REPORTING AND DISCLOSING THE POLLUTION INFORMATION UNDER THE FACTORY ACT B.E. 2535

BY

MISS PAKARAT SRICHAROENSUKPHAK

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF LAWS IN BUSINESS LAWS (ENGLISH PROGRAM)

FACULTY OF LAW

THAMMASAT UNIVERSITY

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was approved as partial fulfillment of the requirements for the degree of Master of Laws in Business Laws (English Program)

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ABSTRACT

The objective of this thesis is to study the issue of the reporting and disclosing of pollution information and related problems. In particular, this thesis will focus on comparing Thailand's existing laws with the concepts and legal controls of reporting and disclosing pollution information under United States law and Japanese law. An investigation is also conducted into the problems and hindrances relating to the enforcement of these laws. This includes looking at ways to improve the requirements of the law for reporting and disclosing pollution information so that better prevention and problem-solving can be effectively implemented.

The study found that the industrial factory sector is governed by the Factory Act B.E. 2535 (1992) which is the relevant law to enforce the reporting of pollution information. However, this law does not effectively allow for prevention and problem solving. This could be a result of the restrictions on the scope of the law and the lack of sanctions found in it. Another issue is that the existing laws only enforce the reporting of pollutants that are released into air and water. The reporting of pollutants released into soil is done according to the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016). This was recently enacted on April 29, 2016 by virtue of the provisions in Section 6 Paragraph 1 and Section 8 (4) - (8) of the Factory Act B.E. 2535 (1992). However, this regulation

stipulates only that industrial factories must report information of soil and groundwater contamination criteria within the factory area, not covering outside the factory area. Additionally, on disclosing pollution information, there are no laws under Factory Act B.E. 2535 (1992) to disclose pollution information to the public. There is only the Official Information Act B.E. 2540 (1997) which requires that the government agencies disclose information to the public. However, disclosing or accessing such information is limited to information that is in the possession of the government agency or state enterprises. This does not include the information that is in the possession of factories in the private sector. This is a big problem because people need to access this information in order to protect themselves from the dangers of pollutants.

Therefore, this thesis will amend Ministerial Regulation of Controlling on Soil and Groundwater Contamination Criteria within Factory B.E. 2559 (2016) which is the subordinate legislation of Factory Act B.E. 2535 (1992) to enforce that industrial factory reports the pollution information which is contaminated into the soil and groundwater within factory area, and covering outside factory area. Moreover, it should enact a new subsection of Section 8 of Factory Act B.E. 2535 (1992) to directly force industrial factories in the private sector to disclose their pollution information to the public or give the public the right to access the environmental information and pollution information of the industrial factory.

Keywords: Report, Disclosure, Pollution, Pollutant, Information, Environment

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CHAPTER 1
INTRODUCTION

1.1 Background and issues

Contaminants which are released into the environment which cause the destruction of natural resources are known as "pollution". Pollution has always been a big problem in the world, and we need to take suitable steps to protect the environment and solve this problem. The growing rate of pollution has caused severe damage to the world's ecosystems. This can be seen from the increase in global warming. Furthermore, pollution is an increasing factor in many human diseases as well as causing the death of many plants and animals, which in turn creates an imbalance in their populations.

Therefore, reporting and disclosing the amount of pollution released from different sources including information on industry type and other sources, for example, pollution released from vehicles, agriculture, households etc. could be one tool that the public could use to estimate the level of risk and the effect on people, animals and the surrounding environment. This is particularly important if there is an accident or emergency, such as an explosion or a factory leak of hazardous chemicals. If the public is aware of the aforementioned information, it will benefit because this information will protect their own health from pollution as well as make them aware of the dangers of pollutants that can affect animals and the environment around us. At the same time, the government is able to use the information as a tool in managing and controlling the release of pollution at source. This will help enforce the appropriate policies to manage and control the release of pollutants that is appropriate in cooperation with every sector that contributes to sustainable development activities in the future.[1]

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[1] Journal of Environmental Management, *"PRTR: Measures of Management and Control Pollution Problems"*, file:///C:/Users/sony/Downloads/26420-58327-1-SM.pdf (last visited Apr 17, 2016).

Reporting originates from the principle concept of the public's right to know through developing the process of reporting the aforementioned pollution information to the public. This will cause there to be efforts made to reduce the release of pollution from industrial factories because the public has been made aware and cares about pollution problems.

Reporting information on pollution first happened in the United States. This was as a result of the tragic events in Bhopal, India in 1984. Shortly after this tragedy, Congress issued a law on emergency planning and recognition of community rights (Emergency Planning and Community Right to Know Act). A reporting system also called the Toxics Release Inventory or TRI was established. After the TRI system had success in reducing pollutant emissions, other countries such as Australia, Canada, and Mexico began to develop similar reporting systems.[2]

The use of this concept internationally occurred for the first time in the UN Conference on the Environment and Development (UNCED), also known as the Earth Summit in 1992 in Rio de Janeiro, Brazil. The outcome of aforementioned meetings contributed to Agenda 21. Chapter 19 of the plan clearly calls for the government of countries that endorsed Agenda 21 to prepare and update information on emissions of pollutants into the environment.[3]

In the first stage of preparation of pollutant emission information, the words "Emission Inventory" were used. However, in 1993, there was a change from the term "Emission Inventory" to the term "Pollutant Release and Transfer Register" or PRTR instead. The original term was not yet inclusive of the characteristics and trending issues that would be conducive to the development of a reporting system that covers the average environment sufficiently because the word

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[2] Project Development in the legal of reporting and disclosing the pollution information to the public, *"Development of Pollutant Release and Transfer Register System in the International",* http://www.learnprtr.net/index.php?lay =show&ac= article&Id=539649254 &Ntype=9 (last visited Apr 17, 2016).
[3] ***Id.***

“Emission” refers specifically to emission of pollutants released into the air, not including emissions into water and soil.[4]

In 1993, the member countries of the Organization for Economic Cooperation and Development (OECD) along with the UN authorized the Secretary of the OECD to prepare a guide for the governments interested in the PRTR system. These guides were published and distributed in 1996. Apart from that there was support in the development of the PRTR systems by the United Nations Institute for Training and Research (UNITAR) through the implementation of pilot projects and potential building activities in various countries.[5]

Later in 2002, the World Summit on Sustainable Development (WSSD) was held in Johannesburg, South Africa. The meeting reaffirmed the need to "promote the potential of strengthening developing countries to deal with hazardous chemicals and hazardous waste appropriately by providing technical or financial assistance. This includes actions at all levels to support the development of information on chemicals that remains coherent and integrated. This was put forward and was brought about through the creation of a database: the National Pollutant Release and Transfer registers.[6]

At this meeting, there was a resolution to approve the Strategic Approach to International Chemicals Management (SAICM). Later, the SAICM strategy received endorsement from the member countries at the 1st International Conference on Chemicals Management (ICCM-1). In February 2006 in Dubai, United Arab Emirates, the SAICM strategy highlighted the importance of proper management of chemicals throughout their lifecycle. The SAICM will also set a common world goal by the year 2020 to make sure that in the production and use of chemicals, importance is placed on reducing the harmful impact to human health and the environment as much as possible. This approach is essential to protect the world and keep it safe from dangerous chemicals by focusing on five basic principles, namely 1) reducing risks

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[4] *Id.*
[5] *Id.*
[6] *Id.*

from hazardous chemicals; 2) public access to information and the promotion of knowledge; 3) establishing good governance; 4) building on potential technologies; and 5) banning the transportation of hazardous waste across borders illegally.[7]

In addition to the implementation of the SAICM Strategic Plan, there was also an agreement between the nations on managing chemical substances that contained matters that were relevant to the PRTR system. Nations have drafted the following relevant agreements.[8]

1) Stockholm Convention

The Stockholm Convention on Persistent Organic Pollutants (POPs) is the convention under the United Nations Environment Program (UNEP) which announces bans and regulates the use of industrial chemicals and agricultural chemicals which have properties that remain in the environment for a long time. These properties spread further into the environment, accumulating in the fatty tissue of living organisms and affecting humans and wildlife.

This Convention was adopted on May 22, 2001. It urged countries to take measures to reduce or stop using and releasing hazardous POP chemicals, whether deliberately or not. The obligations of the Convention party members are to sign an action plan for their country within two years from the date on which the Convention begins to be enforced. The Stockholm Convention began to be enforced on May 17, 2004, after France, the 50th country, ratified the convention to reduce the release of POPs as a whole and promote the use of Best Available Techniques (BAT) and Best Environmental Practices (BEP) for both existing and new sources of pollution in accordance with the action plan.

The Stockholm Convention also focused on the system for reporting and monitoring the release of hazardous chemicals as well as promoting the development of the aforementioned PRTR. The Stockholm Convention highlighted that "Party

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[7] *Id.*
[8] *Id.*

members must seriously consider the development of mechanisms for the information collection and distribution of information to forecast dangerous chemicals that have been released or transferred, one example of this is the PRTR".[9] As in many official documents, the National Implementation Plan (NIP) also mentioned PRTR repeatedly as part of the Chemical Management Program and that the PRTR is a complete and comprehensive approach to information management.

Thailand signed the Convention on May 22, 2002 and ratified it on January 31, 2005. After that, Thailand established the Pollution Control Department which is the agency coordinating the delivery of the management plans at the national level to the Office of the Secretary on July 8, 2007.

2) Aarhus Convention and the PRTR Protocol

After the Earth Summit in Rio de Janeiro, Brazil in 1992 the United Nations Economic Commission for Europe (UNECE) proceeded according to Action Plan 21 to start the Convention reporting on access to information, public participation in decision-making and access to environmental justice in 1996. The Ministers of the Member States of the United Nations Economic Commission for Europe (UNECE) and the European Union signed an agreement regarding "the Convention on access to information and the participation of citizens in decision-making and access to environmental justice", which is also known as the Aarhus Convention, according to the proposal of the United Nations on June 25, 1998 in the town of Aarhus in Denmark. The Convention has been in force since October 1998.

The Convention is another important step in the development of the PRTR system along the principles of participation and the perception of the public. This is a development in the approach as a result of the Earth Summit in Rio de Janeiro as it helps to translate the principles of the Rio Declaration making the principles

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[9] Stockholm Convention, Article 10, Paragraph 5 provides that
"Each Party shall give sympathetic consideration to developing mechanisms, such as pollutant release and transfer registers, for the collection and dissemination of information on estimates of the annual quantities of the chemicals listed in Annex A, B or C that are released or disposed of."

concrete and clear. This was done through the agreement of and providing more details on about three rights that the public should have: 1) the right to access environmental information which includes non-discrimination of the request for information - no matter the citizenship, nationality or residency the person has; 2) the right to access the justice system as required, for example, individuals can appeal if the state refuses to provide environmental and other information, as a tool to combat further claims; and 3) the right to public participation in the decision as to whether or not to carry out certain activities that affect the environment, such as projects to build roads, dams, power plants and factories.

This Convention has the power to enforce laws on the UNECE member countries and the European Union. Each country needs to improve its internal laws to conform to the principles of this Convention. Although the context and the source of the Convention came from a group of European nations, there have been efforts to apply this approach to various ethnic groups in other regions, such as Asia, particularly in areas related to environmental protection and human health.

PRTR is considered as a tool for the public to access environmental information which aligns well with the goals of the Aarhus Convention. There was a working group set up between countries in the field of PRTR, in the second meeting of the members that adopted the Convention. In order to draft the PRTR Protocol, the Protocol was signed by the UNECE member countries and the European Union on May 21, 2003 in Kiev, Ukraine. This protocol is open to any country that is a member of the United Nations to participate in by signing up at the UN Headquarters, New York, USA. From January 1, 2004, the Protocol was ratified by 16 countries. On October 8, 2009, the PRTR Protocol came into force.

The PRTR Protocol aims to promote access to information and participation by the public, as well as encourage the reduction of pollution through the establishment of the PRTR in different countries or even direct data governance oversight over pollution emissions. This Protocol is expected to result in pressure to reduce pollutants even more. The provisions of the PRTR Protocol are only the minimum requirement that each country should implement. Each country is

capable of designing a PRTR system for itself rather than the Protocol defining it. However, depending on the country, since different countries have different structures in terms of information management and information quality pollutant emissions, the PRTR Protocol also views the PRTR system as a system that has improved and changed over the years, both domestically and in terms of international cooperation.

It is therefore necessary to study the requirements for reporting and disclosing pollution information and their subsequent implementation. It is also essential to analyze existing solutions and proposals from other countries in order to compare them with current relevant laws of Thailand. This will help to understand the gaps in Thailand's laws and be able to propose appropriate and effective solutions.

1.2 Hypothesis

Currently, the Factory Act B.E. 2535 (1992) is the relevant law which requires the industrial sector to report pollution information. However, the law only enforces the reporting of pollutants that are released into the air and water. For the reporting of pollutants that are released into the soil, the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016) stipulates only that industrial factories must report information of soil and groundwater contamination within the factory area. It is not cover outside the factory area. Additionally, on the disclosure of pollution information there is only the Official Information Act B.E. 2540 (1997) which requires that the government agencies disclose information to the public for acknowledgement. However, disclosing or accessing such information is limited to information that is in the possession of government agencies or state enterprises; it excludes information that is in the possession of factories in the private sector. Therefore, it is necessary to study and analyze these problems in order to propose possible and appropriate solutions. It is also essential to amend the laws to require industrial factories to report and disclose pollution information that covers all areas, including clearly specifying the guidelines that should be used and information that should be reported and disclosed.

1.3 Objectives of the Study

1. To study the significance of reporting and disclosing pollution information
2. To study and analyze foreign laws and regulations which govern the reporting and disclosing of pollution information, including law enforcement.
3. To study and analyze the current laws on reporting and disclosing pollution information under Thailand's legal system.
4. To analyze whether Thai law should adopt the concepts of United States law and Japanese law as guidance for reporting and disclosing pollution information.
5. To suggest solutions to amend current Thai laws on reporting and disclosing pollution information.

1.4 Scope of the Study

This thesis studies the issue of the reporting and disclosing of pollution information and associated problems. Presently, there are many industrial factories in cities, around populated areas or even close to natural resources and tourist attractions. Even though these industrial factories are in industrial areas, there are still many people that work and live in close proximity. Therefore, checking the standard of reporting and disclosing of pollution information is important and necessary. In the instance that one of these industrial factories has an accident like a chemical leak or something happens that has an effect on humans, animals and the nearby environment, the reporting and disclosing standards would ensure that residents and the nearby community would be able to protect themselves, deal with the problems and be well informed of what is happening.

In terms of legislation, the focus of this thesis is on the Factory Act B.E. 2535 (1992), Ministerial Regulation or Notification issued pursuant to the Factory Act B.E. 2535 (1992), and the Official Information Act B.E. 2540 (1997). Moreover, a comparison is made between existing legal requirements under Thai law regarding reporting and disclosing pollution information to the public and those under United States law and Japanese law. It begin with the consideration of the background of

the duty to report and disclose pollution information and examples of situations where pollution severely impacted on humans, animals, the environment and communities. Finally, in order to find appropriate solutions that can be enforced on industrial factories to make them report and disclose pollution information, this thesis will be based on a comparative study between United States law, Japanese law, and Thai law.

1.5 Study Methodology

This study was conducted by documentation research using documents and other texts as source materials, including journal articles, books, and other information such as internet pages. Also included in this thesis are comments and suggestions from related private organizations. The information will be applied and analyzed in order to find appropriate and practical solutions.

1.6 Expectation of the Study

1. To understand the significance of reporting and disclosing pollution information.
2. To understand the foreign laws and regulations which govern reporting and disclosing of pollution information, including law enforcement.
3. To understand the current laws on reporting and disclosing of pollution information under Thailand's legal system.
4. To suggest the ways that Thai law should adopt the concepts of United States law and Japanese law as guidance for reporting and disclosing pollution information.
5. To suggest the appropriate solutions to amend current Thai laws on reporting and disclosing pollution information.

CHAPTER 2
DUTY TO REPORT AND DISCLOSE POLLUTION INFORMATION

2.1 Background

Nowadays, many industrial factories are established around the world and tons of their pollutants are released. This affects the health of our water, land and air every year. These pollutants have severe impacts upon people who live near the source of the pollution and may cause serious health problems. Moreover, it can also have an adverse effect on wildlife and the environment. There are many recorded cases which show the effects of pollution that has been released from industrial factories.

For example, in December 1984, a hazardous chemical leaked from a Union Carbide chemical plant in Bhopal, India. Union Carbide India Limited (UCIL) was a chemical company which produced industrial batteries, welding equipment, pesticides, carbon products, plastics and chemicals. In 1970, UCIL constructed a pesticide plant which has gained worldwide attention as the worst industrial disaster in the world.[10] A deadly dosage of the poisonous methyl isocyanate (MIC) gas leaked from a tank of pesticides into the community surrounding the plant at the UCIL pesticide plant in Bhopal, Madhya Pradesh. MIC is one of the substances which is used in manufacturing pesticides by combining phosgene with methyl amine. In this accident almost forty tons of this gas was released into the air. This had a severe impact on people in the surrounding areas, causing a burning sensation in the eyes and made breathing difficult due to the lack of oxygen. As a result, there were many deaths.[11] The Indian government estimates that the leaked gas caused the deaths of almost 3,000 people; 50,000 people were permanently disabled;

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[10] Top Entity, *"Union Carbide India Limited"*, http://www.topentity.com/union-carbide-india-limited/ (last visited Jan 1, 2016).

[11] Discover India with Important India, *"Summary of Bhopal Gas Tragedy (facts)"*, http://www.importantindia.com/7657/summary-of-bhopal-gas-tragedy-facts/ (last visited Aug 1, 2015).

and there were 15,000 subsequent deaths as a result of exposure to the poisonous gas.[12]

This case was finally taken to the Civil and Criminal District Court of Bhopal. In June 2010, eight former employees were found guilty of causing death by negligence. They were sentenced to two years in prison and fined around $2,000 each. This was the maximum punishment allowed by law. However, one former employee died before he could be convicted.[13] In this case, the MIC gas polluted drinking water, tanks, soil and also affected pregnant women, fetuses and new born babies. As such, this was one of the deadliest disasters caused by human negligence in the maintenance of dangerous gas.

Another example is the operations of Shell in Nigeria. It owned an oil pipeline which lay across the homes and livelihoods of minority groups. There was an oil leak from this which caused a fire and an explosion. The oil contamination also caused damage to the land and water resources.[14]

Moreover, the UK company, BP caused an oil rig explosion on April 20, 2010, killing a total of 11 workers, and causing a massive oil spill in the Gulf of Mexico. This event had a serious impact on the environment. The result was that around 3000 animals died.[15]

A further example is form the operations of Trafigura in the city of Abidjan, Ivory Coast. The company disposed of hazardous waste in 18 sites across the city which was close to homes, places of employment, schools and prisons. This caused

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[12] Business & Human Rights Resource Centre, *"Union Carbide/Dow lawsuit (re Bhopal)"*, http://business-humanrights.org/en/union-carbidedow-lawsuit-re-bhopal (last visited Aug 1, 2015).

[13] - - - - - - - -, *"Bhopal disaster explained"*, http://everything.explained.today/Bhopal_disaster/ (last visited Jan 1, 2016).

