

SCIA: GIS-based software for assessing the impacts from chemical industrial accidents

ABSTRACT

This study is performed to develop a comprehensive software package entitled “simulation of chemical industrial accident (SCIA).” The SCIA can be integrated with geographical information system (GIS) to predict and display the risk and consequence of chemical hazards from two categories of hazardous materials, namely toxic and flammable materials. This paper describes how the existing models are used for predicting accident scenarios and their impact to humans and the environment. The technique for assessing the consequences from chemical accidents is developed by integrating the models in the system with the help of the GIS tools. The software is coded in Visual Basic, and is compatible with Windows working environments. The validity of the software has been confirmed by comparing the results of several applications with other commercial software. The software is a user-friendly and effective tool for evaluating the consequences of major chemical accidents, process decision making for land-use planning namely locating suitable hazardous installations, hazardous waste disposal areas and emergency response plan.

Keyword: Chemical process accident; Mathematical models; Visual Basic; GIS