

Evaluation of Knowledge and Impact on Fishery, Lifestyle and Business Running of People in Case of Oil Spill Problem in Rayong Province: Mixed Method Research

Pattrawadee Makmee*, Prawit Thongchai and Suchada Kornpetpanee

The College of Research Methodology and Cognitive Science, Burapha University
Mueang District, Chon Buri 20131, Thailand

*Corresponding author's email: pattrawadee [AT] gmail.com

ABSTRACT— *This study was a mixed method research comprised of three main objectives 1) to study and analyze the impact of oil spill on stakeholders, 2) to evaluate environmental impacts and protective approaches to oil spill and 3) to evaluate the impact on fishery, lifestyle, and business. The research sample was 993 residents from Phe, Rayong Province. 40 people were divided by purposive sampling method for qualitative studies while the other 953 participants were divided by stratified random sampling for quantitative studies. Instrument used for qualitative research was interview form about the impact of oil spill situation on residents' lifestyle in Koh Samet, Rayong Province analyze by content analysis and Instrument used for quantitative research were two types as following 1) questionnaire for public opinions survey applied in Ao Prao area, Koh Samet, Rayong Province and 2) a basic knowledge testing about environmental impacts, pollution, effect and protective approaches related to oil spilling analyze by descriptive statistics consisted of percentage, mean and standard deviation.*

The results were: 1) the impact of oil spill on the fishery was diminished, 2) The impact on life style mainly affected to service and trading to tourist. When the number of tourist reduced, it resulted in earning insufficient income to support their daily expense 3) the impact on tourism business related to decrease of tourists number, especially Thai visitors. When they know the situation of oil spill, they were hesitated to visit the island or changed their destinations alternatively. For the international tourists who already reserved accommodation prior to the incident, they still came to the island as planned, 4) the knowledge on oil spill and best practice, majority of people had knowledge about oil spill and practice properly to cope with the real situation, and 5) evaluate the impact and find the way to provide knowledge to residents because it still lacked of understanding and cooperation between responsible official agencies as well as some people suspected fairness of compensation scheme. The researcher has prepared "The manual for residents, knowledge and basic guidelines when facing oil spill" and 6) follow-up and surveillance need to focus on the mental state of the people who live on the island, business owner and relevant agencies including find the policies for supporting sustainable and progress tourism.

Keywords---- Knowledge and Impact Evaluation, Oil Spill, Mixed Method Research

1. INTRODUCTION

The island is an island in Phe, Amphur Mueang, Rayong Province. It is in the area of the National Park of Khao Laem ya-Mu Ko Samet which is a famous attraction of Rayong Province for both Thai and foreigner tourist. It is about 6.5 kilometers away from Ban PHE coast, approximately area of 3,125 Rai. Most people are the original island. Career and Life style are mostly related to tourism living together as a community and help each other.

The situation of Light crude oil transmission 16-inch size pipe, leaked on the sea where was close to the coast of Map Ta phut, Rayong Province at 06.50 p.m. July 27. The leakage quantity was around 50,000 liters, far away from the coastal area of Map Ta phut towards the Southeast approximately 20 km. The oil leak problem that occurred on the sea in Rayong Province was at a level 2. (Tier 2). The rest of the crude oil or leaked salvation from a distribution with sankrachai oil (NS Slickgone) has moved up at Ao Prao Beach, which is in the West of Koh Samet. The crude oil produced the impacts on marine ecosystems including sea water, soil sediments and organisms both long term and short term. Moreover, it affected to people on the island, business running and also tourism business on the island and island nearby both directly and indirectly which may cause damage of economic, Society and the environment of the country. (The Ministry of energy, 2013)¹.