[14] อัชฌา สงฆ์เจริญ, สิทธิในการเข้าถึงข้อมูลสิ่งแวดล้อมในความครอบครองของเอกชน, (วิทยานิพนธ์นิติศาสตร์มหาบัณฑิต คณะนิติศาสตร์ มหาวิทยาลัยธรรมศาสตร์, 2557) (Atcha Songjaroen, **Right of Access to Environmental Information Held by Private Sector**, Master of Laws Thesis, Faculty of Laws Thammasat University, 2014).

[15] *Id.*

air pollution and strong odours. Moreover, more than 100,000 people suffered injuries and were hospitalised.[16]

In Thailand, there is a historic case of lead contamination of Klity creek. Klity Creek is located in Kanchanaburi province, a part of Thailand known for its national parks and scenic waterfalls.[17] There are about 400 ethnic Karen people living in Klity Creek village. They are farmers of rice, vegetables and cassava. 11 kilometres upstream from Lower Klity Creek village was a factory which started operating in the mid-1960s. Klity Creek became one of the most heavily polluted industrial sites in Thailand. In 1998, this factory was ordered to close due to lead leaking into the environment. These very dangerous pollutants remain present to this day.

The residents of Klity Creek are still exposed to very dangerous chemicals and very poisonous levels of lead which cause many serious health problems. Many people who live close to the industrial factory suffer from the symptoms of lead poisoning. These symptoms include muscle spasms, anemia, anxiety, disorientation, headaches, insomnia, convulsions, memory loss, mood changes, sudden behavioural changes, high blood pressure, abdominal pain, depression, hearing impediments and fatigue. Furthermore, it targets children's developing nervous systems.[18] The residents from Klity Creek may be exposed to lead from contaminated drinking water and food, by coming into contact with polluted soil or by breathing air contaminated with lead particles.

As a result of this incident, the Karen people sued the government, alleging that it had failed to protect their right to live in a healthy and stable environment. The court eventually ordered the Pollution Control Department of Thailand, which is used by the government to prevent and resolve pollution problems, to pay almost 4 million baht in compensation. This payment was to be distributed among

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[16] *Id.*

[17] Bangkokpost, *"Klity Creek's neglected toxic lead legacy"*, http://www.bangkokpost.com/print/450120/ (last visited Jan 1, 2016).

[18] Human Right Watch, *"Thailand: Clean Up Klity Creek Confront Toxic Legacy Before Reopening Lead Mines"*, https://www.hrw.org/news/2014/12/15/thailand-clean-klity-creek (last visited Jan 2, 2016).

the affected people. The court also ordered the government to clean up the contaminated area. This was the first ground-breaking order issued in Thailand's history.[19]

Another case in Thailand was a chemical explosion at Klong Toei on March 2, 1991 where four people were killed instantly and 43 others were injured. Many people's lives and properties were also severely impacted by this event.[20]

One final case that deserves a mention is the oil spill on Samed Island resulting from the operations of PTTGC which had a serious impact on the environment, the way of life of the people in the area, the economy and tourism.[21]

From the above cases, it can clearly be seen that, although the operation of the private sector is extremely important to drive the economy by contributing to job creation, at the same time it can cause adverse effects on the environment. When there is environmental degradation, it is very difficult to restore the environment to its original condition. There is also a violation of the right to live in a good environment (environmental rights), as well as a potential violation of the right to life and health of people and animals. Thus, it is essential to have clear laws for the industrial sector. These laws should give specific requirements for reporting and disclosing of pollution information, including the name or types of pollutants that are to be released. However, we can see that Thailand's existing laws do not contain substantive provisions to solve these problems. The current laws cannot be used to enforce stricter reporting and disclosing of pollution information in the industrial sector. The study of these principles will therefore help us to understand the problems.

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[19] Human Right Watch, *"Toxic water, tainted justice Thailand's Delays in Cleaning Up Klity Creek"*, https://www.hrw.org/sites/default/files/reports/thailand1214_web.pdf (last visited Jan 2, 2016).
[20] Atcha Songjaroen, *supra* note 14.
[21] *Id.*

2.2 Definition

2.2.1 Pollutant

The meaning of pollutant is given in Section 4 of the Enhancement and Conservation of National Environmental Quality Act B.E. 2535 (1992), as follows:

*"**Pollutant**" means "wastes, hazardous substances and other polluting substances as well as residues, sediments or remainders of such matters, which are discharged from point sources of pollution or naturally occur in the environment, that have or are likely to have impacts on environmental quality or to cause conditions poisonous or harmful to the health and hygiene of the public, and shall mean to include radiation, heat, light, noise, odor, vibration or other nuisances emanated or discharged from point sources of pollution."*[22]

A pollutant is therefore matter or substance that has contaminated the environment such as garbage, waste or any other form of toxic waste caused by human activity. Thus, it can be concluded that the word "pollutant" is likely to be classified as a toxin or a cause of pollution.

Pollutants or rising contamination will create the following disadvantages:[23]

- Damage to the health of humans due to chemicals in the air, water, food and radioactivity;
- Damage to the environment, which includes damaging the quality of plants, animals, soil and water;
- Damage to the environmental landscape due to the production of smoke and dust from chemicals, sounds, waste, filth and residues;
- Long term damage to the health of people due to the accumulation of toxins in the body, resulting in cancer, radioactivity and hearing problems etc.

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[22] The Enhancement and Conservation of National Environmental Quality Act B.E. 2535 (1992), Section 4.

[23] - - - - - - - - - -, *"Pollution in the Environment : Pollutant from the Industry"*, http://www.geocities.ws/ return_social/toxicinenvironment.doc. (last visited Dec 13, 2015).

This suggests that environmental pollutants are not limited to substances that may harm society and the environment but include noise that may damage auditory systems, chemical substances in the food industry, heat, odours, vibrations and any other forms of interruption.

The increasing amount of pollutants in the environment is connected to the increase in the human population, industrial development, more agriculture, and advancing technology in the energy sector. The result is irreparable harm to human health and society.

2.2.2 Pollution

The meaning of pollution is also given in Section 4 of the Enhancement and Conservation of National Environmental Quality Act B.E. 2535 (1992) as follows:

"Pollution" means "the state or environment that has been affected, changed or contaminated by pollutants, resulting in deterioration of environmental quality, such as water pollution, air pollution, soil pollution."[24]

Pollution can be defined as the presence or introduction of chemicals or any other forms of emissions into the environment which causes deterioration to the environment and has a direct effect on human health. While this environmental deterioration may not have an immediate effect on human health, it might cause side effects to the food chain and the growth of all living creatures in the ecosystem. The resulting ecological imbalance is believed to have a significant long-term and indirect effect on human health and society.

Thus, the word "pollution" is the resulting contamination or the contamination to an environment by a pollutant, and pollution can be defined as the environment that has been affected or contaminated by pollutants.

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[24] The Enhancement and Conservation of National Environmental Quality Act B.E. 2535 (1992), Section 4.

At the present, pollution is released in every part of the world. Pollution affects not only people, animals and plants but also has an effect on the wider environment such as rivers, lakes, mountains, rocks, etc. It is caused when pollutants contaminate natural resources as a result of changes in our normal lifestyles. Pollution is the significant factor which disturbs our ecosystem and the balance of life in our environment. Moreover, due to the advancements of society, pollution has also caused global warming and many diseases in the world.[25]

There are many different types of pollution. These classifications are based on the effects pollution has on certain parts of the environment. Each type has its own characteristics. The study of each pollution category will help in the understanding of the basics of pollution and will help people to be consciously aware and minimize their contribution to these dangers to the environment.[26]

Nowadays, there are 7 recognized kinds of pollution in the world:

1) Air pollution

Air pollution has impurities in quantities higher than the normal level over a long period of time, causing changes to the composition of the air because of the amount of dust, harmful gases, toxic odours, smoke, smog and too much radioactivity in the atmosphere, causing harm to humans, animals, plants and other things.[27]

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[25] Conserve Energy Future, "*What is Pollution?*", http://www.conserve-energy-future.com/PollutionTypes.php (last visited Aug 1, 2015).

[26] Read and Digest, *"What are the different types of pollution?"*, http://readanddigest.com/what-are-differnt-types-of-pollution/ (last visited Aug 1, 2015).

[27] ศูนย์เทคโนโลยีอิเล็กทรอนิกส์และคอมพิวเตอร์แห่งชาติ, กฎหมายสิ่งแวดล้อม (ปทุมธานี : ฝ่ายศึกษาวิจัยประเด็นด้านจริยธรรม กฎหมาย และผลกระทบทางสังคมของเทคโนโลยีสารสนเทศ ศูนย์เทคโนโลยีอิเล็กทรอนิกส์และคอมพิวเตอร์แห่งชาติ สำนักงานพัฒนาวิทยาศาสตร์และเทคโนโลยีแห่งชาติ กระทรวงวิทยาศาสตร์และเทคโนโยลี, 2552), น. 32 (National Electronics and Computer Technology Center (NECTEC), **Environmental Laws** (Pathum Thani : Section of Morality Law and Affect Society of Information Technology National Science and Technology Development Agency (NSTDA) Ministry of Science and Technology, 2009), at 32).

Air pollution is one of the most dangerous and hazardous forms of pollution because it can spread very quickly through the air.

Air pollution can be divided into 2 types:[28]

I. The first type is known as "the primary pollutants" which occur when pollutants are released into the air due to the excessive burning of fossil fuels, for example, in our daily lives the emissions that result from cooking and using vehicles, as well as the emissions from industrial activities where huge amounts of chemical substances are released into the air.

II. The second type is known as "the secondary pollutants" which are generated when primary pollutants react with natural air, resulting in the formation of carbon monoxide, chemical vapours, nitrogen oxide and sulphur dioxide.

Causes of air pollution include the following:[29]

I. Burning forests create dust and soot and when the wind blows such dust and soot travels in all directions This can cause smog.

II. In the major cities, the number of vehicles is increasing rapidly. This creates dust and carbon dioxide. Especially in areas with heavy traffic jams and urban neighbourhoods, this will create more nitrogen dioxide and sulphur dioxide.

III. Certain types of gases are emitted when garbage is dumped and waste results from experimental sciences such as nuclear furnaces. The destruction of materials and chemical waste from experiments is a main cause of air pollution.

Air pollution has many effects. A number of these are listed below.[30]

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[28] Udemy, *"Different Types of Pollution and Methods of Control"*, https://blog.udemy.com/different-types-of-pollution/
(last visited Jan 3, 2016).
[29] National Electronics and Computer Technology Center (NECTEC), *supra* note 28 at 33.
[30] *Id.* at 34.

I. Health and Human Sanitation

Air pollution can cause irritation to the nervous system such as the nose, throat, eyes, and even cause diseases in many systems within the body, including emphysema, asthma, cancer and heart disease. In addition, odours, dust, dung ash, smoke also cause annoying problems although they are not harmful to health. A major impact on the well-being of mankind could come from taking measures to move residents to escape air pollution.

II. Agricultural Farming

Air pollution affects vegetation. Once in the air, gases such as sulphur dioxide come into contact with leaves causing the plants to become yellow around the edges. This stops the production of chlorophyl and nitrogen dioxide causing the vegetation to become weak.

III. Buildings or Places of Historical Significance

Air pollution and toxic gases are a major cause of damage to buildings or places of historical significance. The damage is caused by a chemical reaction in the corrosion of metals such as nitrogen oxides.

IV. Greenhouse Effect

Air pollution causes an indirect effect that over a long period of time has accumulated until it has become a big problem that many countries now face. It is called the Greenhouse Effect. The Greenhouse Effect is caused by certain types of poisonous gases such as sulphur dioxide and carbon dioxide. When these accumulate in the atmosphere to the point of imbalance, it causes surface temperatures to rise which is called global warming. This affects the climate of the world and life on earth dramatically. Moreover, air pollution has resulted in increased temperatures, acid rain, drought and smog.[31]

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[31] Live Science, *"Pollution Facts & Types of Pollution"*, http://www.livescience.com/22728-pollution-facts.html (last visited Jan 3, 2016).

2) Water pollution

Water pollution refers to when bodies of water are contaminated with hazardous chemicals. This can be dangerous to humans, animals and plants and can negatively change nature. It also causes damage to the utilization of water resources.[32]

Nowadays, contaminated water is a problem that results from water pollutants such as chemicals, bacteria or other particles; these contribute to a reduction in water quality and purity. Water pollution can occur in any type of water such as lakes, rivers, oceans and underground reservoirs. Because water is in liquid form, water pollution is easily spread from one place to another. Moreover, water pollution not only creates dirty water and the extinction of aquatic animals but it also contaminates the entire food chain which in turn seriously affects human existence. In addition, water pollution contributes to diseases such as diarrhoea and cholera.[33] These diseases have a very big impact in some parts of the world.

Water pollution occurs in a number of ways. These are given below.[34]

I. Wastewater from Communities

Wastewater from communities is the main cause of water pollution that occurs in urban and metropolitan cities. This is true of places that are heavily populated. Garbage and sewage come from housing, shops or markets, including wastewater, cooking and excretion of waste.

II. Wastewater from Hospitals

Hospitals are businesses that need to strictly control the discharge of waste into water sources because waste generated from hospitals may not be just general waste such as is the case with vegetable markets and shops. Waste from hospitals is contaminated with potentially deadly germs, chemicals and drugs from patients.

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[32] National Electronics and Computer Technology Center (NECTEC), *supra* note 28 at 21.
[33] Conserve Energy Future, *supra* note 26.
[34] National Electronics and Computer Technology Center (NECTEC), *supra* note 28 at 21 – 22.

III. Wastewater from the Factory Industry

Industrial wastewater is another cause of water sources being polluted. For instance, washing raw materials, washing machines and thermal waste are disposed of in the form of organic and inorganic substances, depending on the activity of the factory.

IV. Wastewater from Agriculture

Wastewater from agriculture is caused by drainage from agricultural regions or rain that washes out chemicals such as fertilizers or pesticides down into natural water sources.

V. Large Livestock Farming

The farming of livestock such as cattle, pigs, chickens, ducks and fish often produces sewage and food waste. When dung mixed with sewage is released into water sources, it causes spoilage.

VI. Mining

Mines creates pollutants when mineral resources enter a body of water. Mineral waste management is not coordinated well, including the process of producing minerals.

The effects of water pollution are very widespread. These include reducing drinkable water supply, disrupting crop irrigation and destroying certain fish and wildlife species.

3) Soil/Land Pollution

Soil is a natural basis for human life. It is the source of four factors: food, shelter, clothing and medicine. Soil is a resource that exists in limited amounts.

Its properties change all the time and change more quickly when disturbed inappropriately or in a way that is methodically incorrect.[35]

Humans are of key importance in causing soil to change in a way that is inappropriate or in a way that is methodically incorrect. In terms of polluting soil, industrial activities are a clear example of causing pollution from the dumping of waste and various poisons into the soil where it accumulates. When the soil degenerates to a certain level, restoring it to its original condition is very difficult and costly. Apart from this, if it is not possible to restore the soil to its original condition or to do so without exceeding the standard quality of the soil, this could cause the factory operator to cease operations to avoid being forced to abide by the Factory Act B.E. 2535 (1992). Also, soil pollution within the factory causes problems for individuals, living things, natural resources and the environment.[36]

Soil/land pollution is the contamination of soil by unwanted chemicals from human activities.[37] Pesticides and insecticides absorb nitrogen compounds from the soil meaning plants will not receive sufficient nutrients from the soil.[38] Moreover, the release of industrial waste and deforestation has had bad effects on the soil.

Many scholars have provided definitions of the terms pollution of soil, waste or soil pollution:

Prof. Dr. Supamard Panichsakpatana gave the definition "soil pollution refers to situations of soil contamination with pollutants exceeding the limit. It is dangerous to human health as well as human growth, and organisms, both plants and animals."[39]

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[35] ยงยุทธ มหาเวชศิริ, มาตรการทางกฎหมายเพื่อจัดการมลพิษดินภายในบริเวณโรงงาน (วิทยานิพนธ์นิติศาสตร์มหาบัณฑิต คณะนิติศาสตร์ มหาวิทยาลัยธรรมศาสตร์, 2557) (Yongyut Maharvechasiri, **Legal Measures for Management of Soil Pollution in Factory Site**, Master of Laws Thesis, Faculty of Laws Thammasat University, 2014).

[36] *Id.*

[37] Conserve Energy Future, *supra* note 26.

[38] Read and Digest, *supra* note 27.

[39] สุภมาส พนิชศักดิ์พัฒนา, ภาวะมลพิษของดินจากการใช้สารเคมี, พิมพ์ครั้งที่ 2 (กรุงเทพมหานคร : มหาวิทยาลัยธรรมศาสตร์, 2540), น. 5 (Supamard Panichsukpatana, **Soil Pollution from Using Chemicals**, (2nd ed, Bangkok : Thammasat University, 1997), at 5).

Prof. Dr. Soontorn Poonpipat gave the definition "soil pollution, refers to soil that has degraded from its original state and/or soil that has pollutant levels that exceed the limit up to the point where there is a danger to health and wellbeing, including the impact on the growth of humans, animals and plants, both directly and indirectly".[40]

Assistant Professor Piyawan Sangsawang gave the definition "soil pollution refers to a mix of pollutants that when excessive are dangerous to health and the growth of humans, animals and vegetation both directly and indirectly".[41]

Associate Professor Siripod Ponsin stated that "Soil pollution means the soil's physicochemical and biological properties have changed from the original state making the soil not suitable for use and causing possible hazardous pollutants to human health".[42]

Sutila Duyasatiern stated that "soil pollution means the soil has lost its original qualities including the chemical, physical and biological physics, varying from what they should be. Polluted soil has undesirable chemicals and/or pollutants causing excessive contamination, making the soil unsuitable for use and harmful to health, growth and reproductive life".[43]

Narong Na Chiang Mai said that "soil pollution is caused by the addition or disposal of pollution onto or into the soil for various purposes such as from

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[40] สุนทร พูนพิพัฒน์, วิทยาศาสตร์มนุษย์และสิ่งแวดล้อม (กรุงเทพมหานคร : มหาวิทยาลัยเซนต์จอห์น, ม.ป.ป.), น.99 (Soonthorn Poonpipat, **Scientific Human and Envronment**, (Bangkok : St, John's University, M.P.P.), at 99).

[41] ปิยวรรณ แสงสว่าง, มนุษย์กับสิ่งแวดล้อม (กรุงเทพมหานคร : สมาคมสถาบันอุดมศึกษาเอกชนแห่งประเทศไทย, 2540), น . 9 (Piyawan Sangaawang, **Humans and the Environment**, (Bangkok: The Association of Private University, 2540), at 9).

[42] วราภรณ์ จานโอ, ปัญหามาตรการทางกฎหมายเกี่ยวกับมลพิษทางดินจากภาคอุตสาหกรรม (วิทยานิพนธ์นิติศาสตร์มหาบัณฑิต คณะนิติศาสตร์ มหาวิทยาลัยธรรมศาสตร์, 2554) (Waraporn Janoh, **Problems on Legal Measure relating to Soil Pollution arising from Industrial Sector**, Master of Laws Thesis, Faculty of Laws Thammasat University, 2011).

