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Improvement Directions for Plans for Residents' Scattering in a Risk Management Plan based on the SAFE Chemicals Act in South KOREA - Focused on the Cases of Ensuring Residents' Right to Know in the U.S.A.

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Abstract

Chemical accidents continue to happen since the hydrofluoric acid leak in Gumi in 2012, and people are voicing their opinions to highlight the importance and need of a prevention and management system for chemical accidents. This study thus set out to review the risk management plan under the Chemicals Control Act in the nation and the cases of risk management planning(RMP) at the US Environmental Protection Agency, searching for measures to improve residents' scattering plans based on risk management plan of the South Korean government. In South Korea, businesses handling toxic chemicals should provide residents in neighboring areas with the information about such chemicals once a year to ensure their right to know. The method of providing the information is, however, dependent on the homepage of the concerned local government or the concerned business, which means there are limitations with the residents' perceiving the information. The Emergency Planning Community Right-to-Know Act(EPCRA) was enacted in the U.S.A. The EPA asks each state to form a local emergency planning committee(LEPC) whose members are appointed by 13 groups. EPCRA offers a chance for a third party to participate in risk management, which reflects the greater importance and weight on the education and participation of the public rather than the interventions based on the government's order and control. Local social groups, environment organizations, and labor groups can ask for the information about toxic industrial substances collectively. Based on the review results of plans for residents' scattering in the American risk management plan, the present study made a couple of proposals to improve the plan for residents' scattering in the risk management plan of South Korea. First, there is a need to form a consultative group to promote autonomous risk responses among civilians and encourage its activities. Secondly, there is a need to establish a mutual support system to guarantee residents' right to know and help them perform the duty of seeking information.

[Keywords] *Chemical Disaster Prevention, RMP, Risk Management Plan, Residence Right' to Know, Safe Chemical Act*

1. Introduction

Chemical accidents continue to happen since the hydrofluoric acid leak in Gumi in 2012, and people are voicing their opinions to highlight the importance and need of a prevention and management system for chemical accidents. In South Korea, the number of safety accidents involving chemicals has been exploding from nine in 2012 through 87 in 2013 to 104 in 2014.

Residents who are living near chemical plant have anxiety on accident occurrence. According to Bae & Chung(2017)'s study, anxiety on accident occurrence was shown to have a statistically significant correlation with the possibility[1]. of accident occurrence and the seriousness of damages from accidents.

The trends report of the Ministry of Employment and Labor records that 73 chemical

accidents took place at 1,337 PSM establishments between January, 2013 and July, 2014. Of them, major industrial accidents were nine. The chemical accident rate was 0.7% among the establishments. Approximately 1.5% of establishments across seven categories of business witnessed a major industrial accident on the premise. The percentage was higher than (about 0.5%) that of establishments exceeding the regulated upper limits[2]. According to the Ministry of Environment's survey report(2014) on chemical discharges, the number of surveyed companies increased by 109 from 3,159 in 2011 to 3,268 in 2012[3]. What is more dangerous is that major risk industrial complexes are situated in the areas of dense population, which indicates that it is critical to make a plan for residents' scattering to let them scatter smoothly and minimize their damage in case of a chemical safety accident.

This study thus set out to review the risk management plan under the Chemicals Control Act in the nation and the cases of risk management planning(RMP) at the US Environmental Protection Agency, searching for measures to improve residents' scattering plans based on risk management plan of the South Korean government.

2. Risk Management Planning System in South Korea

The risk management planning system was newly introduced to the "Toxic Chemicals Control Act" to overcome the problems with the old system for "controlling chemical substances to prevent an accident" based on the Act[4]. The system is to prepare in advance for a chemical accident that can happen accidentally with regard to process safety, emergency measure, and emergency plan at an establishment handling a certain amount of chemicals(in the range of 39~2,250 tons to manufacture and use by the substance) or more. Such establishments should update a risk management plan(RMP) every five years, and the plan should cover the followings: ① the list of chemicals they are handling and the information about their toxicity, ② the current state of control facilities and equipments,

③ the current state of operators and workers at the facilities handling chemicals, and ④ the spill and leak scenarios and emergency plans in case of a chemical accident. In addition, it should contain an evaluation table of off-site influences examined earlier.

Parts of the RMP content should be announced to residents in neighboring areas once a year or more to ensure their right to know. They should cover ① the information about the toxicity of harmful chemicals they handle and the risk of chemical accidents and ② the scope of influence on the atmosphere, water quality, underground water, soil, and natural environment in case of a chemical accident, the method of delivering the information early, and the behavioral know-how for the evacuation of residents.

