the locality and bringing foreign currency back into the country. Developing the country's public utility system for the public to receive Thorough comfort The policy has resulted in the development of a variety of industries spreading across the provinces. various increasing rapidly until it became an industrial city as well as Nonthaburi Province which has more than 1.000 industrial plants and, in this number, there are more than 100 food industry factories of assorted sizes. According to the report of Chong Hua Nonthaburi industry, in 2022, there was an increase of 300 % of industrial factories, which is certain that the amount of wastewater released will be large and will have an impact on the environment. If the lack of responsibility of the factory and the surveillance of the people.

The selection of a wastewater treatment system depends on several factors, including the nature of the wastewater. Required level of wastewater treatment construction investment Operation, care and maintenance costs and the size of the land used for construction Currently, the wastewater treatment system can be divided into 6 types:

1. Stabilization Pond wastewater treatment system

2. Aerated Lagoon: AL wastewater treatment system
3. Artificial swamp wastewater treatment system (Constructed Wetland)
4. Activated Sludge Process :AS
5. Klong Suan Waen Wastewater Treatment System (Oxidation Ditch)
6. Biological turntable wastewater treatment system (Rotating Biological Contactor; RBC)

In most cases, the food industry will choose to use the activated sludge process. (Activated Sludge Process: AS), which is a biological treatment using aerobic bacteria as the main ones. degradation of organic matter in wastewater the activated sludge wastewater treatment system consists of 2 main parts: Aeration Tank and Sedimentation Tank. which has a lot of sludge as designed the conditions inside the aeration tank are conducive to the growth of aerobic microorganisms. These microorganisms will eventually decompose organic matter in the wastewater into the form of carbon dioxide and water. The treated wastewater flows to a sedimentation tank to separate the sludge from the clear water. Part of the sedimented sludge at the bottom of the aeration tank is pumped back into the aeration tank to maintain the required concentration of sludge in the aeration tank. And another part will be excess sludge (Excess Sludge) that must be eliminated further. For clear water, the upper part is wastewater that can be discharged into the environment. The effluent must meet the standards. Control the discharge of wastewater as specified in the announcement of the Ministry of Science, Technology and the environment, issue 3 (1996) on setting standards for controlling wastewater discharge from industrial factories and industrial estates.

Wastewater treatment is an important part of the food industry. Every year, a large amount of water is discharged into the environment and the community. Therefore, industrial operators must be aware of such problems. and choose to use a wastewater treatment system that appropriate so that the effluent from the factory meets the standards for controlling the discharge of wastewater from the source before releasing it into natural water sources. And having wastewater flowing into natural water sources would have an impact on the community. and environment in the area This means that all sectors involved must be aware of their responsibilities in order not to affect the environment eventually.

Currently, although there is no policy or any legislation that supports the full participation of communities in industry alongside socially responsible industrialization of developing countries. Throughout the business process but it has international standards. and standards of countries that have encouraged and promoted Action Support take this more seriously Thailand has adopted the International Organization for Social Responsibility Standards (Social Responsibility) by producing TIS/ ISO 26000 published in the Royal Gazette on February 14, 2011 (Volume 128, Special Part 18 D). This standard has 7 aspects: 1) Corporate Governance 2) Human Rights 3) Practices. Labor 4) Environment 5) Fair Practices 6) Consumer Issues and 7) Community Participation and Community Development, which the Department of Industrial Works Therefore, together with various agencies Develop and prepare standards for entrepreneur responsibility. Industry towards society since 2008, using the framework of the ISO 26000 draft and continuously developing. There are rewards to motivate industrial companies to participate in the project, so community participation and community development. As part of the social responsibility of the industry is more widespread. and want a pattern Example case of social responsibility management in community participation as a guideline for several types of industrial sectors.

Research Question

1. What is the current situation in wastewater management in food factories in Nonthaburi?
2. What is the guideline for wastewater management in food factories in Nonthaburi province?
3. What is the public participation in wastewater management in food factories in Nonthaburi province and what format should it be?

