



- Title:** The Integration of Network-Based Models for Spill Response and Homeland Security
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- Abstract:** The integration of three hydraulic GIS (Geographic Information System) applications is presented which represent the water infrastructures of cities and urban areas and US streams and rivers. The water infrastructures include drinking water distribution systems, wastewater collection systems and source water. The National Research Council[1] states that problems dealing with the collective behavior of networks such as river systems, water distribution systems and waste water collection systems are complex because they include feedback loops, produce counter-intuitive behaviors and exhibit behaviors that cannot be predicted from the attributes of individual components. A complex system includes all of the above individual components, yet also exhibits emergent collective behavior caused by the interactions among its features. The integration of these applications have been developed for use in planning, response, training and development of monitoring strategies to address potential deliberate or accidental toxic contamination events.