

An evaluation of a mitigation system for a leakage accident based on the mathematical modeling

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Chemical accidents can trigger massive losses at inside and outside of workplaces. Recently, since a hydro fluorine leak accident in Gumi, many concerns and researches have been gaining more concerns for mitigation systems. However, due to the lack of time, cost, experiments and expertise, most companies have hesitated to install the mitigation systems without evaluating the accurate impact. Therefore, it is essential to analyze the efficacy of the mitigation systems under various possible accident scenarios based on scientific methods. In this study, the mitigation system in which a reserve vessel is installed next to a storage vessel is employed. If a leakage accident occurs, a chemical substance is transferred to the reserve vessel by a pump in this system. The simulation results indicate that this mitigation system can reduce a large amount of leakage. In addition, it is verified by consequence analysis program that this system can contribute to reducing consequences of a leakage in terms of maximum diffusion distance and concentration of hazardous gases, respectively.