

Nattaphongs Julagatepotichai 2007: Impact Evaluation of Leakage and Explosion of Hazardous Substance for Emergency Plan: Case Study of Light Hydrocarbon Gases Tank in Petrochemical Industrial. Master of Engineering (Safety Engineering), Major Field: Safety Engineering, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Penjit Srinophakhun, Ph.D. 106 pages.

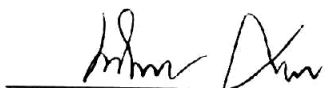
The purpose of the research is to access the impact of leaking and exploding of the hazardous substance in petrochemical industrial. This research will be taken as a case study for arranging and planning for support the emergency situation. The researcher decided to use the ALOHA program in the simulate situation to inspect the impact. The result from this situation will be applied to use with geographic information systems (ArcGIS) program which can indicate the location where trend to receive the effect. Therefore, the researcher can plan the method to control the situation and find out the path for moving out the people.

In the case study from a plant at Rayong province, the researcher determined the simulate situation of the exploding and leaking of four big chemical tanks. These four chemical tanks are contained the discrepant chemistries such as Ethane, Ethylene, Propane and Propylene by limit the quantity and differ in controlling treatment for each tank.

The researcher had arrange the level of leaked and exploded of the hazardous substance base on the range of distance where receive the effect from the most to the less. As the result, the chemical which create the critical effect from leaking is Propane, Propylene, Ethylene and Ethane respectively. On the other hand, the chemical which create the impact of exploding the most is Propylene, then, Ethylene, Ethane and Propane respectively. The range of the impact from Propane leaked in maximum level is 152 meter and from Propylene exploded in maximum level is 4,300 meter. As mention, the range of leaking in the maximum level is not effect to the nearest hospital, where is away form the plant around 1,900 meters. But, on the other hand, the exploding can cause the effect to this hospital. So, the researcher has to move the victim to the hospital outside the effected area instead.



Student's signature



Thesis Advisor's signature

24 / May / 2007