A HYBRID KNOWLEDGE-BASED SYSTEM FOR CHEMICAL INCIDENT MANAGEMENT

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ABSTRACT

A methodology for the diagnosis and management of the effects of small chemical releases into the environment is presented This methodology, termed real world modelling by the authors, has been used to develop a prototypical knowledge-based system for managing such incidents. This system processes explicit knowledge of different aspects of the release, i.e. the geography of the release area, the nature and properties of released chemicals and the current weather conditions around the release site. These three areas act as separate modules controlled by a co-ordinating module which accesses the information held within them in producing recommendations on different aspects of the chemical release, including corrective action, evacuation and routing, hazard area identification, medical symptomatology, persistency and risk assessment. The system has been developed in the logic programming language PROLOG and utilizes a synthesis of different knowledge representation methods, varying from modelling of simple databases to more complex aggregation and inheritance. (C) 1997 Elsevier Science Ltd.

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