Study on air pollution and exposure long-term of Japan was found related to respiratory illness. Katanoda K, Sobue T, Satoh H, Tajima K, Suzuki T, Nakatsuka H, Takezaki T, Nakayama T, Nitta H, Tanabe K, and Tominaga S. (2001)². Furthermore, the relationship between the pollutant or distance between residential and industrial estates source Petrochemical with respiratory symptoms. Such as allergy symptoms, respiratory symptoms, the symptoms. Asthma in

children and adults living near the oil refinery or industrial sources.(White et al, 2009;Yang et al, 1998; Kordysh et al,2005)^{3, 4, 5}

After such an incident, both government and private sector tried to help and heal people in such area continuously. However, such effects still need to be assessed academically to find out the solution for people. To operate in the same direction, definition of effect assessment on fishery, people and business were expectation of effect on fishery, people and business in both negative and positive sides. Many processes, methods and tools used for evaluation for making the protection procedure caused by oil leak into the sea, Rayong Province and also suggestion to assist and promote fishery and businesses in communities that have been affected both physically and mentally to return to be normal as soon as possible and sustainable. (Ministry of natural resources and environment, 2013)⁶

2. OBJECTIVES

- 1) Study and analyze the impact on all stakeholders in the fishery. Using public life and business operations after the oil spill.
- 2) Evaluate knowledge about the environment impact and pollution prevention guidelines on fishery, people and business owner, due to crude oil leak.
- 3) To assess the impact on the fishery, life style and business aspects.

3. SCOPE OF STUDY

1. Data collection area

Study Areas are expected to be the area affected by the case of a crude oil spill where is in Ban Phe, Mueang, Rayong Province. There is a total number of 6 villages divided into 2 area geographically which are Moo 4 located on Koh Samet and Moo 1-3 and Moo 5-6 located on ground. Responsibility zone are follows:

The North From the landmark zone 1 on the north of Sukhumvit road. Measured in vertical from the middle of the road at km 236.230 phase 800 meters in a straight line parallel to the road to the East to the landmark zone 2 which settled as zone 1 phase, 6,440 meters.

The East from the landmark zone 2 is linear to the southwest to the landmark zone 3 which is located along the Gruen canal, The west coast of the south side of bridge concrete landmark zone 3 canal towpath Gruen canel to meet with Phe-Klang-Rayong road over concrete bridges which is the location of landmark zone 4.

The South – From the landmark zone 4 on Grune canel, the west coast to Phe bay into the southwest to Landmark zone 5 which is the end of the Khao Laem Ya from the landmark zone 5 on Phe bay to the the Northwest to landmark zone 6 which is on a white stone dividing line between Ban Phe and Tapong, Mueang, Rayong province.

The West - From the landmark zone 6 is divided into the northeast to meet with the landmark zone 1.

Koh Samet is a zone that is surrounded by the sea. There is a long stretch of Ridge in North-South orientation, which is also a County island is responsible for the administration of the Khao Laem ya-Koh Samet National Park. There is only one village on the island which is Moo 4, Phe Mueang, Rayong Province.



Figure 1: Map of 6 villages under responsibility of Phe, Mueang Rayong Province

2. Continue to evaluate knowledge about environment, pollution, effect and protective guideline for crude oil spill and people who was affected by this situation were following 3 groups.

- 2.1) Fishery
- 2.2) Businesses owner
- 2.3) General People
 - 2.3.1) local leader
 - 2.3.2) community leaders
 - 2.3.3) villagers

3. The framework of project to assess the impact on the fishery, life style and running business in case of oil leak into the sea, Rayong province: mixed-method research was divided into 5 stages, as shown in Figure 2 and 3.