Research Objective

1. To study the current situation of wastewater management in food factories in Nonthaburi Province.
2. To study wastewater management guidelines for food factories in Nonthaburi Province.
3. To study the public participation model in wastewater management from food factories in Nonthaburi Province.

Significant of Research

1. The results of the study will inform the current situation of wastewater management in food factories in Nonthaburi Province. Including various obstacles that arise
2. The results of the study reveal the model of wastewater management guidelines for food factories in Nonthaburi Province.
3. The results of the study will reveal the role of participation of the public sector as affected persons and monitors. in managing wastewater in food factories in Nonthaburi province This will be a model for wastewater management with participation of all sectors in the future.

Scope of study

This research defines as qualitative research with details as follows.

Content Scope To study the current situation of wastewater management in food factories in Nonthaburi Province. Including various obstacles that arise and a pattern of factory wastewater management guidelines including the roles of the public sector as affected persons and monitors in participation in managing wastewater in food factories in Nonthaburi province.

population boundary

1. Key Informants⁰ will conduct in-depth interviews. using a semi-structured interview form the interviewees consisted of the governor of Nonthaburi province. Director General Department of Industrial Works Director General of the Pollution Control Department Chairman of the Federation of Thai Industries, Nonthaburi Province Environmental and Sanitation Academician Representatives of industrial factory entrepreneurs, total 10 persons

2. Groups participating in the Focus Group , which will consist of Community representatives in industrial areas Representative from the industry media representative Officials from the Department of Industrial Works Officials from the Pollution Control Department Nonthaburi Environmental Officer, total of 30 people.

Place and time boundaries Study in Nonthaburi Province Between February - December 2023

Definition of Term

Food industry refers to an industry that brings agricultural products to be utilized or processed into various products. The wastewater generated by the food industry must be properly treated before being discharged into the environment.

Wastewaters refer to waste in the liquid state including the mass contaminated and contaminated in that liquid. In most cases, it is water that has been used for various activities. And there is a high number of impurities that it becomes water that is not wanted by people. Wastewater can be divided into 3 types according to the principle of activity at the source as follows: Wastewater from communities (Domestic Wastewater), wastewater from agriculture (Agricultural Wastewater) and industrial wastewater (Industrial Wastewater), which must be treated before being discharged to the community or the environment.

Wastewater treatment refer to the removal or destruction of contaminants in wastewater to be completely gone or to a minimum. To meet the established sewerage control standards and do not cause pollution to the environment. In general, wastewater at its source is not the same. Therefore, there are many methods of wastewater treatment process. The wastewater treatment can be divided according to the mechanism used to eliminate contaminants in wastewater as follows.

1. Physical Treatment (Physical Treatment) is a way to separate contaminants from wastewater such as large solids, paper, plastic, food scraps, gravel, sand, fat, and oil. by using physical treatment equipment such as garbage sieves, sand gravel traps grease and oil trap and sedimentation tank This reduces the total solids contained in the wastewater.