[43] สุธีลา ตุลยะเสถียร และคณะ, มลพิษสิ่งแวดล้อม **(**ปัญหาสังคมไทย**)**, พิมพ์ครั้งที่ 2 (กรุงเทพมหานคร : อมรการพิมพ์, 2544) , น . 135 (Sutila Duyasatiern and the board, **The Environmental Pollution. (Social Issues, Thailand)**, (2nd ed, Bangkok Amon printing, 2544), at 135).

the industry including agriculture and livestock. These impacts on the health of humans and animals, also possibly resulting in water and air pollution."[44]

From the above statements, it can be concluded that soil pollution is the degrading of soil quality from its natural condition. This includes the changing of physicochemical, biological and physical properties from their original state, causing excessive contamination and making the soil unsuitable for use and harmful to health, growth and reproductive life.

The fact is that humans need to use the land to sustain their livelihood, to develop technology, and to change agriculture into an industry. Manufacturing accelerates the economy, causing humans to use the land indiscriminately and in so doing causing the soil to be contaminated with pollutants. Therefore, the way industries operate can be the cause of these soil pollution problems. Such pollution takes several forms.

I. Soil Pollution from Chemicals[45]

Chemicals or pollutants cause soil pollution. In many cases, chemicals or heavy metals from industrial sites can easily contaminate the soil, such as lead, cadmium, mercury, zinc, iron and manganese. Humans use heavy metals in industries such as manufacturing batteries, metal smelting, manufacturing paints and mining.

As a result, chemicals that are heavy metals are increasingly discharged into the ground, whether it is the ground on the industrial factory's land or an area devoted to these chemicals. This has caused the quality of the soil to deteriorate and has affected people living in that area, even causing death. In one instance, a battery factory in Bang Khru Prapadaeng Samut Prakan Province melted leftover batteries to take the lead out and use them to make roads. However, the lead that still remained caused the death of people living in that area. The doctor's diagnosis found that the leading cause of death was due to excessive lead in the body.

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[44] ณรงค์ ณ เชียงใหม่, มลพิษสิ่งแวดล้อม (กรุงเทพมหานคร : สำนักพิมพ์โอเดียนสโตร์, 2525), น. 130 (Narong Na Chiang Mai, **Environmental Pollution** (Bangkok: Publisher Odeon Store, 2525), at 130).

[45] Waraporn Janoh, *supra* note 43.

II. Soil Pollution from Waste or Sewage[46]

The processes of production in industry also cause other waste and sewage apart from chemically contaminated waste. The dumping of waste or sewage into the ground creates food for the bacteria that lives in the soil, for example, the food industry frequently uses microorganisms such as yeast and bacteria to help in production. When these microorganisms are released, they become a good source of food for the bacteria living in the soil. These germs grow quickly and can cause infectious diseases. In addition, waste and sewage that builds up over time can begin to decay and cause the soil quality to deteriorate. For example, the public park and courtyard around the statue of King Rama 8 , at the foot of the Rama 8 bridge on the edge of the Chao Praya river was originally a winery for Bangyeekan distillery. Waste from such plants is mostly water that contains organic compounds. Even though these are not chemicals or heavy metals that cause soil pollution, the residues are numerous and lasting. As a result, the soil quality in this area greatly deteriorated and had to be regenerated as a public park.

III. Soil pollution from wastewater[47]

Wastewater that has been discharged in the industrial sector can be divided into used water and water that has a high temperature. Used water is water that has been used for washing up chemicals or through use has become contaminated with bacteria and toxins. If this water is released into the ground the toxins and bacteria are also released. Water that has a high temperature, although probably not contaminated, can affect the soil or organisms in the soil causing deterioration and over long periods of time would make it difficult to restore the land to its original condition.

IV. Soil pollution from air pollution[48]

In places where there is a high density of industrial factories or heavy traffic areas, pollutants from car exhausts and factories are released into the air, blowing

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[46] *Id.*
[47] *Id.*
[48] *Id.*

over other areas. When these pollutants fall to the ground they will accumulate and once there in concentrated amounts can cause soil pollution.

V. Sewage spills and hazardous waste are "the wastes that contain or contaminate with hazardous materials or exhibit hazardous characteristics including flammable, corrosive, reactive, pollutant, or having the specified constituents."[49]

VI. Non-sustainable farming practices

VII. Mining, deforestation, and other destructive practices[50]

In conclusion, soil/land pollution can lead to poor growth and yields from farming, loss of natural environments, soil erosion and barren wastelands.

4) Sound/Noise Pollution

Sound is a wave motion which occurs when a sound source sets the nearest particles of air into motion. The movement gradually spreads to air particles further away from the source. Sound propagates in air with a speed of approximately 3 4 0 metres/sec. In liquids and solids the propagation velocity is greater; 1,500 metres/sec in water and 5,000 metres/sec in steel.[51] Sound creates a wave motion of particles or air which generate from the atmosphere changes occurring from the source of such a wave motion.[52]

Noise is an unwanted sound or a sound that is not desirable to humans. The sensitivity of noise perception for each individual varies. A certain noise may affect some people while others may not consider it annoying.[53] Sound/noise pollution

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[49] Pollution Control Department, *"An Overview of Hazardous Waste Management & Prevention in Thailand"*, http://infofile.pcd.go.th/mgt/HWM_111053.pdf?CFID=2056359&CFTOKEN=83871726 (last visited Aug. 1, 2015).

[50] LoveToKnow Corp., *"Types of Pollution"*, http://greenliving.lovetoknow.com/Types_of_Pollution (last visited Jan 3, 2016).

[51] Thanawan Chalayonnawin, **Legal Control of Noise Pollution Generated by Public Entertainment Places**, Master of Laws Thesis, Faculty of Laws Thammasat University, 2014.

[52] Pollution Control Department Ministry of Science Technology and Environment, **Noise Pollution**, (3rd ed. 2544) at 4.

[53] Thanawan Chalayonnawin, *supra* note 52.

is caused from an unpleasant sound that affects people's hearing systems and can lead to psychological problems.[54] Sound/noise pollution originated with the development of machines, particularly factory machines, and the resulting use of engines in vehicles such as cars, trains, motorboats and airplanes. The sound/noise pollution problem has increased due to domestic noise, television, radio, theatres, entertainment venues and even in workplaces where music is played daily as background noise. Sound/noise pollution also affects the health and welfare of human and animal inhabitants.[55] Moreover, sound/noise pollution has many impacts on life. It can be annoying, disturb sleep, and create physical and mental stress and hypertension.[56]

5) Radioactive pollution

Highly hazardous, radioactive pollution is caused by malfunctions at nuclear plants or unsafe, unsuitable nuclear waste disposal or other accidents.[57] Radioactive pollution is the cause of many serious, long-term diseases such as cancer,[58] loss of sight, infertility, birth defects, sterilization as well as other health problems for humans and animals. Radioactive pollution can also cause soil, water and air pollution.

6) Thermal/heat pollution

Thermal or heat pollution is a result of overheating which causes unwanted changes over long periods of time.[59] This type of pollution is mainly caused by industrial factories and power plants as well as deforestation, air pollution and loss of moderate temperatures in water supplies.

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[54] Conserve Energy Future, *supra* note 26.
[55] Thanawan Chalayonnawin, *supra* note 52.
[56] Read and Digest, *supra* note 27.
[57] Conserve Energy Future, *supra* note 26.
[58] LoveToKnow Corp., *supra* note 51.
[59] Conserve Energy Future, *supra* note 26.

7) Light pollution

Light pollution occurs as a result of prominent excess illumination in the specified area. This type of pollution can be seen in big cities, on advertising boards and billboards or at night-time sporting and entertainment events.[60] Thus, if light pollution is near residential areas, it can degrade the quality of life for the residents as well as have effects on astronomical observations and activities by making the stars almost invisible.[61]

2.2.3 Duty to report and disclose pollution information

The phrase 'duty to report and disclose pollution information' means that it is a responsibility of the factory operator to notice and report the details of pollution information such as the name of the pollutant, the type of pollution and the amount of pollution which has been released into the air, water or land around the factory. Additionally, the factory operator has a duty to report the information to the related organization and in turn the related organization will disclose such information to the public.

2.3 Objectives of reporting and disclosing pollution information

At present, the public is more awareness about the significance of pollution information because it helps the public to realize the dangers of pollutants that can affect them, animals and the environment around them.[62] It is also the beginning of self-protection from pollution. Thus, there are many objectives of reporting and disclosing pollution information to the public. These are given below.

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[60] LoveToKnow Corp., *supra* note 51.
[61] Conserve Energy Future, *supra* note 26.
[62] Ministry of Natural Resources and Environment, *"Let's know PRTR"*, http://prtr.pcd.go.th/upload/20140527095713_%E0%B8%A1%E0%B8%B2%E0%B8%97% E0%B8%B3%E0%B8%84%E0%B8%A7%E0%B8%B2%E0%B8%A1%E0%B8%A3%E0%B8%B9%E0%B9%89%E0%B8%88%E0%B8%B1%E0%B8%81%E0%B8%81%E0%B8%B1%E0 %B8%9A%20PRTR.pdf (last visited Apr 14, 2016).

2.3.1 To be useful and as a tool for the public to access, acknowledge and manage the pollution which is released from the industrial factory to the environment.

2.3.2 To reduce and solve the pollution problems that result from the industrial factories. Since the industrial factory is responsible for reporting and disclosing pollution information, this will be the one important cause of the industrial factory to be more careful in how to use the pollutants their affairs and how to release pollutants into the environment because this will affect humans, animals and the environment. On the other hand, if the level of the pollution does not exceed a certain limit and does not affect humans, animals and the environment, the industrial factory will have a good reputation, and their operations will then be sustainable as well.[63]

2.3.3 To be useful for government bodies to follow up and evaluate progress in order to reduce and eliminate pollution, and to follow up on the pollution inspections from different sources.[64]

2.3.4 To enhance industrial factory oversight and increase transparency in industrial factory inspections to comply with the law.

2.3.5 To make the government sector aware of the situation of the release of pollution into the environment because this is the basis for conducting environmental policy, and the basis for guidelines for preventing or solving pollution from hazardous pollutants. It is also useful for monitoring the enforcement of the law, following the progress of the implementation of environmental policy and plan for an emergency.[65]

2.3.6 To be useful for improving the management of pollution within the factory. It also promotes the efficient use of chemicals in the industrial factory because it will help to reduce the loss of raw materials in the production process, to

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[63]Journal of Environmental Management, *supra* note 1.

[64] PRTR, *"Definition of PRTR"*, http://prtr.pcd.go.th/inner_1.html (last visited Dec 13, 2015).

[65] Knowledge an Strategies Development on Multilateral Environmental Agreement Project Good for Social Development and the Environment Institute, *"Bill of Reporting the Pollutant from the industrial factory"*, http://www.measwatch.org/writing/5378 (last visited Apr 14, 2016).

reduce emissions of pollutants into the environment, and to allow the industrial factory to be a good example in terms of disclosure, transparency and accountability to the public.[66]

2.4 Advantages of Reporting and Disclosing Pollution Information

2.4.1 Government Sector

The factory operator will report the information regarding pollutants which are released from the industrial factory and will then notify such information to the relevant state agency. This is an advantage for the government sector because the state agency can use the pollution information in estimating the rate of risks that will occur and the effect on people, animals and the surrounding environment in case of an accident or emergency, such as an explosion or a factory leaking hazardous chemicals which cause contamination in the environment.

Reporting and disclosing pollution information will help state officials such as physicians, public health officials, volunteer firemen and policemen to take control and choose the right solution to solve the pollution problems and respond to these scenarios in an accurate, concise and timely manner.[67]

Apart from this, reporting and disclosing pollution information has benefits for state agencies when monitoring the situation and progress in the release of substances or contaminants that exceed the standard. This will lead to reducing the amount of pollutants to within a safe threshold. These reports also emphasize where the vulnerabilities lie and show what problems may occur. This will guide the government to consider ways and controls to rectify the problems properly.

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[66] *Id.*

[67] Developing Team of Manual of PRTR Assessment for Chemical and Petrochemical Industrial in Thailand, *"Manual of PRTR Assessment for Chemical and Petrochemical Industrial in Thailand"*, http://www2.diw.go.th/env/admin/Chem-Petrochem.pdf (last visited Apr 14, 2016)).

Another important advantage of reporting and disclosing pollution information is that state officials can use the information as a tool to monitor the progress of the implementation to reduce emissions.[68]

2.4.2 Industrial Sector

Reporting and disclosing pollution information provides an opportunity for the factory operator to demonstrate his sincerity, responsible nature and to reassure the public and society.[69] This is a way for the factory operator to acquire good standing in society. It also makes it possible for industry to coexist with the community peacefully.

Reporting and disclosing pollution information also allows the factory operator to become aware of the chemicals used in their business operations. They will be able to ensure they are used according to required standards and not negatively affecting the environment through the contamination with pollutants in quantities that exceed the threshold. It is also a way of enhancing the standard of care and good business operation.[70]

Moreover, in the event of a dispute regarding pollutants at an industrial factory, reporting and disclosing pollution information will be a shield in their initial verification and in claiming innocence that the industrial factory has already complied with the law.

2.4.3 Private Sector

Reporting and disclosing pollution information makes the public aware of the significance of released pollution around them and allows it to easily access

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[68] Project Development in the legal of reporting and disclosing the pollution information to the public, *"Advantages of reporting PRTR"*, http://www.learnprtr.net/index.php?lay=show&ac=article&Id= 5 3 9 6 4 9 2 5 2 &Ntype=9 (last visited Apr 14, 2016).

[69] Developing Team of Manual of PRTR Assessment for Chemical and Petrochemical Industrial in Thailand, *supra* note 69.

[70] Journal of Environmental Management, *supra* note 1.

information on pollutants and harmful chemicals that have been released into the environment.[71]

Reporting and disclosing pollution information will help the public to immediately get the information and to understand the pollution situation. As a result, people who live close to the industrial factory areas will be able to carefully and adequately take control of protecting themselves in their daily lives.[72] In the event of an incident or an emergency situation, these people will also be able to effectively and appropriately deal with the problem. Moreover, it encourages the public to actively participate in environmental decision-making process. This clear and easily accessible pollution information can help them to effectively and objectively make decisions on environmental policies.

Furthermore, the most important aspect of this is that the public will have the opportunity to receive environmental justice. For example, in the event of a dispute, the public will have the necessary information and legal basis to negotiate with the industrial factory or they will be able to take the issue further to the state agencies with regulatory authority.[73] This information can also be used as grounds for justice in a court proceeding or for a judge ruling.

2.5 Obstacles of reporting and disclosing pollution information

At present, reporting and disclosing pollution information is very useful and important for the public because this information will help every sector, such as the government sector, the industrial sector and the private sector to manage and cope with pollution which is released from industrial factories into the environment. However, there are still many obstacles and limitations to reporting and disclosing pollution information. These are given below.

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[71] *Id.*

[72] PRTR, *"Advantages of PRTR"*, http://prtr.pcd.go.th/inner_3.html (last visited Dec 13, 2015).

[73] Project Development in the legal of reporting and disclosing the pollution information to the public, *supra* note 70.

2.5.1 Even if the public is aware of the pollution problems resulting from the industrial factories, the public will still have some obstacles in accessing pollution information, especially about the types and quantities of hazardous chemicals that the industrial factories use and release into the environment each day because almost all information is considered either a business secret, confidential government information or a threat to national security.[74]

Concealing information means that people living near the industrial factory areas have no opportunity to know necessary information, and they are not able to plan and protect themselves from the unexpected situations that arise in daily life. This also makes it difficult to cope with and respond to all emergencies such as accidents in the industrial factory near the community. People cannot help or protect themselves properly. In addition, the relevant authorities such as the fire department, police and doctors will not be able to cope with emergency chemical accidents due to the lack of accurate and timely information on planning and response to the situation.[75]

2.5.2 To solve and prevent the problem of pollution, there should be modern legislation and mechanisms. Moreover, it can be verified from the relevant authorities, including the public who have been directly affected. However, the legislation and mechanisms for environmental management in Thailand have not been put in place to manage this issue. These are also full of loopholes. Controlling emissions of pollutants from industrial factories is still very difficult. It can be said that it is not actually possible to protect the health of the public from the impacts of pollution and hazardous substances. This includes the inability or lack of legal action against serious, damaging polluters.

In addition, the existing legislation is not conducive to assessing the actual situation of pollution. For example, the current law requires the reporting of only

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[74] Project Development in the legal of reporting and disclosing the pollution information to the public, *"Access to the information of people and protection of environmental quality"*, http://www.learnprtr.net/index.php?lay=show&ac=article&Id=539755037&Ntype=12 (last visited Apr 17, 2016).

[75] ***Id.***

a few emission types from industrial plants. This does not cover the amount of pollutants being released entirely. Therefore, the relevant authorities do not have an opportunity to know the real information about the pollutants which are released from the industrial factory and are not able to estimate the amount of pollutants in the whole of the region and the country.[76]

2.5.3 The factory operator may not be very cooperative on the issue of reporting and disclosing pollution information because the factory operator may think that the costs of reporting and disclosing it are too high and unnecessary.[77]

2.5.4 In the instance that an industrial factory releases the pollutants that exceed a certain threshold, the factory operator may not be willing to report and disclose such pollution information to the public to know as this could have many serious consequences such as the factory being forcibly closed, licenses revoked or even pressure from the community including protests. The result of all of this could be that operations can no longer go on.[78]

2.5.5 An industrial factory may not wish to directly publish such pollution information because the amount of pollutants that are released from it may adversely affect its business, for example, in case the amount of pollutants exceeds the limit. Thus, the government shall develop a mechanism to disclose the pollution information to the public. This will enable the public to access information easily.[79]

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[76] ***Id.***
[77] ***Id.***
[78] ***Id.***
[79] Journal of Environmental Management, *supra* note 1.

CHAPTER 3
REPORTING AND DISCLOSING POLLUTION INFORMATION UNDER FOREIGN LAWS

In 1984, a UCIL plant in Bhopal had a MIC gas leak due to an accidental explosion. As a result of this explosion, many people were injured and died, some people suffered permanent disabilities. After this incident, there was another accidental leak of toxic gas at a Union Carbide Factory in West Virginia. These two incidents caused a lot of public concern over the lack of preparation for chemical emergencies and the lack of information available on dangerous chemicals. These accidents started an international movement to create public awareness about the consequences of industries increasing use of chemical substances.

Presently, the industrial factories in the United States and Japan are major emitters of chemical substances. In 2008, industrial sectors in the United States and Japan emitted 3.85 and 0.44 billion pounds of chemical substances. This is an emission rate significantly larger than that of other developed countries.[80] The rate of emissions has resulted in the public and various environmental organizations in the United States and Japan demanding that industrial factories provide information about pollutant emissions.[81]

3.1 Reporting and disclosing the pollution information under United States law

3.1.1 Emergency Planning and Community Right-to-Know Act (EPCRA)

In 1986, the US Congress approved the U.S. Emergency Planning and Community Right-to-know Act (EPCRA). EPCRA is part of the Superfund Amendments and Reauthorization Act of 1986 (SARA), also known as SARA Title

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[80] Hidemichi Fujii, Shunsuke Managi, Hiromitsu Kawahara, "*The pollution release and transfer register system in the U.S. and Japan: an analysis of productivity*" **Journal of Cleaner Production 19.** 1330 – 1338 (2011).
[81] ***Id.***

III. EPCRA has established requirements for the industrial sector to plan for emergencies, as well as ordering compliance with the Community Right-to-Know reporting and disclosing on pollutant emissions as required by the government.