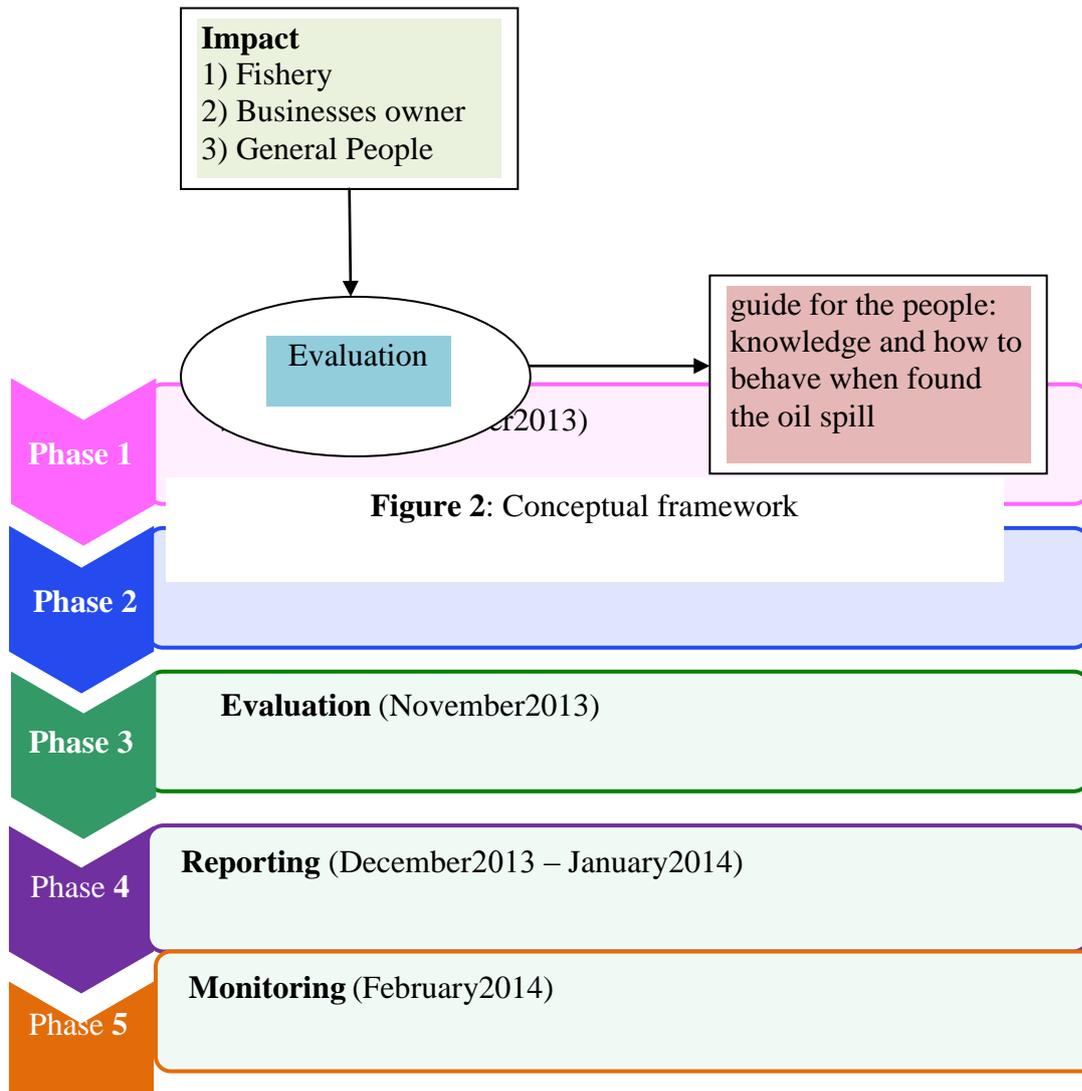


Figure 3: Frame guidelines for the action

4. DURATION OF ACTION

Duration of the project for knowledge evaluation and impact of fishery, life style and doing business in case of oil leak into the sea, Rayong province: Mixed Method research for 6 months September 2013 - February 2014

5. METHODOLOGY

Study and analyze the impact on stakeholders in fishery, life style and business owner after the situation of crude oil spills into the sea in Rayong province. The researcher has planned and set the methods using mixed-method research (qualitative and quantitative research)

6. SAMPLING

Samples was people living in Phe Muaeng Rayong province for 993 participants. 40 person were qualitative data which were selected specially and quantitative data was from Stratified Random Sampling. These was from 6 villages in Phe, Mueang Rayong province. Sub-group and simple random sampling were set by calculating the ratio to obtain samples

7. DATA COLLECTION

The researchers used field data collection method including opinion survey in case of oil leak into the sea from fishery, business owner and people residing in Phe and also used inquiry on environment, pollution and protection method of oil leak and evaluate basic knowledge to cope with such problem. There was group concersation and interview with people who was directly affected in term of fishery, business owner and people.

8. INSTRUMENTS

- 1) Questionnaire for surveys of public opinion after the incident of crude oil leak into the Ao Prao Beach, Samet Island.
- 2) Interview about the impact on lifestyle from the oil leak at Koh Samet, Rayong province.
- 3) Test of knowledge about environment, pollution, effect and solution to the problem of crude oil leak.