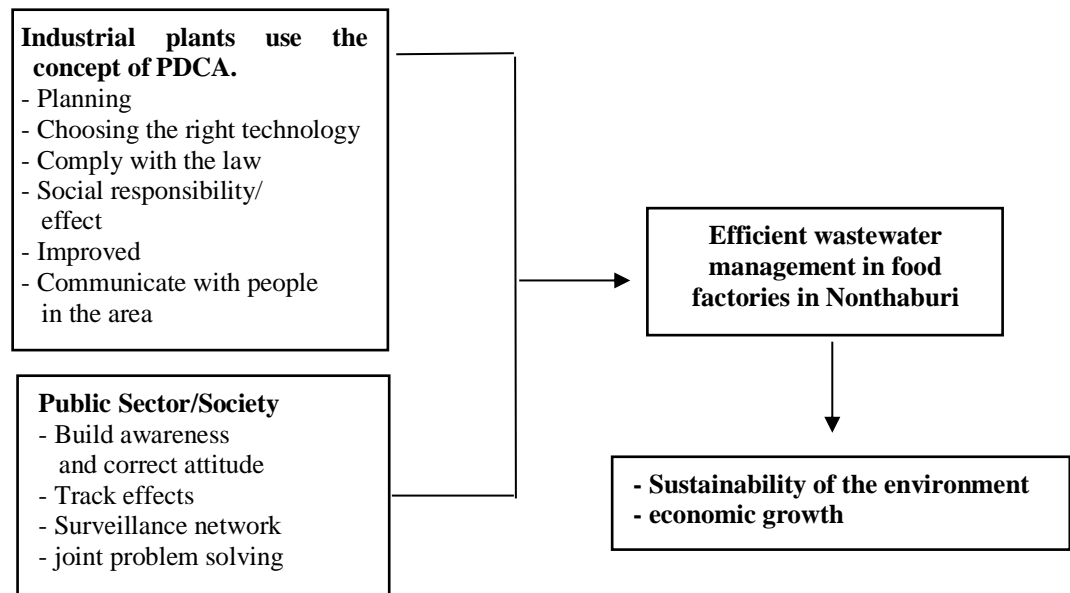
2. Chemical Treatment (Chemical Treatment) is a method of treating wastewater by using a chemical process. to react with impurities in the wastewater This method is used for wastewater containing one of the following components: pH value that is too high or too low, toxic, heavy metal, suspended solids that are difficult to precipitate. Contains water soluble fats and oils. Too high in nitrogen or phosphorus and have germs The equipment used to treat wastewater by chemical methods are fast stirring tanks, slow stirring tanks, sedimentation tanks, filtering tanks and disinfection tanks.

3. Biological treatment is a method of treating wastewater by using biological processes or using microorganisms to eliminate contaminants in wastewater, especially organic carbon, nitrogen, and phosphorus. These impurities are used as food. and as a source of energy for microorganisms in the culture tank for growth Makes the wastewater have a lower dirtiness value. These microorganisms may be aerobic (Aerobic Organisms) or anaerobic (Anaerobic Organisms).

Theoretical Concept and Related Literatures

1. The 13th National Economic and Social Development Plan (B.E. 2566-2570)
2. Environmental Quality Management Plan B.E. 2566 - 2570
- 3 Laws and strategies related to the management of marine and coastal resources
4. Wastewater Management Plan Pollution Control Department
5. Theoretical concepts of development management
6. Concept of sustainable development
7. Theoretical concepts of environmental management
8. Theoretical concepts about environmental conservation
9. Sustainable Development Goals: SDGs
10. International Conventions and Agreements Related to Administration natural resources and environment
11. Participation Concept
12. Theoretical concepts of demographics
13. Related Research
14. Conceptual Framework

Conceptual Framework



Bibliography

- Associate Engineer Company Limited. Wastewater treatment. [Online] [Quoted 14 November 2017], accessed from <https://www.xn--13ckbaaa2db3etcpke7b7kwfqcg.net/>
- Determine standards to control wastewater discharge from the factory. [Online] [Quoted 16 November 2017], access. From <http://www.diw.go.th/hawk/news/Announcement%20Chest.Wastewater.PDF>
- Industrial wastewater treatment. [Online] [Quoted on 15 November 2017] https://en.wikipedia.org/wiki/Industrial_wastewater_treatment
- Prasit Ruangrit. Wastewater treatment system. [Online] [Quoted 14 November 2017], accessed from http://news.ubmthailand.com/Newsletter/2013/TW/Files/Session/07-Presentation_Mr.Pasith.pdf
- Wastewater system. [Online] [Quoted on 15 November 2017] <http://www.coe.or.th/coe-2/Download/Articles/ENV/CH3.pdf>