

## **Intelligence Database and Tools for Chemical Hazards – A Program to Develop Tools to Assist Soldiers in an Environment with Toxic Industrial Chemicals**

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Toxic industrial chemicals and material (TIC/Ms) can be defined as chemicals with industrial value that can be used to create hazardous situations during emergency responses, or worse, used in improvised chemical attacks. For these reasons, TIC/Ms represent a significant threat to civilians, emergency responders, and warfighters. Some TIC/Ms are highly toxic and can be more environmentally problematic than typical chemical weapons. Furthermore, the broad spectrum of TIC/Ms often renders simple decontamination solutions ineffective. In recent years, the U.S. Army has encountered TIC/Ms used in improvised chemical attacks. Advanced planning and mitigation resources for TIC/Ms would be valuable to minimize potential exposure and health risks.

The purpose of our project is to provide planning tools to anticipate and address the potential for TIC/Ms encounters in order to minimize impacts to health and mission success. We are approaching this goal by first developing a dynamic database, the toxic industrial chemicals and material intelligence (TICM-INT) that includes physical-chemical data to allow calculations of contaminant migration and transformation. The database also includes data that allow the user to predict presence of TIC/Ms associated with industries, dynamic environmental chemistry of TIC/Ms, and hazard data linked to maximum exposure limits. The integration of this data is being used to develop probabilistic risk models for mission planning purposes. Although the TICMINT is focused on disaster responses and military applications, it may also have great value in homeland security and anti-terrorism applications.