The Community Right-to-Know provision is aimed at protecting the public in the event of a release of dangerous substances. It is also aimed at encouraging and supporting increased public awareness and access to information such as information on the presence of chemicals in the communities, releases of chemicals and waste management activities involving chemicals. This provision provides the public with the fundamental "right-to-know" of information pertaining to hazardous substances that have been released into the environment by industrial factories.[82]

EPCRA requires that each state create a State Emergency Response Commission (SERC), designate emergency planning regions and establish Local Emergency Planning Committees (LEPCs) for each region. The US Environmental Protection Agency (EPA) requires the listing of dangerous substances, including the establishment of a threshold planning quantity for each substance. Each facility is required by law to notify their region's LEPC of any "extremely hazardous substance" that is stored or used in excess of its threshold planning quantity. LEPCs are required to collaborate with such facilities to develop evacuation plans, response procedures and training programs for First Responders in the event of an incident. If there is a sudden release of hazardous substances exceeding the reportable quantity, EPCRA requires that the incident is immediately reported by the facility to appropriate state, local and federal officials.[83]

In addition, the industrial factories must estimate and report to EPA annually on releases from their industrial factories of certain chemicals onto the land, air or water. And then, the EPA also designates certain industrial facilities to submit estimates and annually report their factory's emissions of certain chemicals that affect

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[82] Sidney M. Wolf, **Pollution Law Handbook : A Guide to Federal Environmental Laws** (The United States of America, Quorum Books,1988).
[83] ***Id.***

the land, air or water.[84] This information is then compiled by the EPA and entered into a computerized database, known as the Toxics Release Inventory (TRI).[85] Largely, all information about emissions reported to the LEPCs, SERCs or EPA is consequently made available to the general public. However, if the chemical is a trade secret the EPCRA authorizes reporting facilities to withhold the identity of the chemical. Civil actions can be raised by the public against a facility, EPA, a governor or a SERC for failure to implement EPCRA requirements.

This ensures that the government as well as people who are working or living near to these industrial factories will have the necessary information to improve chemical safety, protect public health and protect the environment.[86]

This Act is divided into 2 parts:[87] emergency planning and notification, and community right to know.

3.1.1.1 Emergency planning and notification (Sections 301-304)

This law requires that the government and community who live around industrial factories prepare for emergency situations which may result from the release of chemical substances.

If a chemical incident occurs, community officials will use the emergency response plans to promptly respond to the incident. These plans must include the following:[88]

- Description of emergency response procedures, on and off site;
- Designation of a community coordinator and facility coordinator(s) to implement the plan;

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[84] The Emergency Planning and Community Right-to-Know Act, Section 311 and 312.
[85] The Emergency Planning and Community Right-to-Know Act, Section 313.
[86] EPA United States Environmental Protection Agency, *"Emergency Planning and Community Right-to-Know Act (EPCRA)"*, http://www.epa.gov/sites/production/files/2015-05/documents/epcra_fact_sheet.pdf (last visited Sep 5, 2015).
[87] Atcha Songjaroen, *supra* note 14.
[88] EPA United States Environmental Protection Agency, *supra* note 88.

- Description of how to determine the possible area affected or populated by the release;
- Identification of facilities and transportation routes used for extremely hazardous substances;
- Description of local emergency equipment and facilities, identifying the persons responsible for them;
- Outlines of evacuation plans and emergency notification procedures;
- Methods and schedules for exercising emergency response plans; and,
- Training programs for emergency responders (including schedules).

The factory operator must immediately notify the relevant government agencies if emissions are equal to or exceed the amount of reportable quantity as set out in the regulations. Notification can initially be made by telephone, radio or in person. Emergency notifications such as these needs to include:[89]

- The chemical's name;
- An indication of whether it is an extremely hazardous substance;
- An estimate of the quantity released into the environment;
- The time and duration of the release;
- What the release affected – the air, water and/or land;
- Acute or chronic health risks associated with the emergency whether known or anticipated and, where necessary, advice for exposed individuals regarding medical attention;
- Precautions, such as evacuation or sheltering; and,
- The name and telephone number of contact persons.

[89] *Id.*

3.1.1.2 Community right to know (Sections 311-313)

Under this law, the public is given the right to access information about chemicals used and emissions that are released by factories with no intervention from the government.

Section 313 of the EPCRA establishes the Toxics Release Inventory. TRI is a tool that tracks the management and control of chemicals that threaten human health and the environment. Each year, industrial factories handle chemicals through recycling, energy recovery, treatment and environmental releases. The details of each chemical handled through this process must be reported on annually.[90]

Some of the ways TRI data can be used include:[91]

- Encourage pollution prevention at facilities;
- Identify sources of chemical releases; and
- Initial analysis of potential chemical hazards to human health and the environment.

3.1.2 Reporter

The industrial factories which release, use or produce chemical substances, known as pollution, into the natural environment during their business operations have a duty to report the amount of pollution that has been transferred or released to the relevant authorities directly.

Industrial factories which have a duty to report pollution information are as follows:

I. "The industrial factories whose operations are under the 9 types of business operations specified in the government ordinance[92]

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[90] ***Id.***
[91] ***Id.***
[92] EPA United States Environmental Protection Agency, *"Is my facility's six-digit NAICS Code a TRI-covered industry?"*, https://www.epa.gov/toxics-release-inventory

(i) Mining industry (Metal mining, Non-metal mining, Coal mining)
(ii) Manufacturing of electricity and water industry
(iii) Petroleum industry
(iv) Petroleum and substance wholesale trade
(v) Electronic product wholesale trade
(vi) Treatment, storage and disposal industry
(vii) Solution treatment industry
(viii) Printing & Publishing
(ix) Manufacturing of food, beverage, tobacco products, textile products, leather and allied products, decoration, plastic and rubber products, wood products, paper, furniture, computer and electronic products

II. Industrial factories that have more than 10 employees during their regular business operations, or a combination of working hours of employees of more than 20,000 hours."[93]

3.1.3 Type of pollution information required to report [94]

I. "On-site releases (including disposal) of chemicals to the air, surface water and land
II. On-site recycling, treatment and energy recovery associated with TRI chemicals
III. Off-site transfers of chemicals from TRI factories to other locations
IV. Pollution prevention activities at the industrial factories
V. Releases of lead, mercury, dioxin and other persistent, bio accumulative and (PBT) chemicals, and
VI. Factories in a variety of industry sectors (including manufacturing, metal mining and electric power generation) and some federal factories."

-tri-program/my-facilitys-six-digit-naics-code-tri-covered industry (last visited May 20, 2015).
[93] Atcha Songjaroen, *supra* note 14.
[94] EPA United States Environmental Protection Agency, *supra* note 88.

The current TRI chemical list contains 689 chemicals. These chemicals are linked to causing cancer or have other chronic effects on human health, including significant acute human health effects and significant adverse environmental effects.[95]

3.1.4 How to report

As mentioned above, the United States uses a system of reporting and disclosing emission information called TRI. This system discloses information about pollutant emissions from factories, allowing the public to access and review the information. TRI developed rapidly after 1984 due to a series of serious accidents. In particular, due to the events in Bhopal as well as the incident where chemicals leaked at the Union Carbide Factory in West Virginia which resulted in injury and many deaths.

These incidents caused the community and several organizations to call for the disclosure of information about chemical hazards emitted from facilities. As a result, legislation was passed in the form of the Emergency Planning and Community Right-to-know Act (EPCRA)), this legislation also defines provisions related to the TRI.[96]

The TRI was established under Section 313 of the EPCRA. The TRI database was established with the intention of collecting and publishing information related to factories' possession and release of listed chemicals which have an effect on human health, animals and the environment.[97]

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[95] EPA United States Environmental Protection Agency**,** *"TRI-Listed Chemicals"*, https://www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals (last visited May 20, 2016).

[96] Project Development in the legal of reporting and disclosing the pollution information to the public**,** *"Using the advantages of PRTR information"*, http://www.learnprtr.net/index.php?lay=show&ac=article&Id=539649611&Ntype =12 (last visited May 20, 2016).

[97] Ralph Mastromonaco, **Do environmental right-to-know laws affect markets? Capitalization of information in the toxic release inventory** (Journal of Environmental Economics and Management 71 (2015) 54 – 70)

Industrial factories must report their annual emissions of chemicals according to type, presence and quantity of hazardous chemicals to the U.S. Environmental Protection Agency (U.S. EPA)[98] and the appropriate state or tribe by July 1st of each year.[99] Following that, these reports are made available to the public via the TRI website *www.epa.gov/tri.* Information in the report must cover the events that occurred in the previous calendar year, reporting on any environmental releases and other information regarding the management of chemicals.[100]

In conclusion, TRI was created to allow access to pollution information with the intent of helping to reduce the release of pollutants and to support informed decision-making by industrial factories, government organizations, relevant organizations and the public. Since the introduction of TRI in the United States, pollutant emissions have fallen. For example, from 1989 to 1999, emissions in the United States fell by 40%. The EPA also reported that the disposal and release of covered chemicals fell by approximately 30% between 2001 and 2010.[101]

3.1.5 Disclosure

When a report is created, the U.S. EPA will publish preliminary information in TRI form[102] in late July. The TRI data will be analyzed and national reports will be prepared and published by December of each year. The TRI data at the state level is a function of that state, the state publishes data to the public through specific, already established sites. All states have individual systems for publishing TRI data which are only used in that state.[103]

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[98] The Emergency Planning and Community Right-to-Know Act, Section 311 and 312.

[99] Project Development in the legal of reporting and disclosing the pollution information to the public, *"Toxic Release Inventory : PRTR system in U.S.A"*, http:// www.learnprtr.net/index.php?lay=show&ac=article&Id=539650144 &Ntype=11 (last visited Jan 5, 2016).

[100] EPA United States Environmental Protection Agency, *supra* note 88.

[101] Ralph Mastromonaco, *supra* note 99.

[102] The Emergency Planning and Community Right-to-Know Act, Section 313.

[103] Project Development in the legal of reporting and disclosing the pollution information to the public, *supra* note 101.

The benefits of using the TRI system are as follows:[104]

I.Various states can use the TRI data to support the implementation of the state's plan to prevent and reduce pollutant emissions, giving clear goals and deadlines.

II. Emerging private enterprises are using TRI data to increase the public's understanding of the types of hazardous chemicals being released from factories into surrounding communities. These include companies such as the organization called Citizens for a Better Environment who publish a report called "Know Your Local Polluter" which presents data of the state's top 40 sources of pollutants. In addition to the TRI data, there is also other information such as company profiles, demographics, size, company contact information, information about the company's location and any major landmarks around the area such as schools, hospitals, water supply, etc. Also in 1990, Greenpeace USA published a report entitled "Zero Discharge: A Citizen's Toxic Waste Audit Manual" for people to use as a tool for identifying those responsible for pollution emissions, examining where the pollutants or waste have been released, grouping those emissions by priority and creating pressure to reduce the use of chemicals and reduce emissions from such sources.

III. Locals and communities use the TRI data to provide education to members of the community about pollutants emitted from factories. In addition, some communities may use TRI data as a starting point in negotiations with local industry or seek the support of local community organizations, such as the Louisiana Environmental Action Network (LEAN). LEAN uses the TRI data to make people and communities aware of the risks and dangers of chemicals that are emitted from factories, as well as using the TRI data to assess the effects of those pollutants.

Currently, information is published via two websites, TRI Explorer and Envirofacts. These websites are very easy to use; they not only provide raw data but users can also create some reports from the raw data in the database. Furthermore, when browsing the TRI data it is possible to examine many different aspects of

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[104] Project Development in the legal of reporting and disclosing the pollution information to the public, *supra* note 98.

the data. For example, it is possible to filter the data by chemical, established industry categories and areas. People that do not have access to the Internet can call the EPA's hotline and information will be provided in printed form without charge.[105]

3.1.6 Governing organization

The U.S. EPA, a section of the U.S. federal government, was established on December 2, 1970.[106] The aim of this agency is to protect human health and the environment through the creation and implementation of regulations based on laws passed through Congress. This agency is responsible for preserving and implementing national standards under various environmental laws. Its functions include conducting environmental assessments, research and public education. The U.S. EPA has the authority to issue sanctions and fines as well as take other measures if necessary. The U.S. EPA has worked in collaboration with various industries and different areas of the government in the establishment of various volunteer pollution prevention programs and energy conservation efforts.

The purpose of the US EPA is to:[107]

I. Ensure Americans are protected from significant risks to their health and the environment;

II. Use the best available scientific information to reduce environmental risk;

III. Ensure that federal laws are fairly and effectively enforced in order to protect human health and the environment;

IV. Advocate for environmental protection to ensure it is an integral consideration in U.S. policy-making. In particular, those concerning natural resources, economic growth, energy, human health, transportation, agriculture, industry, and

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[105] Project Development in the legal of reporting and disclosing the pollution information to the public, *supra* note 101.
[106] EPA United States Environmental Protection Agency, *"Our Mission and What We Do"*, http://www.epa.gov/ aboutepa/our-mission-and-what-we-do (last visited Jan 3, 2016).
[107] *Id.*

international trade. Also to ensure that these factors are considered in the establishment of environmental policy;

V. Make sure that all levels of society, including communities, businesses, individuals, as well as state, local and tribal governments, can access information that is sufficient for the management of human health and environmental risks;

VI. Ensure that the United States plays a leadership role in working with other nations to protect the global environment; and

VII. Contribute to making communities and ecosystems diverse, sustainable and economically productive through environmental protection.

3.1.7 Exemption

Sometimes, there are specific chemicals that are a trade secret for the factories.[108] Even if these specific chemicals cannot be reported and disclosed to the public,[109] they must still be reported to health professionals[110] and public health officials[111] because they are hazardous chemicals. The US EPA requires this information for diagnostic and treatment purposes. Local health officials can also use the information for prevention and treatment.[112]

If this information is requested in a non-emergency, health professionals must sign a confidentiality agreement with the factory and provide a written statement explaining why this information is necessary. During a medical emergency, health professionals can immediately request that the factory provide the identity of a specific chemical in order to treat the victim.[113]

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[108] The Emergency Planning and Community Right-to-Know Act, Section 322.
[109] Atcha Songjaroen, *supra* note 14.
[110] The Emergency Planning and Community Right-to-Know Act, Section 323.
[111] Sidney M. Wolf, *supra* note 84.
[112] EPA United States Environmental Protection Agency, *supra* note 88.
[113] *Id.*

3.1.8 Sanction [114]

I. Where an industrial factory does not comply with reporting requirements, civil and administrative penalties of $10,000 to $75,000 per violation or per day per violation will be applied.

II. Where an emergency release notification is knowingly and willfully not provided, there are criminal penalties up to $50,000 or 5 years in prison.

III. If any person knowingly and willfully discloses information that is entitled to protection as a trade secret, there are penalties not more than $20,000 and/or up to one year in prison.

From this information it can be seen that any citizen, corporation, association or university may have access to all information that is not defined as confidential or a trade secret by the EPCRA. That confidential information, however, cannot be withheld from emergency response personnel and government planning agencies.[115]

Requests for EPCRA information are required by law to be in writing, be specific about the type of information requested and provide the EPCRA section number when possible. The request should include as much facility specific information as possible including the facility name, full address and zip code. These details are extremely helpful in processing EPCRA requests.[116]

3.2 Reporting and disclosing pollution information under Japanese law

The Environment Agency of Japan (presently the Ministry of the Environment) is responsible for the environment and is currently concerned about protecting against future environmental risk and emissions from chemical substances.

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[114] *Id.*
[115] Maryland Department of the Environment *"Emergency Planning and Community Right-to-Know Act (EPCRA) General Public Access Guide"*, http://www.mde.state.md.us/assets/document/crtk.pdf (last visited May 21, 2016).
[116] *Id.*

This concern has caused the Environment Agency of Japan to prepare the Bill on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof in association with the Ministry of International Trade and Industry.[117] Finally, the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof or "PRTR System" was disseminated on July 13, 1999.

3.2.1 Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (PRTR System)

The Pollutant Release and Transfer Register (PRTR) is a scheme that requires industrial factories to manage the amounts of the hazardous chemical substances which are released into the air, water or soil as well as transferred in waste. This scheme also requires industrial factories to report the amount of their pollution release[118] and transfer[119] to the relevant ministries directly or via local governments.[120] Finally, the relevant ministries directly or local governments will submit and disclose the results of their pollution information to the public.

PRTR aims to support reducing pollution from the release of chemical substances and preventing any obstacles to the preservation of the environment by taking measures to ensure that releases and transfers of pollution and chemical substances into the environment are reported and disclosed. The system has also gained the attention of the factory operators, who are the owners of the industrial

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[117] Ministry of the Environment Government of Japan, *"Background to Japanese PRTR"*, https:// www env.go.jp/ en/chemi/prtr/about/index.html (last visited Dec 7, 2015).

[118] *"Release"* means the emission into the environment (e.g. air, water, soil, and landfill).

[119] *"Transfer"* means the disposal as sewage or waste.

[120] Environment Economic and Policy Studies, *"First inventory of pollutant release and transfer register in Japan"*, http://link.springer.com/article/10.1007%2FBF03353931#page-2 (last visited May 21, 2016).

factories, and of the citizens. Therefore, we can say that Japan's PRTR plays a very important role in managing and reducing the amount of pollution.[121]

3.2.2 Reporter

The industrial factories who release, use or produce chemical substances, known as pollution, into the natural environment during their business operations have a duty to report the amount of pollution transferred or released to the relevant authorities directly.

The following industrial factories have a duty to report pollution information:[122]

I. "The industrial factories whose operations under the 24 types of business operations specified in the government ordinance:

(i) Metal mining
(ii) Crude petroleum and natural gas production
(iii) Manufacturing
(iv) Production, transmission and distribution of electricity
(v) Manufacture of gas
(vi) Heat supply
(vii) Sewerage
(viii) Railway transport
(ix) Warehousing (limited to the business of keeping agricultural products or storing gas or liquid in storage tanks)
(x) Petroleum wholesale trade

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[121] Ministry of the Environment Government of Japan, *"Overview of the PRTR system"*, https://www.env.go.jp/ en/chemi/prtr/about/overview.html (last visited Dec 1, 2015).

[122] Ministry of Economic, Trade, and Industry, *"Outline of the PRTR system"*, http://www.meti.go.jp/policy/ chemical_ management/ english/files/PRTRsystem.pdf (last visited Dec 1, 2015).

(xi) Iron scrap wholesale trade (limited to the business of collecting substances enclosed in an automobile air-conditioner or removing an automobile air-conditioner that has been installed in an automobile body)

(xii) Motor vehicles wholesale trade (limited to the business of collecting substances enclosed in an automobile air-conditioner)

(xiii) Fuel stores

(xiv) Laundries

(xv) Photograph businesses

(xvi) Automobile maintenance services

(xvii) Machinery repair shops

(xviii) Commodity inspection services

(xix) Surveyor certification (excluding general surveying certification)

(xx) Domestic waste disposal business (limited to waste disposal business)

(xxi) Industrial waste disposal business (including special controlled industrial waste-disposal businesses)

(xxii) Medical and other health services

(xxiii) Institution of higher education (including attached the industrial factories and excluding one only pertaining to humanities)

(xxiv) Research institutes for natural sciences"

II. The industrial factories who have 21 or more full-time employees during their regular business operations; or

III. "The industrial factories who annually handle 1 ton or more of any chemical substance specified in the Class I Designated Chemical Substances. However, it is 0.5 tons or more for Specific Class 1 Designated Chemical Substances."[123]

[123] Ministry of the Environment Government of Japan, *"Who reports to the PRTR?"*, https://www.env.go.jp/ en/chemi/ prtr/about/reports.html (last visited Dec 9, 2015).