A risk management plan should cover three major areas including accident prevention, off-site evaluation, and emergency response, which include six, two, and three smaller parts, respectively. The area of emergency response covers a plan for residents' scattering including workers. The content of such a plan is comprised of a consultative group in cooperation with residents, ② specific methods of noticing residents, ③ an evacuation alarm in case of an accident, ④ behavioral know-how for residents, emergency treatments, and the route and venue of evacuation for residents in case of an accident, ⑤ a consultation system with the concerned agencies, and ⑥ an emergency communication network with the concerned agencies.

In South Korea, businesses handling toxic chemicals should provide residents in neighboring areas with the information about such chemicals once a year to ensure their right to know. The method of providing the information is, however, dependent on the homepage of the concerned local government or the concerned business, which means there are limitations with the residents' perceiving the information.

3. Risk Management Planning System of the USA

Interest in chemical accidents has increased worldwide since the Bhopal gas tragedy in India in 1984. A series of chemical accidents followed in the U.S.A., which led to a strong demand to introduce a systemic approach and new system to prevent and manage accidents at facilities handling chemicals.

In the United States, the prevention of chemical accidents is considered in two major aspects: the protection of workers and the protection of residents or the environment. The prevention of chemical accidents to protect workers is usually based on the Process Safety Management system led by the Occupational Safety and Health Administration(OHSA). The prevention of chemical accidents to protect local residents or the environment is based on the Risk Management Planning system run by the Environmental Protection Agency(EPA). While the two systems share many similarities in terms of content, there are some differences in the time of implementation and the objects of protection between them. The differences are prominent especially in the concerned facilities, chemicals, and methods of application.

After the Bhopal gas tragedy, the Emergency Planning Community Right-to-Know Act(EPCRA) was enacted in the U.S.A. The EPA asks each state to form a local emergency planning committee(LEPC) whose members are appointed by 13 groups. EPCRA offers a chance for a third party to participate in risk management, which reflects the greater importance and weight on the education and participation of the public rather than the interventions based on the government's order and control. Local social groups, environment organizations, and labor groups can ask for the information about toxic industrial substances collectively.

This shows the case of LEPC operation by Massachusetts[5]. The state government runs local governance inclined more toward proactive preparation systems than control activities to respond to a chemical accident quickly. Its emergency management is based on the cyclic activities of prevention, planning, preparation, response, restoration, and prevention. In the state, the Massachusetts Emergency Management Agency(MENA) runs the

State Emergency Response Commission under LEPC. The MENA homepage offers information about the current operation of LEPC and REPC.

According to law, LEPC should ensure the participation of practitioners in the transportation industry to support the fast evacuation of residents in case of an accident. LEPC should be comprised of public servants elected at the state or local government level, law enforcement agencies, staff members in charge of emergency management, firefighters, emergency medical workers, public servants in health, local environment groups, healthcare professionals, practitioners in the transportation industry, broadcasting journalists, local social groups(reflecting and raising the public's concern with the risk and harmful factors of chemicals raised by conservationists, environmental activists, and the community very effectively), and owners or employees of concerned businesses(facilities).

The American law stipulates that the businesses should provide local residents with the list of chemicals they handle, MSDS, and handling information(Tier II) via LEPC. One of LEPC's important roles is to notice local residents regularly that such information is available via LEPC. In addition, the minutes and meeting plans of LEPC are all made to the public. Since LEPC meetings are open to everyone, anyone can observe them.

4. Conclusion

Based on the review results of plans for residents' scattering in the American risk management plan, the present study made a couple of proposals to improve the plan for residents' scattering in the risk management plan of South Korea:

First, there is a need to form a consultative group to promote autonomous risk responses among civilians and encourage its activities. Information about an accident plays a critical role in the fast evacuation of residents in an emergency situation. Risk alarms including a siren serve as an important strategy of

providing risk information in case of an accident, but the awareness of risk possibilities in advance plays an important role in residents' handing the emergency situation fast. It is thus necessary to run a consultative body of residents in a similar form to the LEPC of America systematically in the risk management plan.

Secondly, there is a need to establish a mutual support system to guarantee residents' right to know and help them perform the duty of seeking information. It will be desirable for local residents to invest their resources, combine them together, and form a consultative body to ensure sustainable safety in their living spaces from the viewpoint of putting the vulnerable class or individuals to safety first and from the perspective of prosumers (producers + consumers) rather than simple consumers of autonomous administration. It will especially be desirable to form a close consultative body among local residents, local government, and businesses to ensure residents' right to know.

The present study focused on the cases of residents' scattering in the risk management plans of South Korea and the U.S.A. Chemical safety accidents are not, however, restricted to the two countries. Such disasters happen around the world. Local residents' right to know in a risk management plan should thus be treated as an important global issue beyond South Korea.

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