Argonne NATIONAL LABORATORY

# National Security

# *New simulator helps analyze, mitigate threats to water-distribution infrastructure*

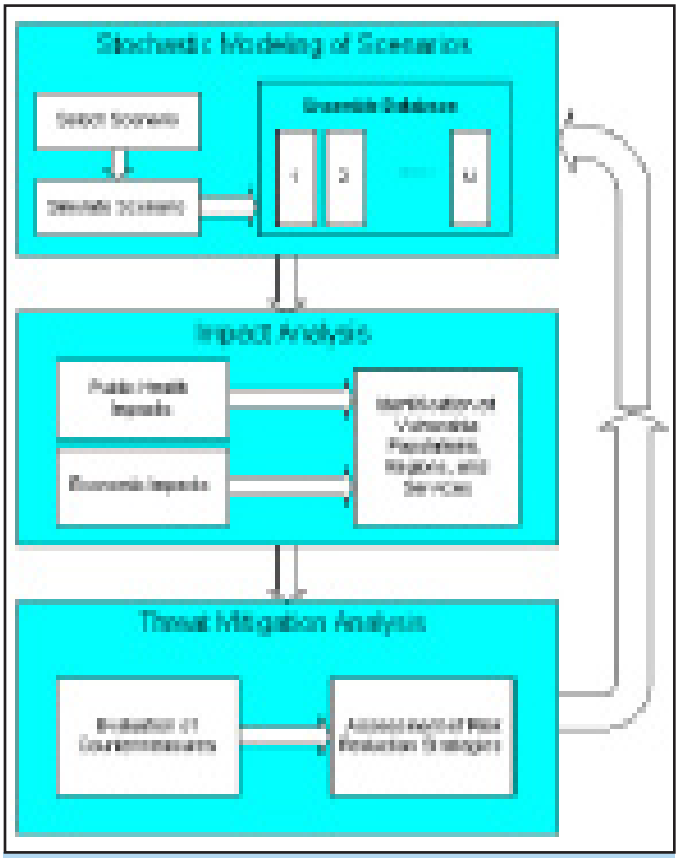
To combat the heightened risk of terrorist attacks on our critical infrastructure, our nation's decision makers need tools to analyze the dynamics of complex infrastructure systems and to quickly assess threats to their operations. Argonne National Laboratory is helping the U.S. Environmental Protection Agency's National Homeland Security Research Center to design, build, and test a system that simulates threats to drinking-water distribution infrastructure.

This effort is part of EPA's Threat Ensemble Vulnerability Assessment (TEVA) Program to analyze the vulnerabilities of drinking-water distribution systems, measure public health and economic impacts, and design and evaluate threat-mitigation and response strategies.

Argonne is taking a systems-analysis approach to designing the flexible and extensible TEVA framework. TEVA addresses the spatial and temporal complexities of water-distribution networks by integrating network hydraulic models with water-quality models, health-impact models, and sensor-placement algorithms. Argonne has also been instrumental in the design and development of TEVA's health-impacts component.

This integrated approach allows decision makers to assess the potential health impacts of a variety of contamination scenarios; to design and evaluate possible mitigation strategies, such as a contaminant warning system; and to plan effective response activities, such as containment and public health intervention. TEVA is a probabilistic framework for assessing the vulnerability of a water utility to a large range of contamination attacks.

Preliminary results illustrate applications of TEVA to three drinking-water distribution systems of different sizes. In addition to the EPA project sponsor, Argonne's research partners and collaborators include the University of Cincinnati and Sandia National Laboratories.




*DRINKING-WATER THREATS – Argonne National Laboratory is helping the U.S. Environmental Protection Agency's National Homeland Security Research Center to design, build, and test a system that simulates threats to drinking-water distribution infrastructure.*


For more information, please contact:

**Pamela Sydelko**
Decision and Information Sciences Division
Argonne National Laboratory
630-252-6727
psydelko@anl.gov



UChicago ▶ Argonne LLC

Argonne National Laboratory is a U.S. Department of Energy laboratory managed by UChicago Argonne, LLC

April 2008