3.2.3 Type of pollution information required to report

Every year industrial factories must report pollution information or chemical substance emissions to include the eight parts below:[124]

I. Amount of release
II. Releases into the atmosphere/air
III. Releases to land or soil
IV. Releases to public water
V. Reclamation within the place of business concerned
VI. Amount of transfer
VII. Transfer of sewage
VIII. Transfer to outside of place of business concerned as a waste

3.2.4 How to report

The PRTR System requires the factory operator to submit the notifications regarding specified chemical substances that may be harmful to human health and ecosystems to their regional or municipal governmental authorities. The notification must provide details of the amount of emissions releases into the natural environment, including the atmosphere, rivers and other waterways, and soil. In turn, the regional or municipal governmental authorities shall submit the notifications to the relevant minister that has jurisdiction over the business.[125]

The factory operator shall submit a PRTR notification from April 1st to June 30th every fiscal year.[126]

3.2.5 Disclosure

When the factory operator reports in a PRTR notification, the Ministry of the Environment and the Ministry of Economy, Trade and Industry will work together

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[124] Ministry of Economic, Trade, and Industry, *supra* note 124.
[125] *Id.*
[126] *Id.*

in collecting and sorting the reported information. This information will then be released as a public announcement.

The PRTR notification, which is information regarding pollution, is also disclosed on the PRTR website which is looked after by the National Institute of Technology and Evaluation (NITE),[127] the Ministry of the Environment website (http://www2.env.go.jp/ chemi/prtr/prtrinfo/e-index.html), and the Ministry of Economy, Trade and Industry website (http://www.meti.go.jp/policy/chemical_ management/law/prtr/6.html).[128]

3.2.6 Governing organization

The Ministry of the Environment (MOE) of Japan was established in order to replace the former Environmental Agency in 2001. MOE acts under the Basic Environmental Law of 1993 and is accountable for environmental policies and planning. MOE puts in place policies with the intention of establishing a society that is sustainable and plays a proactive leadership role in promoting environmental policies that ensure the implementation of basic environmental plans. Independently, MOE aims to have policies promoted regarding wildlife protection, pollution control, nature conservation and waste management. MOE also plans to promote policies in cooperation with other line ministries, including processes to address wetland conservation, ozone layer protection, chemical management, marine pollution control, recycling, forest and global warming, environmental impact assessments and the monitoring of radioactive substances.[129]

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[127] ChemSafetyPro, *"PRTR Law in Japan"*, http://www.chemsafetypro.com/Topics/ Japan/Japan_PRTR_Law.html (last visited Dec 6, 2015).

[128] Project Development in the legal of reporting and disclosing the pollution information to the public, *"PRTR system in Japan"*, http://www.learnprtr.net/ index.php?lay=show&ac=article&Id=539650355&Ntype=18 (last visited May 21, 2016).

[129] Asian Environmental Compliance and Enforcement Network, *"Ministry of Environment, Japan"*, http://www.aecen. org/ministry-environment-japan (last visited Jan 3, 2016).

The Ministry of Economy, Trade and Industry (METI) is a ministry of the Japanese government. The 2001 Central Government Reform created METI when the Ministry of International Trade and Industry combined with agencies from other ministries related to economic activities, such as the Economic Planning Agency. METI has jurisdiction over a broad policy area, including Japan's economic and industrial policy, industrial technology and innovation policy, energy security policy, intellectual property policy, trade policy, control of arms exports, etc. Officials of METI are well known for their excellence and METI is known for its liberal atmosphere. It is commonly referred to as the "human resource agency" for it is the leader in business, politics and academia.[130]

3.2.7 Exemptions

Exemptions that do not need to be reported under PRTR are as follows:[131]

I. "Products that contain less than 1% of class 1 designated chemical substances (or less than 0.1% of specific class 1 designated chemical substances)

II. Solid products which do not become granular or pulverized throughout the handling process by the factory operator

III. Products completely sealed such as batteries

IV. Daily products meant for general consumers

V. Recyclable resources"

3.2.8 Sanction

"Industrial factories who fail to give a notification, who have given a false notification, who have failed to make a report, or who have made a false report will be liable for the payment of a fine not more than 200,000 yen."[132]

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[130] *"Ministry of Economic, Trade, and Industry"*, https://www.linkedin.com/ company/ministry-of-economy-trade-and-industry (last visited May 21, 2016).

[131] Ministry of Economic, Trade, and Industry, *supra* note 124.

[132] Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof, Article 24.

From the information considered above, although each country's system began at a different time, there are two important characteristics of PRTR and TRI that are the same. Firstly, industrial factories send mandatory reports to the relevant authorities detailing their emission releases into the air, water and soil and the disposal of other wastes. Secondly, the public has access to emission information of specific pollutants from industrial factories.[133]

[133] Hidemichi Fujii, Shunsuke Managi, Hiromitsu Kawahara, *supra* note 82.

CHAPTER 4
REPORTING POLLUTION INFORMATION UNDER THAI LAW

At present, the increasing expansion of industrial factories is causing the way of life of communities located within the vicinity of industry to change. The way of life that has changed is not only that of the local people but also refers to the change in the environment and animal populations. When there is progress in rural societies, the rural societies become modern urban civilizations and living conditions that impact the environment begin to change with the growth of industry. Rapidly continuous establishment of the industrial factory inevitably leads to environmental problems and pollution which results from factory operations,[134] whether it is in the form of toxic gases emitted into the atmosphere or the release of chemicals in the form of a solution into water sources causing water pollution. As a result, this water cannot be used for consumption or business, as well as damaging aquatic ecosystems.[135] The use of machines and large equipment inevitably causes pollution in the form of air pollution, noise pollution, water pollution, soil pollution, etc. Therefore, it can be said that industrial factories are the top sources of pollution.

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[134] Podchamarn Amkakoon, *"Environmental Impacts from Industrial Factories : A Case Study of Nonphueng Sub - district Administrative Organization Warinchamrab District, Ubonratchathani Province"*, http://mis.cola.kku.ac.th/files/gs28_attachment_files/files/1036/%E0%B8%9A%E0%B8%97%E0%B8%84%E0%B8%A7%E0% B8%B2%E0%B8%A1%E0%B8%9B%E0%B8%A3%E0%B8%B0%E0%B8%8A%E0%B8%B8%E0%B8%A1%E0%B8%A7%E0%B8%B4%E0%B8%8A%E0%B8%B2%E0%B8%81%E0%B8%B2%E0%B8%A3.doc?1403151458 (last visited Apr 30, 2016).

[135] NIDA Center Research & Development of Disaster Prevention & Management, *"Harm of substances : Waste water from the industrial factory"*, http://dpm.nida.ac.th/main/index.php/articles/chemical-hazards/item/129-%E0%B8%A0%E0%B8%B1%E0%B8%A2%E0%B8%88%E0%B8%B2%E0%B8%81%E0%B8%AA%E0%B8%B2%E0%B8%A3%E0%B9%80%E0%B8%84%E0%B8%A1%E0%B8%B5-%E0%B8%99%E0%B9%89%E0%B8%B3%E0%B9%80%E0%B8%AA%E0%B8%B5%E0%B8%A2%E0%B8%88%E0%B8%B2%E0%B8%81%E0%B9%82%E0%B8%A3E0%B8%87%E0%B8%87%E0%B8%B2%E0%B8%99%E0%B8%AD%E0%B8%B8%E0%B8%95%E0%B8%AA%E0%B8%B2%E0%B8%AB%E0%B8%81%E0%B8%A3%E0%B8%A3% E0 %B8%A1 (last visited Apr 30, 2016).

In Thailand, there are many laws that relate to the control and operation of industrial factories. However, the most important law which relates to industrial factory is "Factory Act B.E. 2535 (1992)".

4.1 Factory Act B.E. 2535 (1992)

The purpose of the Factory Act B.E. 2535 (1992) is to control the industrial operations regarding pollution emissions, contamination and disposal of waste by industrial factories. This Act also lists provisions regarding licensing, the issuing of permits and required inspections of factory operations, including waste management. The main objective is to minimize the environmental impacts of factory waste and emissions.[136]

The Ministry of Industry has powers to issue laws under the Factory Act B.E. 2535 (1992). These laws take into consideration the type and size of the industrial factory. They aim for control and prevention of nuisance, damage and danger in order to minimize the gravity of impact on the public and the environment.

"***Factory*** means a building, place or vehicle which uses a machine from five horsepower or an equivalent thereof or more or which employs seven workers or more with or without any machine for manufacturing, producing, assembling, filling, repairing, maintaining, testing, improving, altering, transporting, keeping or destroying anything in accordance with the type or kind of factory as provided for in the ministerial regulation."[137]

Moreover, there are three classified types of factories according to Section 7 of the Factory Act B.E. 2535 (1992). They are:

(1) "Group 1 factory is factory of the type, kind, and size as capable of engaging in a factory business immediately upon the desire of a person engaging in a factory business.

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[136] Waraporn Janoh, *supra* note 43.
[137] Factory Act B.E. 2535 (1992), Section 5.

(2) Group 2 factory is factory of the type, kind and size, when engaging in a factory business, must be notified in advance to the Grantor.

(3) Group 3 factory is factory of the type, kind and size as to be granted a permit prior to engagement.

Including upon prescription of an announcement of the Minister pursuant to Section 32 (1), the factory designated in such announcement shall also be the group 3 factory."[138]

According to the Factory Act Section 7 B.E. 2535 (1992), in order to determine the type and size of the factory as Group 1, Group 2 or Group 3, the industrial factory has to be considered to accord to the type or kind of factory that has been determined in Ministerial Regulation B.E. 2535 (1992) Issued pursuant to the Factory Act B.E. 2535 (1992). This is generally done by considering the horsepower output of the machines in use or the number of workers, as follows:[139]

1. Group 1 factory is the industrial factory that can operate immediately according to the desire of the factory operator, without permission or prior notification given to the permit provider. The law requires that the machinery of Group 1 factories must not exceed 20 horsepower and that they have no more than 20 employees.

2. Group 2 factory is the industrial factory that does not need to ask for permission to operate but shall notify the Department of Industrial Works which is the relevant authority that the business has been established. If the factory operator does not notify to the relevant authority that the business has been established, they are liable for a punishment of 6 months imprisonment or a fine not exceeding 50,000 baht,[140] or both. Moreover, if the factory operator reports operations improperly or not according to the law, the factory operator will be liable for a punishment of a fine not exceeding 20,000 Baht.[141] The law requires that Group 2 factories have machines that

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[138] Factory Act B.E. 2535 (1992), Section 7.
[139] List of Factory Annexed with Ministerial Regulation B.E. 2535 (1992) issued pursuant to the Factory Act B.E.2535 (1992).
[140] Factory Act B.E. 2535 (1992), Section 48.
[141] Factory Act B.E. 2535 (1992), Section 49.

are greater than 20 horsepower and have more than 20 workers, but not more than 50 horsepower and up to 50 workers.

3. Group 3 factory is the industrial factory that needs to be licensed to operate before they can begin operations. Those that have received a permit to operate a factory need to keep it on display in a place that is visible in that factory. If a Group 3 factory operator begins operation without the license to operate from the Department of Industrial Works which is the relevant authority, the factory operator will be liable for a punishment of imprisonment of up to two years or a fine not exceeding 2 0 0 ,0 0 0 Baht,[142] or both. The law stipulates that a Group 3 factory has three machines that are 50 horsepower, or more than 50 workers.

In any case, classifying the factory's group is not always dependent on the power of the machines or the amount of workers. Certain types of factories are considered to be Group 3 factories regardless of what size they are because it is considered that the factory has an effect on the environment and the health of the community. These include the petroleum refineries, the paper-mills, the glass factories, the cement factories, the factories that make products from plant fibers, the asbestos and steel factories, the iron mills, etc.[143]

In order to control the engagement of the industrial factory business, the ministry has the power to enforce additional Ministerial regulations with which any or all groups of factories must comply under Section 7 according to Factory Act B.E. 2535 (1992). These additional rules are in accordance with Section 8 of Factory Act B.E. 2535 (1992), as follows:[144]

(1) "To adopt the criteria relating to the location of factory, environment of the factory, nature of the buildings of factory or interior nature of the factory.

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[142] Factory Act B.E. 2535 (1992), Section 50.

[143] กอบกุล รายะนาคร, กฎหมายกับสิ่งแวดล้อม, พิมพ์ครั้งที่ 1 (กรุงเทพมหานคร : สำนักพิมพ์วิญญูชน, 2550), น.146 (Kobkul Payanakon, **Law and Environment**, Edition 1 (Bangkok : Vinyuchon, 2007), at 146).

[144] Factory Act B.E. 2535 (1992), Section 8.

(2) To adopt the nature, type or kind of machines, equipment or such other things as to be used for the engagement in a factory business.

(3) To adopt the requirements of specialized worker according to the type, kind or size of factory to perform any duty for such factory.

(4) To adopt the criteria to be followed, process of production and provision of other equipment or tools in order to prevent, or stop or mitigate the dangers, injuries, or troubles that may be caused to the persons or property in the factory or its vicinity.

(5) To adopt the standards and methods of controlling the discharge of wastes, pollutants or anything that affects the environment as a result of the engagement in a factory business.

(6) To adopt the provision of required documents for the factory for the purpose of controlling and inspecting the compliances with the laws.

(7) To adopt the required information relating to the engagement in a factory business of which a person engaging in a factory business must inform from time to time or in a specified period.

(8) To adopt any other requirements for the protection of safety in the operations in order to prevent, or stop or mitigate the dangers or injuries that may result from the engagement in a factory business."

This thesis will study on issue of informing the required information relating to the engagement in a factory business according to Section 8 (7) of the Factory Act B.E. 2535 (1992). Moreover, this Act gives authority to Ministerial Regulation, Notification of Ministry of Industry and Notification of Department of Industrial Works to use in determining the format of reports as well as the time given to prepare and submit the report of the type and amount of pollutants released from the industrial factory to the Department of Industrial Works within the specified time. The details are as follows;

4.1.1 Ministerial Regulation No. 3 B.E. 2535 (1992) issued pursuant to the Factory Act B.E. 2535 (1992)

"By the virtue of section 6 and sections 8(7) of the Factory Act B.E. 2535 (1992), the Minister of Industry hereby issues the Ministerial Regulation".

The industrial factory that adversely impacts the environment shall keep a record on inspection of efficiency of pollution control system, analysis of pollutants in pollution control system, and environmental quality examination and report such information in accordance with the form and method prescribed by the Minister of Industry.[145]

4.1.2 Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015)

"By the virtue of the provisions in Article 1 and 4 of the Ministerial Regulation No. 3 B.E. 2535 (1992) issued pursuant to the Factory Act B.E. 2535 (1992), the Minister of Industry hereby issues the Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015)."

Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015) was to be effective from 1st January 2016 (2016) onwards.[146] This notification was prepared with the aim of controlling factories that pose a risk of releasing pollutants which would have an impact on the environment. The notification determines the type and method of reporting the type and amount of pollutants emitted from a factory so that it would be possible to use the information reported to create real benefits. For instance,

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[145] Ministerial Regulation No. 3 B.E. 2535 (1992) issued pursuant to the Factory Act B.E.2535 (1992), Clause 1 and Clause 4.

[146] Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015), Article 2.

the information could be used to control the emission of pollutants in industry that exceed the legal limit.[147]

Apart from this, the Notification of Ministry of Industry regarding the preparation of types and quantities of pollutants discharged from factories B.E. 2 5 5 8 (2015) gives details about the scheme and how to report the type and amount of pollutants emitted from the industrial factory. These are given below.

4.1.2.1 Reporter[148]

Industrial factories have a duty to report on the type and amount of pollutants they discharge. Additional duties include taking measures to prevent, mitigate and monitor environmental impacts.

The types or kinds of industrial factories which are required to prepare reports on the type and amount of pollutants discharged from the factory are as follows:

I. Industrial factories are required to have environmental personnel[149] according to Article 5 of the Notification of Ministry of Industry on Descriptions of

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[147] Department of Industrial Works, *"Type and quality of pollution discharged from a factory law"*, http://www.thai-water.com/Portals/0/seminar/Presentation/02-%E0%B8%81%E0%B8%8E%E0%B8%AB%E0%B8%A1%E0%B8%B2%E0%B8%A2%E0%B8%A7%E0%B9%88%E0%B8%B2%E0%B8%94%E0%B9%89%E0%B8%A7%E0%B8%A2%E0%B8%81%E0%B8%B2%E0%B8%A3%E0%B8%88%E0%B8%B1%E0%B8%94%E0%B8%97%E0%B8%B3%E0%B8%A3%E0%B8%B2%E0%B8%A2%E0%B8%87%E0%B8%B2%E0 %B8%99%E0%B8%8A%E0%B8%99%E0%B8%B4%E0%B8%94%E0%B9%81%E0%B8%A5%E0%B8%B0%E0%B8%9B%E0%B8%A3%E0%B8%B4%E0%B8%A1%E0%B8%B2%E0%B8%93%20GH203.pdf (last visited May 5, 2016).

[148] Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015), Article 5.

[149] Notification of the Ministry of Industry on Descriptions of Factory Types and Sizes, Procedure for the Control of Discharges of Wastes, Pollutants, or Any Substances that Cause Adverse Effects on the Environment, Qualifications of Supervisors and Operators, and Criteria for Registration of the Supervisors of Pollution Prevention Systems (No.2) B.E. 2554 (2011), Article 1 and 2.

"***Environmental personnel*** means a supervisor and an operator of the pollution prevention system."

Factory Types and Sizes, Procedure for the Control of Discharges of Wastes, Pollutants, or Any Substances that Cause Adverse Effects on the Environment, Qualifications of Supervisors and Operators, and Criteria for Registration of the Supervisors of Pollution Prevention Systems (No.2) B.E. 2554 (2011).

Therefore, the industrial factories which are required to have environmental personnel in the factory have a duty to report the type and amount of pollutants discharged from the factory[150] to the Department of Industrial Works according to the following table:[151]

"***Supervisor*** means a person who is registered to carry out inspection, control, supervision, operation and maintenance of water, air and industrial waste pollution treatment systems or of machines, equipment, tools or appliances installed as for pollution prevention system in a factory and this shall include a consultant and an environmental manager."
Supervisor is classified, as follows;
1. Environmental Manager
2. Water Pollution Supervisor or consultant
3. Air Pollution Supervisor or consultant
4. Industrial Waste Management Supervisor or consultant

*"**Operator*** means a person who is notified to carry out inspection, control, supervision and maintenance of the water, air and industrial waste pollution treatment systems or tool, appliance or any equipment installed for control, treatment or disposal of any other pollutants that is installed as for pollution prevention system in a factory."
Operator is classified, as follows;
1. Water Pollution Operator
2. Air Pollution Operator
3. Industrial Waste Management Operator"

[150] Notification of the Ministry of Industry on Descriptions of Factory Types and Sizes, Procedure for the Control of Discharges of Wastes, Pollutants, or Any Substances that Cause Adverse Effects on the Environment, Qualifications of Supervisors and Operators, and Criteria for Registration of the Supervisors of Pollution Prevention Systems (No.2) B.E. 2554 (2011), Article 6.2.6 and 6.3.5.

