

A method of risk assessment for gas pipeline network

조영도*, 박교식¹, 조은구¹, 고재욱²
한국가스안전공사 가스안전연구원; ¹한국가스안전공사;
²광운대학교
(ydjo@kgs.or.kr*)

Unlike other hazardous plant, the pipeline networks carrying natural gas are not within secure industrial site, but are routed across land out of owned by the pipeline company. If the natural gas is accidentally released and ignited, the hazard distance associated with these pipelines to people and property is known to range from under 20 m for a smaller pipeline at lower pressure, up to over 300m for a larger one at higher pressure. Therefore, pipeline operators and regulators must address the associated public safety issues.

This paper focuses on a method to calculate explicitly the individual risk and societal risk of a pipeline network carrying natural gas with reasonable accident scenarios. By using the similarity between gas flow and current flow the gas release rate from pipeline network is estimate . The individual risk and societal risk are calculated using the parameters of fatal length and cumulative fatal length. The fatal length is defined as the integrated fatality along the pipeline associated with hypothetical accidents. The cumulative fatal length is defined as the section of pipeline in which an accident leads to N or more fatalities. This quantitative risk assessment method may be useful for risk management.