9. DATA ANALYSIS

Researchers has analyzed the collected data, classified and compared and then summarized descriptively. Then, effects issue were analyzed in term of environment, physical and psychological condition including knowledge needed to cope with oil leak situation and synthesized the effect of oil leak so that we could classify the effect and find out the solution to solve the problem.

10. RESULTS

1. *Impact on fishery*

According to crude oil spill situation, it affected to fishery resulting that people could catch less fish which is not worth for the gas to sail in each time. To sail for fishing in the sea each time, the fisher could earn 350 Bath, if they think it was not worth, they won't sail. As survey from affected people of oil leak, we found that both fishery boat and passenger boat would receive the compensation rapidly. This was different from people who need to show many evidences of being affected. Therefore, the enterprises were mostly satisfied for compensation more than people on the shore. Impact of oil leak situation on fishery was from the publicity of mass media that made consumer concerning of eating sea food.

2. *Effect on life style of People*

The lives of people on the island are diverse and quite a full range of shops, schools and health, temples, etc., Vegetables, fruit, water and various foods are delivered by ship from Phe municipal every day. The effect on life style of people was providing service and trading with tourist. When tourist was lower, it resulted in insufficient income each day.

After the incident of crude oil leak, the villagers in the district start up and calls for the various agencies to help responsible for their health. People who get risk would have a health check. For psychological effect, most people were afraid of the situation, expectation for compensation, assistance from responsible organization and condolences to the image of tourism on the island that had fewer tourists.

3. *The impact on business*

There are many careers on the island but mostly tourism-related. There are many kinds of people who have worked for earning income in this area. The condition occurs after the crude oil leak caused fewer tourists, especially Thai tourists who knew about crude oil leak. They were worried about travelling at the island or choose to go elsewhere instead. For foreign tourists who have booked the tour group in advance, some still came to travel and some of them cancelled. In high season, there were more tourist but still lower than expectation. The business owner on Samet Island said that they feel sad to hear the serious news about oil leak. This affected to lower number of tourist. In the same way, when the tourist was lower, it resulted in negative mind as well.

4. *Knowledge about the situation of crude oil leak and appropriate practice*

The research results of 55 samples who resided in Phe with the knowledge evaluation test for 10 scores, it was found that the average score was 6.36 and the standard deviation value was 2.21. People who passed the test 40 people

(72.73%). This showed that most people had more knowledge about oil leak and had best practice to cope with the situation occurred.

5. Evaluation of effect and development of people's knowledge

According to the assessment and development of increasing knowledge to people, it was found that the impact of crude oil leak was only one event that was damaged because of mass media. This made unconfident for tourists. We have classified people who were affected into 3 groups. 1) Evaluation of impact on the fishery, it was found that the fishing boat was and passenger boats were compensated thoroughly and quickly. This was different from people who needed to be checked many evidence of being affected. Therefore, most enterprises had satisfaction to receive compensation. They could catch the sea food in the area far away, so the impact of seafood trading needs help from Public health organization to provide knowledge to people. 2) The impact on life style mainly affected to service and trading to tourist. When the number of tourist reduced, it resulted in earning insufficient income to support their daily expense. 3) The impact on tourism business related to decrease of tourists number, especially Thai visitors. The business owner mostly worried about their income, especially small and big business that need to pay wage for employee. This made insufficient expense although they already gotten the compensation. They need the company that made the oil spill to know such problem continuously.

However, what the researchers perform is to provide guidelines for adding knowledge to affected people about life after the crude oil leak incident. This was divided into chemical knowledge, oil, practice after crude oil spills and best practice by writing the "guide for the people: knowledge and how to behave when found the oil spill."