[151] Notification of the Ministry of Industry on Descriptions of Factory Types and Sizes, Procedure for the Control of Discharges of Wastes, Pollutants, or Any Substances that Cause Adverse Effects on the Environment, Qualifications of Supervisors and Operators, and Criteria for Registration of the Supervisors of Pollution Prevention Systems (No.2) B.E. 2554 (2011), Article 5.

No.	Factory Types and Sizes	Classification of Environmental Personnel
1	Factories having an organic-wastewater: Factories having 500 cubic meters per day or more of wastewater (excluding cooling water) or having BOD load of influent 100 kilograms per day or more	- Environmental Manager - Water Pollution Supervisor or consultant - Water Pollution Operator
2	Factories using the following substances or its compounds in production processes and having 50 cubic meters per day or more of wastewater. 2.1 Zinc 2.2 Cadmium 2.3 Cyanide 2.4 Organic Phosphorus Compounds 2.5 Lead 2.6 Copper 2.7 Barium 2.8 Selenium 2.9 Nickel 2.10 Manganese 2.11 Hexavalent Chromium 2.12 Arsenic and its Compounds 2.13 Mercury and its Compounds	- Environmental Manager - Water Pollution Supervisor or consultant - Water Pollution Operator ***Note:*** *A metal plating factory shall have Air Pollution Supervisor and Operator, Industrial Waste Pollution Supervisor and Operator or consultant in a factory.*
3	Factory engaging in the following activities: 3.1 Production of raw sugar or white sugar or refined sugar, all sizes 3.2 Production of glucose, dextrose, fructose, or other similar products	- Environmental Manager - Water Pollution Supervisor or consultant - Air Pollution Supervisor or consultant - Water Pollution Operator

	with a production capacity of 20 tons/day or higher	- Air Pollution Operator
4	Factory engaging in the following activities: 4.1 Production of liquor, alcohol with a production capacity of 40,000 liter/month or higher (at 24% alcohol) 4.2 Production of wine, with a capacity of 600,000 liter/month 4.3 Production of beer, with a capacity of 600,000 liter/month	- Environmental Manager - Water Pollution Supervisor or consultant - Air Pollution Supervisor or consultant - Water Pollution Operator - Air Pollution Operator
5	Pulp production from wood or other materials, having capacity of 50 tons/day or higher	- Environmental Manager - Water Pollution Supervisor or consultant - Air Pollution Supervisor or consultant - Industrial Waste Management Supervisor - Water Pollution Operator - Air Pollution Operator - Industrial Waste Management Operator
6	Petrochemical factory having chemical processes and having capacity from 100 tons/day	- Environmental Manager - Water Pollution Supervisor or consultant - Air Pollution Supervisor or consultant - Industrial Waste Management Supervisor or consultant

		- Water Pollution Operator - Air Pollution Operator - Industrial Waste Management Operator
7	Chlor-Alkaline Industry using Sodium Chloride (NaCl) as raw material for a production of Sodium Carbonate (Na2CO3), Sodium Hydroxide (NaOH), Hydrochloric Acid (HCl), Chlorine (Cl2), Sodium Hypochlorite (NaOCl) and Bleaching powders with a production capacity of each or combined product(s) of 100 tons/day or more	- Environmental Manager - Water Pollution Supervisor or consultant - Air Pollution Supervisor or consultant - Industrial Waste Management Supervisor or consultant - Water Pollution Operator - Air Pollution Operator - Industrial Waste Management Operator
8	Factory producing active ingredients or pesticide, insecticide by chemical processes of all sizes or chemical fertilizer using chemical processes, all sizes	- Environmental Manager - Water Pollution Supervisor or consultant - Air Pollution Supervisor or consultant - Industrial Waste Management Supervisor or consultant - Water Pollution Operator - Air Pollution Operator - Industrial Waste Management Operator
9	Production of rubber, synthetic resin, elastomer rubber, plastic, or synthetic fiber which is not optical fiber having capacity from 100 tons/day	- Environmental Manager - Water Pollution Supervisor or consultant - Air Pollution Supervisor or consultant

		- Industrial Waste Management Supervisor or consultant - Water Pollution Operator - Air Pollution Operator - Industrial Waste Management Operator
10	Petroleum refinery, all sizes	- Environmental Manager - Water Pollution Supervisor or consultant - Air Pollution Supervisor or consultant - Industrial Waste Management Supervisor or consultant - Water Pollution Operator - Air Pollution Operator - Industrial Waste Management Operator
11	Cement factory, all sizes	- Environmental Manager - Air Pollution Supervisor or consultant - Air Pollution Operator
12	Iron and steel factory, capacity from 100 tons/day	- Environmental Manager - Water Pollution Supervisor or consultant - Air Pollution Supervisor or consultant - Industrial Waste Management Supervisor or consultant - Water Pollution Operator - Air Pollution Operator

		- Industrial Waste Management Operator ***Note:*** *If there is not wastewater generated from the factory, it is not required to have a Water Pollution Supervisor, consultant or operator.*
13	Non-ferrous smelting factory, having capacity from 50 tons/day	- Environmental Manager - Water Pollution Supervisor or consultant - Air Pollution Supervisor or consultant - Industrial Waste Management Supervisor or consultant - Water Pollution Operator - Air Pollution Operator - Industrial Waste Management Operator ***Note:*** *If there is not wastewater generated from the factory, it is not required to have a Water Pollution Supervisor, consultant or operator.*
14	Thermal Power Plant with a capacity from10 MW	- Environmental Manager - Air Pollution Supervisor or consultant - Air Pollution Operator ***Note:*** *In case of a coal-fired power plant, it is required to have Industrial Waste Management Supervisor, consultant or operator.*

15	Natural gas separation or processing plant, all sizes	- Environmental Manager - Air Pollution Supervisor or consultant - Industrial Waste Management Supervisor or consultant - Air Pollution Operator - Industrial Waste Management Operator
16	Central waste treatment factory, as follows;	
	16.1 Central wastewater treatment system, all sizes	- Environmental Manager - Water Pollution Supervisor or consultant - Industrial Waste Management Supervisor or consultant - Water Pollution Operator - Industrial Waste Management Operator
	16.2 Incinerator according to the factory law, all sizes	- Environmental Manager - Air Pollution Supervisor or consultant - Industrial Waste Management Supervisor or consultant - Air Pollution Operator - Industrial Waste Management Operator
	16.3 Hazardous waste treatment, all sizes	- Environmental Manager - Industrial Waste Management Supervisor or consultant - Industrial Waste Management

		Operator
17	Waste separation or landfill 17.1 Hazardous waste separation, all Sizes 17.2 Landfill, all sizes	 - Environmental Manager - Industrial Waste Management Supervisor or consultant - Industrial Waste Management Operator - Environmental Manager - Water Pollution Supervisor or consultant - Industrial Waste Management Supervisor or consultant - Water Pollution Operator - Industrial Waste Management Operator
18	Recycling of industrial waste or industrial hazardous waste as raw materials or new products, all sizes.	- Environmental Manager - Industrial Waste Management Supervisor or consultant - Industrial Waste Management Operator ***Note:*** *In case of a recycling of lead from used battery, it is required to have Water Pollution Supervisor or consultant, Air Pollution Supervisor or consultant, and Water Pollution Operator and Air Pollution Operator.*

II. Types or kinds of industrial factories specified in the List of Factories Annexed to the Notification of the Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015) are as follows:[152]

i. Types of industrial factories that are required to report on water pollution and air pollution:

(1) Paper factories or industrial factories that make paper to use in construction where the paper is made from strands or paper fiber, the industrial factories must have the capacity of 50 tons per day.
(2) Industrial factories with iron or steel with a capacity of each type or combination of 100 tons per day.

ii. Types of industrial factories that are required to report on air pollution:

(1) Industrial factories which produce glass, glass fiber or glass product with a furnace.
(2) In the case where liquid or solid fuel is used, industrial factories that have a single boiler with a steam capacity of 10 tons of steam per hour or more. And, in the case where gas is used as fuel, where the industrial factory has a single boiler with a capacity of 20 tons of steam per hour or more.
(3) Industrial factories that have or use more than 36 tons per year of volatile organic compounds (VOCs) in the production process.

[152] List of Factory Annexed with Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015).

4.1.2.2 Type of pollution information required to report

The preparation of reports on emissions under the Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from factories in B.E. 2558 (2015) is a report on pollutant emissions into the water and air[153] according to the Ministry of Industry issued under Article 14 and 16 of the Ministerial Regulation No. 2 B.E. 2535 (1992) issued pursuant to the Factory Act B.E. 2535 (1992).[154] As such, it is clear that the reporting of pollutant emissions of the Notification of Ministry of Industry is to report about emissions only into the water and air. The report does not specify the reporting of emissions into the ground or other channels that emissions can take at all.

4.1.2.3 Form to Report

According to Notification of Department of Industrial Works Subject: Type or category of factory required to prepare a report of type and quantity of pollutants discharged from a factory B.E. 2559 (2016), industrial factories are required to submit the report according to the specifications made by the Department of Industrial Works as follows:[155]

I. RoWo 1 Form (when reporting information on water pollution and air pollution)

This form is a general report that gives details of factories, for instance, the name of the factory, the registration number of the factory, the location of the factory and the kind of operations.[156]

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[153] Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015), Article 4.
[154] Ministerial Regulation No. 2 B.E. 2535 (1992) issued pursuant to the Factory Act B.E.2535 (1992), Clause 14 and 16.
[155] Notification of Department of Industrial Works Subject: Type or category of factory required to prepare a report of type and quantity of pollutants discharged from a factory B.E. 2559 (2016), Article 4.
[156] Department of Industrial Works, *"Manual of using type and quality of pollutants discharged from the industrial factory (RoWo.1, RoWo.2, RoWo.3, RoWo.3/1 for the factory operator) "*, http://hawk.diw.go.th/eis/manual-user.pdf (last visited May 6, 2016)).

II. RoWo 2 Form (when reporting information on water pollution)

Water pollution reports (RoWo 2 Form) include information regarding the sewage treatment system, the release of wastewater out of sewerage plants, chemical and biological agents used in wastewater treatment and reports analyzing the pollution of the water.[157]

III. RoWo 3 Form (when reporting information on air pollution) as specified by the Department of Industrial Works via the electronic system.

Air pollution reports (RoWo 3 Form) include the release of air pollution from chimneys, sources of contaminants, and a fuel usage analysis report schedule.[158]

When the Department of Industrial Works examines the aforementioned reports on pollutant emissions and finds them to be incorrect or incomplete, the factory operator is obliged to report accurately and completely and send these reports to the Department of Industrial Works electronically within 4 5 days of receiving notice that the report has issues.[159]

4.1.2.4 How to Report

Industrial factories are required to submit a report to the Department of Industrial Works via an electronic system, as per the following:

I. First round: The report covering pollution information from January to June must be submitted by 1st September of the year that the report is made.
II. Second round: The report covering pollution information from July to December must be submitted by 1st March of the next year.[160]

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[157] *Id.*
[158] *Id.*
[159] Notification of Department of Industrial Works Subject: Type or category of factory required to prepare a report of type and quantity of pollutants discharged from a factory B.E. 2559 (2016), Article 5.
[160] Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015), Article 13.2

For the pollutant emissions reports (RoWo 1 - 3 Form), the type and amount of pollutants must be endorsed, as follows:[161]

I. If the industrial factory needs in the environment personnel the report must be certified by the factory operator or someone who has attorney-in-fact and the environmental protection system supervisor as an endorser.
II. In the case that the industrial factory is on the List of Factories Annexed with Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015), the report must be certified by the factory operator or the attorney-in-fact as the endorser.

"However, all industrial factories must keep one copy of these pollution reports at the factory for at least 3 years and should have them ready for inspection by a government official."[162]

4.1.2.5 Disclosure

According to the Factory Act B.E. 2535 (1992), Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015), and Notification of Department of Industrial Works Subject: Type or category of factory required to prepare a report of type and quantity of pollutants discharged from a factory B.E. 2559 (2016), it has not been specified that the Department of Industrial Works who receives the pollutant emissions reports from the industrial factory to disclose such pollution information to the public for acknowledgement.

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[161] Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015), Article 13.4.
[162] Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015), Article 13.3.

4.1.2.6 Governing organization

The agency which is involved in reporting pollution information of the industrial factories is the Department of Industrial Works, Ministry of Industry. The Department of Industrial Works has a primary responsibility of developing industrial business through promoting and overseeing the business industry in order to increase productivity and competitiveness with sustainable development goals that are internationally accepted. This includes the control of hazardous materials and chemicals to maintain environmental quality and safety.[163] Also, the Department of Industrial Works is responsible for enforcing the Factory Act BE 2535, which empowers the Minister of Industry to issue regulations and announce these regulations in order to control industrial operations in a manner that prevents damage[164] to the health of the general public, property, natural resources and the environment.[165]

4.1.2.7 Sanction

If any person violates or fails to comply with the measures stated under the ministerial regulations to inform the government from time to time or within a specific period of information relating to the operations in the industrial factory sector, the punishment shall be subject to a fine not exceeding 20,000 Baht.[166]

4.1.3 Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016)

This regulation was enacted on April 29, 2016 by virtue of Section 6 Paragraph 1 and Section 8 (4) - (8) of the Factory Act B.E. 2535 (1992). This regulation will be effective from 180 days from the date of its publication in the Government Gazette. The main reason why the Ministry of Industry enacted

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[163] Ministerial regulations of the distributed government of Department of Industrial Works Ministry of Industrial B.E. 2545 (2002), October 9, 2002 No.1.
[164] Waraporn Janoh, *supra* note 43.
[165] Yongyut Maharvechasiri, *supra* note 36.
[166] Factory Act B.E. 2535 (1992), Section 46.

this regulation was because there was no specific regulation to control soil and groundwater contaminated within a factory.

The regulation emphasizes quality monitoring of the soil and groundwater contaminated within the industrial factory's area. It requires the government agency to collect and analyze the contaminated examples from the industrial factory and compare these against determined criteria in regulations to gauge the concentration levels of contaminants. Excessive concentration levels of contaminants may harm the health and livelihoods of those living in the vicinity.[167]

4.1.3.1 Reporter

The factory operator as prescribed by the annex[168] shall provide a quality monitoring process and quality monitoring report on the soil and groundwater contamination and report this to the Department of Industrial Works. The types of industrial factory which have a duty to provide quality monitoring reports are as follows:[169]

I. The industrial factory which processes textiles of yarn or fiber which are not asbestos with one or more of the following conditions: (1) carbon fermentation; (2) yarn preparation and weaving for textiles; (3) bleaching or dyeing of yarn or textiles; and (4) textile printing.

II. The industrial factory which operates on pulping or paper manufacturing with one or more of the following conditions: (1) the pulp from wood or other materials; (2) the paper, cardboard or paper used in the construction made from fiber or fiberboard.

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[167] Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016), Article 2.
[168] Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016), Article 2.
[169] List of Factory Annexed with Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016).

III. The industrial factory which processes chemicals or chemical materials (except fertilizers) with one or more of the following conditions: (1) the manufacturing of chemicals or chemical materials; and (2) the storage, conveying, separation, screening, or specifically repacking of chemical hazards.

IV. The industrial factory which operates on paints, shellac varnish, lacquer, or oil products for the treatment or filling with one or more of the following conditions: (1) the colours for paint, spraying or coating; (2) the varnish, mixed oil, or paint remover; (3) the lacquer or shellac products for the treatment or filling.

V. The industrial factory which operates on chemicals with one or more of the following conditions: (1) product for furniture polish or wax or metal or other materials for building refurbishment; (2) production of antiseptic or deodorants; (3) waterproofed products, wetting agents, emulsifiers or penetrants, products for seals or glue, products for connecting or fillings which made from plants, animals, or plastic from other sources which are not dental cements; (4) matches or fireworks production; (6) product of fermentation or black carbon; (12) production of product used for metal, oil or water treating compounds, product of prepared photo-chemical materials or sensitized film, paper or cloth.

VI. Petroleum Refinery

VII. The industrial factory which operates on smelting mixture, pure molten metal, casting, rolling, drawing or manufacture of iron or steel (nn-ferrous metal basic industries)

VIII. The industrial factory which operates on electrical equipment with one or more of the following condition: (1) electric lamps; (4) insulation or electric insulation materials other than ceramic or glass; (5) energy storage pot or pot generator of electricity (water or dried) including the components of such products.

IX. The industrial factory which operates on the refurbishment or changing features or components of products without producing one or more of the following conditions: (1) applying the coating; or (2) applying the coating of shellac or lacquer, varnish, oil or another. (3) plating, anodizing.

X. Central Waste Treatment Plant

XI. The industrial factory which operates on segregation or landfill of waste or non-recycle materials with characteristics and features as prescribed in the Ministerial Regulation No. 2 (B.E. 2535) issued under the Factory Act B.E. 2535.

XII. The industrial factory which operates on the non-use or industrial waste products from factories to produce new products or raw materials through a manufacturing process.

4.1.3.2 Type of pollution information required to report[170]

"Contamination" means chemicals or any other things that are used or stored within the industrial factory. Contamination shall include any waste in the industrial factory that may be harmful for health and the environment. The factory operator must monitor and report the following contaminated soil and groundwater that are within the industrial factory, as follows:

(1) Volatile organic compounds

(2) Heavy metals

(3) Chemicals for protection from pesticides and animal

(4) Chemicals that have the characteristics or properties according to the Announcement of Ministry of Industry that the disposal of waste or unused materials.

(5) Other chemicals that are as prescribed by the Minister upon publication in the Government Gazette.

4.1.3.3 Form to Report

According to Article 11 of the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016), the verified report on the quality of soil and groundwater contamination within the factory shall be prepared

[170] Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016), Article 2.

according to the format and forms prescribed by the Minister and published in the Government Gazette.[171] However, at present, these have not been enacted.

4.1.3.4 How to report

I. If the industrial factory was established after the date that the Ministerial Regulation came into force[172]

The factory operator must monitor the quality of soil and groundwater as well as writing a report about the condition of the soil and groundwater. The report shall be kept in the factory and shall be ready to be checked by the Department of Industry Works before starting operation.

The factory operator must monitor the quality of soil and groundwater for a second time after 180 days after the operation date has passed. Also, the factory operator must report on the results of this check to the Department of Industry Works or the Office of Local Industry where the factory is located within 120 days since the 180 days has passed. Also, the factory operator must submit the report in accordance with paragraph 1 to the Department of Industry Works or the Office of Local Industry where the factory is located as well.

II. If the factory was established before the date that the Ministerial Regulation came into force[173]

The factory operator must monitor the quality of soil and groundwater within 180 days after the Ministerial Regulation has come into force and the factory operator must publish the results of his checks and submit it to the Department of Industry

[171] Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016), Article 11.
[172] Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016), Article 4.
[173] Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016), Article 5.

Works or the Office of Local Industry where the factory is located within 180 days from the first 180 days that passed.

The factory operator must monitor quality of soil and groundwater for the second time 180 days after the factory operator monitors them in accordance with paragraph 1. The report shall be submitted to the Department of Industry Works or the Office of Local Industry where the factory is located within 120 days from 180 days since the second monitoring passed.

III. If the period of time under I. and II has passed[174]

The factory operator must monitor the quality of the soil every 3 years and must monitor the groundwater every year. Also, the factory operator must write and submit the report to the Department of Industry Works or the Office of Local Industry where the factory is located within 120 days since the date that the factory operator monitored the soil or groundwater.

