## **Risk Reassessment Using GIS Technologies for the Development of Emergency Response Management Plans for Water Treatment Systems**

## Authors : Han Gul Lee

**Abstract**: When water treatments utilities are designed, an initial construction site risk assessment is conducted. This helps us to understand general safety risks that each utility needs to be complemented in the designing stage. Once it's built, an additional risk reassessment process secures and supplements its disaster management and response plan. Because of its constantly changing surroundings with city renovation and developments, the degree of various risks that each facility has to face changes. Therefore, to improve the preparedness for spill incidents or disasters, emergency managers should run spill simulations with the available scientific technologies. This research used a two-dimensional flow routing model to simulate its spill disaster scenario based on its digital elevation model (DEM) collected with drone technologies. The results of the simulations can help emergency managers to supplement their response plan with concrete situational awareness in advance. Planning based on this simulation model minimizes its potential loss and damage when an incident like earthquakes man-made disaster happens, which could eventually be a threat in a public health context. This pilot research provides an additional paradigm to increase the preparedness to spill disasters. Acknowledgment: This work was supported by Korea Environmental Industry & Technology Institute (KEITI) through Environmental R&D Project on the Disaster Prevention of Environmental Facilities Program funded by Korea Ministry of Environment (MOE) (No.202002860001).

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