Chemical Threat Characterization

Science and Technology

PROJECT BACKGROUND

The Department of Homeland Security (DHS) Science and Technology Directorate's (S&T) Probabilistic Analysis for National Threats, Hazards, and Risks (PANTHR) program supports the national chemical, biological, radiological, nuclear, and explosive (CBRNE) defense mission. PANTHR provides stakeholders with accurate, useful, and defensible knowledge and tools to enable risk-informed decision making for defense against weapons of mass destruction threats to the homeland. PANTHR enables decision-makers to address CBRNE threats more effectively through three strategic capabilities: risk assessment, characterization, and knowledge management.

MISSION

PANTHR's Chemical Threat Characterization (CTC) project is one of several projects within the PANTHR program. CTC develops and maintains capabilities across the chemical spectrum. CTC generates data that enhances the understanding of chemical threats facing the nation and informs homeland security enterprise (HSE) decision-makers regarding strategic directives, prioritization of efforts, and development of guidelines for the first responder and medical communities. A more thorough understanding of these emerging and current chemical threats increases preparedness and effectiveness of first responder recovery efforts, and ultimately saves lives.

STRONGER CTC, GREATER CHEMICAL THREAT PREVENTION

Chemical threat characterization, by definition, is the collection and/or measurement of physical, chemical, and toxicological properties of chemicals that affect their dissemination and routes of exposure when used for the purpose of causing terror or deaths. CTC provides chemical hazard analysis and threat characterization to the HSE through data and knowledge products focused on improving pre-event planning, event-specific operational response, and strategic chemical defense preparedness decisions. DHS leverages that information to prevent, protect, prepare for, mitigate, respond to, and recover from chemical events.

CTC conducts fundamental studies and analyses to characterize the current and potential chemical threats facing the homeland and develop strategies to mitigate those threats. To achieve that mission, CTC works in pursuit of three main strategic goals:

1. Support and expand DHS S&T chemical threat characterization and defense capabilities;
2. Produce technical data and reports to inform HSE decision-makers, including supporting the PANTHR annual risk assessment;
3. Actively collaborate and harmonize the collective understanding of chemical threat materials, methods, and resources to maximize the impact of chemical characterization research.

ENHANCING PREPAREDNESS THROUGH COLLABORATION

CTC collaborates with federal, state, local, industry, and academic partners to generate and utilize fundamental chemical threat studies and analyses that enhance the collective knowledge of chemical threats. This collaboration allows interagency partners and DHS components to leverage data, technical requests, tailored analyses, and more, to meet mission needs and protect the American public from chemical threats. CTC's laboratory and literature data are input parameters for PANTHR's annual risk assessment, which is circulated throughout the HSE to help focus partners' chemical defense activities on those that will have the most impact and reduction in risk.

IMPACT

CTC delivers knowledge products and capabilities to stakeholders that are required for effective preparedness and response to existing and potential chemical threats. This informs national homeland defense recovery activities to mitigate the impact of a chemical attack on the homeland and effectively focus homeland security investments.