Monitoring to determine whether the soil and groundwater qualifies has to be done by private laboratories that are registered with the Department of Industry Works or private laboratories that it approves.[175]

4.1.3.5 Disclosure

The Factory Act B.E. 2535 (1992) and the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016) have not been specified that the Department of Industrial Works who receives the soil and groundwater contamination report from the industrial factory to disclose such pollution information to the public for acknowledgement.

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[174] Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016), Article 6.

[175] Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016), Article 7.

4.1.3.6 Governing organization

The agency involved in reporting the pollution information of industrial factories is the Department of Industrial Works, Ministry of Industry. The Department of Industrial Works has a primary responsibility to develop industrial business through promoting and overseeing the business industry with a view to increasing productivity and competitiveness with sustainable development goals that are internationally accepted. This includes the control of hazardous materials and chemicals to maintain environmental quality and safety.[176] Also, the Department of Industrial Works is responsible for enforcing the Factory Act BE 2535, which empowers the Minister of Industry to issue regulations and announce these regulations in order to control industrial operations in a manner that prevents damage[177] to the health of the general public, property, natural resources and the environment.[178]

4.1.3.7 Sanction

In case the report shows that the contamination of the soil or groundwater exceeds the standard, the industrial factory must publish a report that shows the solution and the measures to control and decrease the contamination so that it does not exceed the standard. The report shall be submitted to the Department of Industrial Works or the Office of Local Industry where the factory is located within 180 days from when it found the contamination to be above the standard. Moreover, the industrial factory must state in the report about the timeframe that the industrial factory can control the level of contamination.[179]

If it is necessary, the government officer shall have the power to set the timeframe for the industrial factory that does not submit the report or does not

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[176] กฎกระทรวงแบ่งส่วนราชการกรมโรงงานอุตสาหกรรม กระทรวงอุตสาหกรรม พ.ศ. 2545 ลงวันที่ 9 ตุลาคม 2545 ข้ อ .1. (Ministerial regulations of the distributed government of Department of Industrial Works Ministry of Industrial B.E. 2545 (2002), October 9, 2002 No.1).
[177] Waraporn Janoh, *supra* note 43.
[178] Yongyut Maharvechasiri, *supra* note 36.
[179] Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016), Article 10.

describe the timeframe in accordance with Paragraph 1 in order to decrease the level of contamination of the soil or groundwater. If the government officer believes the timeframe that the industrial factory has set is too long, he shall have the power to set a timeframe that is shorter.[180] Moreover, if any person violates or fails to comply with the measures stated under the ministerial regulations to inform the government from time to time or within a specific period of information relating to the operations in the industrial factory sector, the punishment shall be subject to a fine not exceeding 20,000 Baht according to Section 46 of Factory Act B.E. 2535 (1992).[181]

4.1.4 Legal Analysis

The above information indicates that existing Thai laws do not allow for adequate prevention and problem-solving regarding the enforcement of reporting pollution information in the industrial factories sector. Under these laws, the existing laws only enforce the reporting of pollutants that are released into the air and water according to the Factory Act B.E. 2535 (1992), Notification of Ministry of Industry regarding preparation of type and quantity of pollutants discharged from a factory B.E. 2558 (2015), and Notification of Department of Industrial Works Subject: Type or category of factory required to prepare a report of type and quantity of pollutants discharged from a factory B.E. 2559 (2016). In the event of the reporting of pollutants being released into the soil, the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016) was enacted on April 29, 2016 by virtue of the provisions in Section 6 paragraph 1 and Section 8 (4) - (8) of Factory Act B.E. 2535 (1992). However, this regulation stipulates only that industrial factories must report information about soil and groundwater contamination within the factory area, not covering outside factory area. Moreover, at present, the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016) does not have a specific format and forms for publishing the verified report on the quality of soil and groundwater contamination within a factory. Neither does it

[180] Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016), Article 12.
[181] Factory Act B.E. 2535 (1992), Section 46.

give a specific method for monitoring the quality of soil and groundwater nor does it offer the standard of quantity to verify the quality of soil and groundwater contamination within a factory. As such, it should enact a new notification on the specifics of such a format and forms, and the standard of quantity to verify the quality of the soil and groundwater contamination within a factory. Furthermore, the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016) only lists 12 types of industrial factories which have a duty to provide a quality monitoring process and report on soil and groundwater contamination to the Department of Industrial Works. However, in the present, many types of the industrial factory are causes or risk factors to be the soil pollution or the soil or groundwater contamination. Thus, there are more types of industrial factory which should have a duty to do this.

On the subject of punishments, these are not heavy enough to ensure that industrial factories will submit their pollution reports to the government or related authorities. If a person violates or fails to adopt the requirements for reporting pollution information from time to time or within a specified period, the punishment is a fine not exceeding 20,000 Baht. This punishment may not be strong enough to motivate the factory operator to act. These inadequate consequences may result in the factory operator neglecting or avoiding to report pollution information because they may feel that the reporting does not benefit their own operation activities and may even led to extra unnecessary costs.

4.2 Official Information Act B.E. 2540 (1997) [182]

The Official Information Act was approved in July 1997 and came into effect in December 1997.[183] The Official Information Act B.E. 2540 (1997) is a law that supports the public's "Right to know". It sets out the right to have information from officials and has given the responsibility to state agencies and public officials to obey

[182] Atcha Songjaroen, *supra* note 14.
[183] ARTICLE 19 Free Word Centre, *"The Right to Information in Thailand"*, https://www.article19.org/resources. php/resource/38143/en/country-report:-the-right-to-information-in-thailand (last visited Apr 10, 2016).

the law. This is for the purpose of supporting and protecting the rights of citizens in accordance with the principles and concepts of the Official Information Act B.E. 2540 (1997). Specifically, it provides the following:[184]

I. It gives people an opportunity to receive information about the operations of the government by clearly setting exemptions so that the public can utilize their rights, acknowledge information for the sake of their involvement in policy-making and monitor the use of state power to ensure transparency. These are basic principles that are paramount to the development of a democratic society.

II. It ensures the rights of citizens to access official information that is under the control of state agencies, including the right to counsel, the right to verify information, the right to request any other public information, the right to request a copy or certified copies of documents, and the right to know personal information and so on.

III. Almost all official information or at least most of it can be disclosed under the principle "Disclosure is essential, Concealing is the exception". Exceptions are only allowed where the laws state that information cannot be disclosed.

4.2.1 Definition

The meaning of information has also been given in Section 4 of the Official Information Act B.E. 2540 (1997), as follows:

4.2.1.1 ***"Information"*** means "a material which communicates matters, facts, data or anything, whether such communication is made by the nature of such material itself or through any means whatsoever and whether it is arranged in the form of a document, file, report, book, diagram, map, drawing, photograph, film, visual or sound recording, or recording by a computer or any other method which can be displayed."[185]

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[184] Office of the official information commission (OIC), *"Right to know the information of people according to Official Information Act B.E. 2540 (1997)"*, http://www.immigration.go.th/ IDC/10.pdf (last visited Apr 14, 2016).
[185] Official Information Act B.E. 2540 (1997), Section 4.

From the above statement, we can see that the definition of "Information" is very broad to include any material that communicates anything.[186] It covers all that is meaningful, whether recorded or stored in any form. Thus, the essence of information is that it is capable of being meaningful.[187]

4.2.1.2 ***"Official information"*** means “information in possession or control of a State agency, whether it is information relating to the operation of the State or information relating to a private individual.”[188]

From the above statement, official information is defined as any material that communicates information and is arranged in a form of a document or any other form in the possession or control of a state agency relating to the operation of the state.[189] Therefore, if the information is in the possession or control of a public authority, such information can be the official information. Regardless of the information will be public's information or private's information.[190]

4.2.1.3 ***"Personal information"*** means “information relating to all the personal particulars of a person, such as education, financial status, health record, criminal record or employment record, which contain the name of such person or contain a numeric reference, code or such other indications identifying that person as fingerprint tape or diskette in which a person's sound is recorded, or photograph, and shall also include information relating to personal particulars of the deceased.”[191]

From the above statement, it can be seen that “Personal Information” under Section 4 of Official Information Act B.E. 2540 (1997) has a relatively narrow meaning as it refers to ordinary individuals only, focusing on specific information

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[186] Toby Mendel, *“Freedom of Information: A Comparative Legal Survey”*, http://portal.unesco.org/ci/en/files/26159/ 12054862803freedom_information_en.pdf/ freedom_information_en.pdf (last visited Apr 10, 2016).

[187] ดร.ฤทัย หงส์สิริ และ มานิตย์ จุมปา, คำอธิบายกฎหมายข้อมูลข่าวสารของทางราชการ, 10 (2542) (Dr. Ruthai Hongsiri and Manit Jumpa, **Legal Description of Official Information**, 10 (1999)).

[188] Official Information Act B.E. 2540 (1997), Section 4.

[189] ARTICLE 19 Free Word Centre, *supra* note 185.

[190] Dr. Ruthai Hongsiri and Manit Jumpa, *supra* note 198.

[191] Official Information Act B.E. 2540 (1997), Section 4.

about identity or an individual's private matters. When comparing this definition with "Personal Information" as used under the draft of Protection of Personal Information Act B.E. …, it can be seen that the meaning is significantly broader because it covers personal data, questionnaires, personal history and information about the person also, as stated below.[192]

The Bill of Personal Information Protection B.E. … defines "Personal Information" as facts about the person which make it possible to identify the person, whether directly or indirectly. From this definition, it is possible to interpret that "Personal Information" refers to the following:

1. Personal information such as name, age, gender, height, weight, skin colour, and so on.
2. Information that is private such as financial status, education, religion, health records, criminal records, work history, etc.
3. Information about the person such as consumer behavior, how they live, etc.

Different countries and jurisdictions define the meaning of "personal information" differently. A number of examples are given below.[193]

1. Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of information defines "personal data" as "any information relating to an identified or identifiable natural person (data subject); an identifiable person is one who can be identified, directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his physical, physiological, mental, economic, cultural or social identity."

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[192] ธนัท สุวรรณปริญญา, ปัญหาทางกฎหมายเกี่ยวกับ การคุ้มครองข้อมูลส่วนบุคคลบนธุรกรรมทางอิเล็กทรอนิกส์ กรณีศึกษา **:** การจัดทำนโยบายการคุ้มครองข้อมูลส่วนบุคคล **(Privacy Policy)** ของธนาคาร สถาบันการเงิน และผู้ประกอบธุรกิจบัตรเครดิตในประเทศไทย, (สารนิพนธ์นิติศาสตร์มหาบัณฑิต คณะนิติศาสตร์ มหาวิทยาลัยกรุงเทพ, 2550) (Thanut Suwanprinya, **Legal problems on privacy protection in electronic transaction. Case Study : the making of privacy policy of banks, financial institutions, and credit card operators,** Master of Laws Thesis, Faculty of Laws Bangkok University, 2007).

[193] *Id.*

2. The OECD Guidelines on the Protection of Privacy and Transborder Flows of Personal Data 1980 defines “personal data” as “any information relating to an identified or identifiable individual (data subject).”

3. The UK Data Protection Act 1998 (DPA) defines “personal data” as “data which relate to a living individual who can be identified i) From those data, or 2) From those data and other information which is in the possession of, or is likely to come into the possession of, the data controller, and includes any expression of opinion about the individual and any indication of the intentions of the data controller or any other person in respect of the individual.”

4. The Australian Privacy Act 1993 defines “personal information” as “information or an opinion (including information or an opinion forming part a database), whether true or not, and whether recorded in a material form or not, about an individual whose identity is apparent, or can reasonably be ascertained, from the information or opinion.”

5. The Italian Protection of individuals and other subjects with regard to the processing of personal data Act 1996 defines “personal data” as “any information relating to natural or legal person, bodies or associations that are or can be identified, even indirectly, by reference to any other information including a personal identification number”.

6. The New Zealand Privacy Act 1993 defines “personal information” as “information about an identifiable individual; and includes information contained in any register of deaths kept under a Births and Deaths Registration Act 1951”.

7. The Personal Data (Privacy) Ordinance 1996 of Hong Kong defines “personal data” as “any data –

i. Relating directly or indirectly to a living individual
ii. From which it is practicable for the identity of the individual to be directly or indirectly ascertained; and in a form in which access to or processing of the data is practicable.”

4.2.2 Disclosure

The Official Information Act B.E. 2540 (1997) applies to government information only. The information must be in the possession or control of a state agency, whether it is information on the operations of the state or information regarding the private sector.[194]

Therefore, considering that the information is either subject to the enforcement of this Act or not, it is necessary to consider whether such information is in the possession of the state or not, without regard to the content of that information. That information might have content to do with the state or to do with the private sector.[195]

The Act provides a definition of "state agency" as detailed below:[196]

i. A central administration;
ii. Provincial administration;
iii. Local administration;
iv. State enterprise;
v. Government agency attached to the National Assembly;
vi. Courts only in respect of affairs unassociated with trials and the adjudication of cases;
vii. Professional supervisory organization;
viii. Independent agency of the State; and
ix. Other agencies as prescribed in the Ministerial Regulation.

In any case, the Official Information Act B.E. 2540 (1997) has established the method to disclose information depending on the type of information. These are given below.

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[194] Official Information Act B.E. 2540 (1997), Section 4.

[195] ชาญชัย แสวงศักดิ์ บรรเจิด สิงคะเนติ และสมศักดิ์ นวตระกูลพิสุทธิ์, การเปิดเผยข้อมูลข่าวสารของราชการกับข้อพิจารณาทางกฎหมายปกครอง (กรุงเทพมหานคร : สำนักพิมพ์นิติธรรม, 2543), น. 2 - 3 (Chanchai Sawaengsak, Banjerd Singkaneti, and Somsak Nawatrakulpisud, **Disclosing the official information and consideration of Administration law** (Bangkok : Thammaniti Print & Press, 2000), at 2 - 3).

[196] Official Information Act B.E. 2540 (1997), Section 4.

4.2.2.1 Information which must be printed in the Government Gazette

Information which is required to be printed in the Government Gazette is official information that the public should know. The publication is published to disseminate the aforementioned information as much as possible, including collecting evidence in the use of alleged legal benefits in the future.[197]

The following are the types of information which must be printed in the Government Gazette:[198]

(1) The structure and organization of operations;

(2) The summary of important powers, duties and operational methods;

(3) A contact address for the purpose of contacting the State agency in order to request and obtain information or advice;

(4) By-laws, resolutions of the Council of Ministers, regulations, orders, circulars, rules, work pattern, policies or interpretations only as they are made or issued to have the same force as by-laws and intended to be of general application to private individuals concerned; and

(5) Other information as determined by the Board.

4.2.2.2 Information that state agencies must provide for public inspection

Information that the state agencies have to provide for public inspection is information that the public should know. The state agencies must provide information in accordance with the law defined for the public to review[199] without considering whether the public are stakeholders in such information or not. However, if there is

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[197] ชั่งทอง โอภาสศิริวิทย์, คู่มือการปฏิบัติงานตามพระราชบัญญัติข้อมูลข่าวสารของราชการ **พ.ศ. 2540** ของเจ้าหน้าที่รัฐ (ทำเนียบรัฐบาล : สำนักงานคณะกรรมการข้อมูลข่าวสารของราชการ, 2540), น.10 (Changthong Opardsirivit, **Manual of Official Information Act B.E. 2540 (1997) of the governor**, (Government House : **Office of the official information commission (OIC)**, 1997), at10).

[198] Official Information Act B.E. 2540 (1997), Section 7.

[199] สำนักพัฒนาระบบงานคดีปกครอง, ความรู้เบื้องต้นเกี่ยวกับกฎหมายว่าด้วยข้อมูลข่าวสารทางราชการและคดีปกครองเกี่ยวกับการไม่เปิดเผยข้อมูลข่าวสาร (2549), น.13 (System Development Office of Administrate cases, **Introduction of Official Information law and Administrate cases about non-disclosing information** (2006), at 13).

any information that cannot be revealed, it should be deleted, censored or other methods should be used that does not reveal that information.

The following are the types of information that must be provided by state agencies for public inspection:[200]

(1) A result of consideration or a decision which has a direct effect on a private individual including a dissenting opinion and an order relating thereto;
(2) A policy or an interpretation which does not fall within the scope of the requirement of publication in the Government Gazette under section 7(4);
(3) A work-plan, project and annual expenditure estimate of the year of its preparation;
(4) A manual or order relating to work procedure of State officials which affects the rights and duties of private individuals;
(5) The published material to which a reference is made under section 7 paragraph two;
(6) A concession contract, agreement of a monopolistic nature or joint venture agreement with a private individual for the provision of public services;
(7) A resolution of the Council of Ministers or of a similar Board, Tribunal, Commission or Committee as established by law or by a resolution of the Council of Ministers; provided that the titles of the technical reports, fact reports or information relied on in such consideration shall also be specified; and
(8) Other information as determined by the Board.

Article 8 means information that the Board determines to be crucial to access on the environment in terms of announcing the use of environmental information that is accessible to the public under Section 9 (8) of the Information Act B.E. 2540 (1997), through pushes by the Thailand Environment Institute Foundation and its

[200] Official Information Act B.E. 2540 (1997), Section 9.

partners. The reason for this was to push for the disclosure of environmental information, which is consistent with Principle 10 of the Rio Declaration on Environment and Development.[201]

Thailand has many laws governing information, including The Enhancement and Conservation of National Environmental Quality Act B.E. 2535 (1992), Official Information Act B.E. 2540 (1997), National Health Act B.E. 2550 (2007), and Constitution of the Kingdom of Thailand B.E. 2550 (2007). However, in practice it is evident that the public's ability to access information on the environment and health is very limited. The state should disclose information on these as it is information that the government is required to disclose under Section 9(8) of the Official Information Act B.E. 2540 (1997) to give the public the opportunity to use this mechanism in order to extensively and more effectively protect their right to know information as recognized by law.[202]

Further, the Official Information Commission is aware of the future consequences that will arise from the destruction of the environment. It was therefore announced on June 7, 2010 that environmental and health information is information that must be made available for public review under Section 9(8) of the Official Information Act B.E. 2540 (1997), namely:[203]

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[201] Principle 10 of Rio Declaration provides that

> "Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous material and activities in their communities and the opportunity to participate in decision-making process, States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceeding, including redress and remedy, shall be provided."

[202] สมฤดี นิโครวัฒนายิ่ง และ วรากร น้อยพันธ์, การเข้าถึงข้อมูลข่าวสารของประชาชนประเภทของข้อมูลข่าวสารเกี่ยวกับสิ่งแวดล้อมและสุขภาพที่ควรจัดไว้ให้ประชาชนตรวจดูได้ ตามมาตรา **9 (8)** พระราชบัญญัติข้อมูลข่าวสารราชการ **พ.ศ. 2540** (นนทบุรี : ส.เจริญการพิมพ์, 2552), น. 1-2 (Somrudee Nicrowattanaying and Warakorn Noipun, **Access to the environment and health information that the government agencies must provide for public inspection Section 9 (8) of Official Information Act B.E. 2540 (1997)** (Nonthaburi : S.Charoen Print & Press, 2009), at 1-2).