6. Monitoring and surveillance of the area

The researchers have seen the difference in each 2 months compared total of three times (October 2013 to February 2014). This shows that the number of visitors to the island has increased both Thai and foreign tourists. This can be observed from the density of people on the beach. In particular, number of passengers on each boat trip across to the island has increased. The number of seats was full filled. Monitoring and surveillance are divided into three groups: 1) Monitoring and evaluation and monitoring the impact on fisheries, we found that resident at Koh Samet had less fishermen compared to the number of fishermen who are affected with a harbor on the home side. Monitoring of chemicals and substances in the process which monitored by agencies and organizations involved. Information about toxic, substance and chemical made from oil leak should be provided. 2) The monitoring and surveillance of the impact on life style of people after the oil spill incident. This focused on the mental condition of people who live on the island and Phe nearby who were still worried and unsure of preventive measures of industrial sector. This included the factory in coastal industrial zone Eastern Seaboard which close to the Gulf of Thailand. The industrial community should more visit the community to provide them knowledge and make confidence for people. 3) Assess and monitor the impact on the business, business owner has increased on Sai Keaw Beach. This demonstrated that their business is back to normal. From interviewing entrepreneurs on the island, They indicated that their businesses was better now. Therefore, people and related organization should work together and plan for promote sustainable tourism and grow even more.

11. DISCUSSION

From the knowledge assessment about the oil spill and appropriate practices, we found that most people still have insufficient knowledge to cope with the situation which has never been found. Therefore, it is imperative that related authorities or the various health organization should provide knowledge and understanding to community, not only the period of situation. Due to there are many industrial factory on the coast of Rayong, they need to cooperate with community for the same understanding. Besides providing knowledge to people, real news is also important. They should present both real situation and situation which the problem was solved as well so that it would be beneficial for the residents and business owner and general people also. Mass media need to follow up the situation until it became normal. (Ministry of Natural Resources and Environment, 2013)⁷.

Fishery, aquatic animal can be caught in the area of deep sea which is far from the situation, so the trading effect depended on the consumer. Public Health need to make sure and confidence to people in term of sea food in Rayong province.

To provide assistance to the people affected should support the occupation of people on the island to be sustainable. When a crisis occurred, not only the residents must have a second plan, government agencies or private employer must have plan to help the people working on the island as well such as appropriate compensation. (Ministry of Natural Resources and Environment, 2013)⁷.

In term of Business running, due to the number of tourists has dropped by several factors, the entrepreneurs and traders concerned about their income that need to be paid every day, especially small and medium-sized businesses that had high cost of hiring many employees. As a result, it become inadequate or loss although it has been compensated. They need the company that made the oil spill to visit and acknowledge the problem thoroughly and continuously. (Bangkok business, 2013)⁸.

12. SUGGESTIONS

A follow-up on the chemicals and substances that are toxic to the consumer was still in the process of monitoring and surveillance of involved agencies and organizations. The most request of people is to provide knowledge about toxic and substance caused by oil leak. People need related person to inform or present news to the public continuously. The Life style after the situation still focused on the state of mind of the people that live on the island and Phe who was still nervous and unsure of precautions and solutions of the industry. The included the factory in Eastern Sea Board Industrial Estate on the Thai Gulf. Federation of Thai Industries Council might visit community more and thoroughly continuously for help, support and provide knowledge to people. For the entrepreneur, they mostly based on trading and tourism which there are many factors affecting the quantity of tourists, Sothey must corporate with related organization to make a plan to support for sustainable tourism and standard, safety and attractive tourism.

Suggestion: a summary of issues and guidelines for improving their quality of life

1. Government organization and the company that made the oil spill should have effective publication for people will know the situation of oil leak. What make people concern should be clear and informed people by reliable or standard organization.
2. Research on situation of crude oil leaked into the sea should be reported including related science information such as chemical in environment should be reported via mass media as well.
3. Other agencies should be more responsible for the situation of oil leak, especially academic organization, to inform reliable data.
4. Provide the organization that would check quality of environment and food quality continuously and inform to people.
5. Make the plan for protect oil leak and better management
6. Assistant process for sufferer must be just and reliable
7. Reform tourism of Koh Samet and Ban Phe.
8. Provide Health check for people continuously
9. Develop new tourist attraction as a land Mark of the Ban Phe to attract more tourist such as biggest statue of Phra Apaimanee of Thailand or the Biggest Guan Aim of Thailand.
10. Promote other career which is not relied on tourist and it must be in the context of Ban Phe and Koh Samet.

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