[203] ประกาศคณะกรรมการข้อมูลข่าวสารทางราชการ เรื่อง การกำหนดให้เป็นข้อมูลข่าวสารเกี่ยวกับสิ่งแวดล้อมและสุขภาพเป็นข้อมูลข่าวสารที่ต้องจัดเก็บไว้ให้ประชาชนเข้าตรวจดูได้ตามมาตรา 9 (8) แห่งพระราชบัญญัติข้อมูลข่าวสารของราชการ พ.ศ.

1. Reports and information relating to environmental, health and social impact analysis at each stage of the process, including reports on public hearings in the relevant sections and information related to the preparation of the report.

2. Reports on the results of implementing measures to prevent and mitigate the environmental, health and social impacts, including reports relating to monitoring environmental quality and relevant information.

3. Reports relating to information and quantities of pollutants affecting the environment and health. Including information related to the preparation of these reports or the results of the report, depending on the case.

4. Status reports and/or information relating to the measurement and monitoring of pollutants, hazardous materials or environmental quality. As well as information and reports related to health conditions or health impacts caused by the pollutants, hazardous materials and environmental quality.

5. Reports of research or analysis on the levels of contamination of crops and foods produced from crops and relevant impacts, including audit reports or reports on the impact of the use of chemicals in agriculture that have an effect on the environment and health.

6. Research reports relating to the level of contamination of chemical substances in the environment. In particular, pollutants that have an impact on the environment and health as well as other relevant information.

7. Impact reports or analysis reports to do with surveillance information and/or other information, in particular relating to health conditions, occupational hygiene and environmental hygiene.

8. Reports on study, research or analysis of the risk of harm that has occurred from operating activities. Especially those related to the environment and health. The report on the implementation of standards relating to the protection of the safe operation of the industrial sector.

2540. (The announcement of the Official Information Commission about the government's determination to have the environment and health information to be the publish information for public inspection under section 9 (8) of the Official Information Act 2540).

9. Reports on the audit of operating results that have or may have an impact on the environment and health. Including performance standards that maintain safety. This should be done continuously by law or the conditions laid down for granting such approval or other audit reports with characteristics that are the same.

10. Reports relating to placement and/or planning of city and urban development in every aspect. Including information relating to the preparation of those reports, in particular with respect to environmental, health and social impacts.

11. Leases and permits in connection with activities or actions that affect or may impact the environment, health and society. Including leases or licenses related to the use, or exploitation of natural resources.

12. Negotiation framework, draft agreements and international agreements in connection with the environment and health. Including negotiation framework, draft agreements and international agreements relating to the use or exploitation of natural resources as well as the implementation of the associated obligations.

13. Policies, plans, programs and budgets in relation to the environment and health.

14. Minutes and resolutions relating to the environment and health. Including the Social Impact Committee that has been appointment, provided by law or by the Cabinet.

15. Information or reports relating to impacts resulting from changes to environmental quality that has an impact on the environment and health.

16. Other relevant information as well as other statistical information, maps and more.

4.2.2.3 Other information that state Agencies must provide to the Public on request[204]

This refers to the information in the possession or control of the Government, in addition to defining the information printed in the Government Gazette, information provided to the public to review, or official information which is prepared for public research. Information that state agencies provide must be information that

[204] The Official Information Act B.E. 2540 (1997), Section 11.

is already available, without needing to prepare, analyze, classify, collect or publish new information unless it is to transform it into a document that use the information that is recorded in a recording studio or sound system, or other systems. However, if the state agency sees that the request is not for the purpose of seeking commercial exploitation, and instead is an important matter in protecting the rights and freedoms for that party, or if it is a matter that is beneficial to the public, state agencies will provide that information.[205] Also, state agencies are able to arrange to provide official information to the public upon request if it is already consistent with the normal functions of the agencies.[206]

4.2.3 Rules and procedures for access to information

Rules and procedures for access to information are based on a number of types of information. These are set out below.

4.2.3.1 Information that state agencies have provided for public review

(1) Criteria and procedures for review

Official Information Act B.E. 2540 (1997) empowers the Commission of Information Affairs to determine the rules and procedures for the preparation of information for public review, as follows;[207]

i. Must have a particular place for the public to review and study the information that is convenient, is adequately staffed and within budget, in order to provide privacy for review and study.

ii. Must have sufficiently detailed indexes to allow for easy review by the public.

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[205] The Official Information Act B.E. 2540 (1997), Section 11 Paragraph 3.

[206] The Official Information Act B.E. 2540 (1997), Section 11 Paragraph 4.

[207] ประกาศคณะกรรมการข้อมูลข่าวสารทางราชการ เรื่อง หลักเกณฑ์และวิธีการเกี่ยวกับการจัดพิมพ์หรือจัดให้มีข้อมูลข่าวสารทางราชการกิดขึ้นก่อนวันที่ พรบ.ข้อมูลข่าวสารฯ ใช้บังคับ ลงวันที่ 24 ก.พ. 2541 และประกาศคณะกรรมการข้อมูลข่าวสารทางราชการไว้ให้ประชาชนตรวจดู ลงวันที่ 24 ก.พ. 2541 (The Official Information Commission about the rules and procedures relating to publishing or making available information before the Information Act was enforced on 24 February 1998 and The Official Information Commission for public review dated 24 February 1998)

iii. The public must easily be able to access the information that has been prepared for review.

iv. Where a state agency discerns that it is necessary to maintain the order of service or security of information, the agency may impose their own rules by also taking into account ease of public review.

v. The venue for public review could be the library of another agency or a private location adjacent to the location of that government agency.

(2) People with the right to review

People that have a right to review the information do not necessarily have to have a conflict with or relationship to the official information that they are reviewing,[208] and neither do they have to mention how they will be using the information.[209]

As for foreigners, they only have the right to review information as defined in the regulations.[210] Currently, however, no law has been enacted on such matters so foreigners still have no right of access to information under this Act.

(3) Cost

Everyone has the right to request a copy or request a certified copy.[211] The state agency may place rules on the collection of fees to obtain a copy of the information, unless the law states otherwise.[212]

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[208] The Official Information Act B.E. 2540 (1997), Section 9 Paragraph 3.

[209] คำวินิจฉัยคณะกรรมการเปิดเผยข้อมูลข่าวสารสาขาสังคมการบริหารราชการแผ่นดินและการบังคับใช้กฎหมาย ที่ สค 139/2548 (The Decision by the Board of Disclosing Public Information, National Administration and Enforcement of Law 139/2548).

[210] The Official Information Act B.E. 2540 (1997), Section 9 Paragraph 4.

[211] The Official Information Act B.E. 2540 (1997), Section 9 Paragraph 3.

[212] The Official Information Act B.E. 2540 (1997), Section 9 Paragraph 3.

4.2.3.2 Other information that state agencies must provide to the public upon request

(1) Rules and procedures for review

A person requesting information must identify the information they need in a way that can be understood by the state agency who has the responsibility to provide such information to the applicant within a reasonable timeframe. However, there is an exception in the case of large or frequent requests without just cause.[213] Currently, there is a set period of 15 days and results must be notified within 15 days. If there is a lot of information, it may not be possible to complete the task within this timeframe.[214]

(2) People with the right to review

People that have a right to review the information do not necessarily have to have a conflict with or relationship to the official information that they are reviewing,[215] and neither do they have to mention how they will be using the information. As for foreigners, they only have the right to review information as defined in the regulations.[216] Currently, however, no law has been enacted on such matters so foreigners still have no right of access to information under this Act.

(3) Cost

Everyone has the right to request a copy or request a certified copy. The state agency may place rules on the collection of fees to obtain a copy of the information, unless the law states otherwise.

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[213] The Official Information Act B.E. 2540 (1997), Section 11.

[214] ประกาศคณะกรรมการข้อมูลข่าวสารทางราชการ เรื่อง การกำหนดให้เป็นข้อมูลข่าวสารที่ต้องจัดเก็บไว้ให้ประชาชนเข้าตรวจดูได้ตามมาตรา 9 (8) พระราชบัญญัติ ข้อมูลข่าวสาร พ.ศ. 2540 (The announcement of the Official Information Commission about the government's determination to have the environment and health information to be the publish information for public inspection under section 9 (8) of the Official Information Act 2540).

[215] The Official Information Act B.E. 2540 (1997), Section 11 Paragraph 5 and Section 9 Paragraph 3.

[216] The Official Information Act B.E. 2540 (1997), Section 11 Paragraph 5 and Section 9 Paragraph 4.

However, the law does not stipulate guidelines and steps to take if the requesters demand access to information. The Official Information Act only states that information may be demanded if it is not already published elsewhere, the requestor must make reasonable mention of the intended information. However, the law does not state what form such a request should take.[217]

4.2.4 Exceptions to disclosure

This version of The Right to Know Act is not absolute and can be overruled by the exceptions given below.

4.2.4.1 Information prohibited from disclosure

Information which could cause damage to the monarchy[218] must not be revealed in any circumstance. The person who is in charge of disclosing the information must use discretion in determining whether to disclose the information or not.

4.2.4.2 Information that may be ordered not to be exposed

In order that state agencies or authorities that are responsible for disclosing information can have clear guidelines for determining whether information is such that it may be ordered not to be disclosed or not to be disclosed at that time, and also for determining which citizens have a right to be informed of such guidelines, the law must stipulate that those with the responsibility of disclosing information must use discretion with regard to the legal duty of public authorities, public interest and the interest of private parties relating to non-disclosure. This is permitted in the following circumstances:[219]

a. Disclosure would cause harm to national security, international relations and the stability of the economy or finances in the country.

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[217] ARTICLE 19 Free Word Centre, *supra* note 185.
[218] The Official Information Act B.E. 2540 (1997), Section 14.
[219] The Official Information Act B.E. 2540 (1997), Section 15.

b. Disclosure would cause damage to the effectiveness of law enforcement or cause it to be unable to successfully fulfill its objective, whether it is to do with prosecution, prevention, suppression, testing or checking the source of the information.

c. Opinions or advice within the state agencies to do with the implementation of any particular subject matter, but not including technical reports, factual reports or information used in making recommendations in these areas.

d. Disclosure would cause harm to someone's life or safety.

e. Doctor's report or personal information, so that disclosing such information would be an invasion of privacy.

f. Is information that the Official Information Act protects from disclosure or the information is provided to the government with the intent that it will not be disclosed to others, and

g. Other cases stipulated in the statute.

In addition, the order not to disclose official information can be imposed on any situation but the agency must state the type of information it is and the reason that information cannot be disclosed. It is therefore considered that the order to disclose official information is at the discretion of the authorities, particularly the chain of command. However, the applicant may appeal a Board of Directors decision not to disclose information.[220]

4.2.5 Sanction

Sanctions are a threatened penalty for anyone disobeying the law. They apply to those who fail to comply with an order to provide a statement or documents and evidence for inspection.[221] However, the Official Information Act does not contain sanctions for willful obstruction to access, neither does it include any protection for disclosures made in good faith.[222]

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[220] The Official Information Act B.E. 2540 (1997), Section 15 Paragraph 2.
[221] The Official Information Act B.E. 2540 (1997), Section 32 and Section 40.
[222] Toby Mendel, *supra* note 188.

4.2.6 Legal Analysis

From the above statements it can be seen that Thailand's legal system does not recognize the public's right to access information in the possession of individuals such as the private industry. The law only recognizes the public's right to access information in the possession of state agencies or state enterprises. This is because the Official Information Act B.E. 2540 (1997) requires that state agencies disclose information in the possession of the government for public knowledge, regardless of whether the information is public or private. There are many ways that information can be disclosed, depending on the case, such as by publication in the Government Gazette, disclosure arranged by the state for public inspection or disclosure by public request.

The Official Information Commission is aware of the future consequences that will arise from the destruction of the environment. Therefore, the state is obliged to provide information of potential impacts on the environment and public health for the public's review. Following the announcement of the Official Information Commission, it was stipulated that information associated with environmental and general public health must be kept for public review under section 9(8) of the Official Information Act B.E. 2540 (1997), dated 7 June B.E. 2553. Therefore, the Department of Industrial Works holds that is a state agency who receives reports of pollutants being released from the industrial factory, they have the duty to disclose the pollution information and its impact on the environment and health by making this information available for public knowledge and review.

In any case, even though industrial factories have a duty to report pollution or environmental information to the Department of Industrial Works, which is a state agency, and the public can access that information through their right to access state agencies or state enterprise's information given under the Official Information Act B.E. 2540 (1997), there may still be some obstacles to accessing the factory's pollution or environmental information, namely the Official Information Act B.E. 2540 (1997). This stipulates that the state has the responsibility to prepare the environmental impact and public health information for public knowledge and

review. In other words, it is the right of citizens to access environmental impact and public health information. However, access to such information is limited to information that is in the possession of the state agency or state enterprises.

The factory operator is responsible under the Factory Act B.E. 2535 (1992) for reporting the pollutants being released from the industrial factory to the Department of Industrial Works. If the factory operator fails to do this or reports incomplete or incorrect information, the public has no way at all of knowing or accessing the right information that is in the possession of the factories in the private sector. This is because, at present, there is no law which gives the public the right to access information which is held by a private company.

Furthermore, the requirement to report pollution that is released by the industrial factory under the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016) does not cover the reporting of soil pollution outside factory areas; it only requires the reporting of pollutants which contaminate the soil and groundwater within the factory area. Thus, this shows that even though under the current Official Information Act B.E. 2540 (1997) it is required to disclose environmental impact and public health information, there are still some loopholes that do not allow the public to access information on soil pollution outside a factory area which has very serious impacts on humans, animals and the environment all the same. Soil pollution information is in the possession of the industries as private entities. This is why the public cannot gain access to pollution information in this area.

Therefore, Thai law should be amended to enforce the reporting and disclosing of pollution information of industrial factories – this would make it fall in line with the reporting and disclosing of pollution information to the public under United States law and Japanese law. These laws include provisions that require factory operators to report and the government or related authorities to disclose pollution information in all areas: air, water and land to the public. Moreover, they have heavier punishments than Thai laws to ensure that this is done in form of civil and criminal penalties.

CHAPTER 5
CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The current laws of Thailand relating to the duty to report pollution information come under the Factory Act B.E. 2535 (1992) and Ministry Regulation and Notification issued pursuant to Factory Act B.E. 2535 (1992). This study found that when enforcing reporting of pollution information in the industrial factories sector, the existing law does not sufficiently allow for prevention and resolution of problems due to the release and transfer of pollution. Factory Act B.E. 2535 (1992) only enforces the reporting of pollutants that are released into the air and water. In the case of the reporting of pollutants that are released into the soil, the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016) stipulates only that industrial factories must report information of soil and groundwater contamination within the factory area, not covering outside factory area. Moreover, at present, the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016) does not require a specific format and forms for the verified reporting on the quality of soil and groundwater contamination, and neither does it have a specific method of monitoring the quality of soil and groundwater nor a standard of the quantity needed to verify the quality of soil and groundwater contamination. Moreover, this regulation only lists 12 types of industrial factory which have a duty to provide a quality monitoring process and report on the soil and groundwater contamination to the Department of Industrial Works. However, in the present, many types of the industrial factory are causes or risk factors to be the soil pollution or the soil or groundwater contamination. Thus, there are more types of industrial factory which should have a duty to do this.

Furthermore, existing Thai laws do not hand out heavy enough punishments to force industrial factories to report their pollution information to the government or related authorities. These inadequate punishments may result in the factory operator

neglecting or avoiding to report pollution information because they may feel that the reporting does not benefit their own operation activities and may even led to extra unnecessary costs. This means that the public may not have the opportunity to find out about or access this valuable information which is necessary for the many people who live near industrial factories to know, especially when an accident occurs. Also, when an accident does occur, the lack of available information means that the government and related authorities will not know the source of the pollution that has been released or transferred. They will therefore not be able to protect the community, manage the pollution risks or find methods to solve to problem.

Additionally, there are no laws under the Factory Act B.E. 2535 (1992) which force the government or related authorities to disclose pollution information to the public. There is only the Official Information Act B.E. 2540 (1997) requiring that the government agencies disclose information to the public for acknowledgement. However, disclosing or accessing such information is limited to information that is in the possession of the government agencies or state enterprises. It does not include information that is in the possession of the factories which is the private sector. Thus, for example, if the factory operator fails to report information or reports incomplete or incorrect information, then the public has no way of knowing or accessing the right information that is in their possession. This is because, at present, there is no law which gives the public the right to access information which is held by a private company. Furthermore, the requirement to report pollution being released by the industrial factory under the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016) does not cover the reporting of soil pollution outside the factory area, only within the factory area. This shows that even though under the current Official Information Act B.E. 2540 (1997) it is required to disclose environmental impact and public health information, there are still some loopholes that do not allow the public to access information on soil pollution information outside the factory area which has very serious impacts on humans, animals and the environment. Therefore, the soil pollution information is in the possession of the industries as private entities, and the public cannot gain access to

it in this area. This is a big problem because people need to access this information in order to protect themselves from the dangers of the pollutants.

5.2 Recommendations

When comparing United States and Japanese law with existing Thai law concerning the legal requirements for reporting pollution information, it has been found that Thailand should amend and provide some clear provisions to enforce the industrial factories to report on pollution information. Based on the study, the author would like to propose the following suggestions:

1. To amend the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016) which is the subordinate legislation of Factory Act B.E. 2535 (1992) to forces the industrial factory to report pollution information that occurs within the factory area, and covering outside factory area. This amendment is considered necessary because the effects of pollution into the soil and groundwater outside the factory area are equally as important as the effects of pollution contaminated within the factory area. If this information is provided according to clearly specified guidelines, it could potentially protect the health of the public, animals and the environment. Moreover, a new Notification under the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016) should be enacted to limit the distance outside the factory area to report the soil and groundwater contamination because, if it does not have the limitation, it will be the exceeding cost for the industrial factory to do the report and the industrial factory may be avoid reporting such information.

2. To enact a new Notification under the Ministerial Regulation on Soil and Groundwater Contamination within Factory B.E. 2559 (2016) that specifies the format and forms for the verified report on the quality of soil and groundwater contamination, define the method of monitoring the quality of soil and groundwater, and define the standard of the quantity to verify the quality of the soil and groundwater contamination.

3. To amend Section 46 of Factory Act B.E. 2535 (1992) to enforce heavier punishments for the industrial factories who fail to accurately report their pollution information to the Department of Industry Works. A fine not exceeding 20,000 Baht may be inadequate punishment to force the factory operator to report his pollution information because the factory operator may feel that the reporting does not benefit his own operating activities and may even led to extra unnecessary costs. The factory operator may neglect or avoid to report the pollution information. A heavier punishment may include imprisonment (criminal penalty), a temporary suspension of operations or even revoking the license to operate the plants that have repeatedly ignored warnings to report and disclose the required information.

4. To enact a new subsection of Section 8 of Factory Act B.E. 2535 (1992) to directly force industrial factories in the private sector to disclose their pollution information to the public or give the public the right to access the environmental information and pollution information of the industrial factory without intervention from the government. This is necessary because the existing laws under the Factory Act B.E. 2535 (1992) only force industrial factories to report pollution information to the Department of Industry Works, and the Official Information Act B.E. 2540 (1997) requires that the government agencies disclose information in the possession of the government agency or state enterprises for public knowledge. The problem to be overcome is that this does not include information that is in the possession of factories in the private sector. However, it should enact a new Ministerial Regulation under the Factory Act B.E. 2535 (1992) to determine the disclosure method to the public.

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