Chemical Security Analysis Center

Outdoor Chemical Dispersion Consequence Model

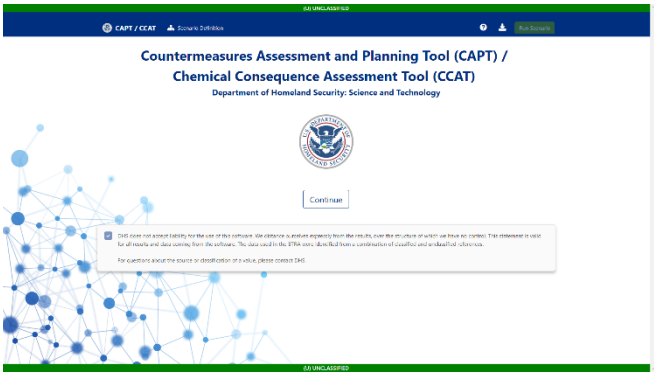
Homeland Security
Science and Technology

COMPREHENSIVE MODEL OF AN OUTDOOR CHEMICAL DISPERSION TERRORIST ATTACK

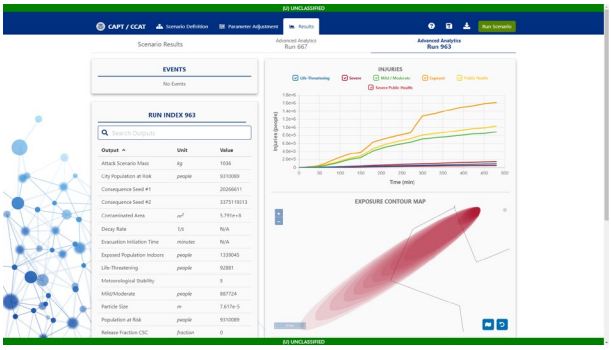
Releasing chemicals outdoors as inhalation hazards was first demonstrated on a large-scale in World War I when forces on both sides used chlorine, phosgene, and mustard gas as offensive weapons resulting in both physical and psychological hazards to even the most highly trained troops. Although successful terrorist use of chemical weapons in an outdoor setting has been rare, it has the potential to cause large impacts, necessitating the need for outdoor release scenarios to be modeled and understood.

DYNAMIC MODELING IN A USER-FRIENDLY INTERFACE

The Outdoor Chemical Dispersion Consequence Model provides the capability to simulate the outdoor dispersion of a wide variety of chemical events using an intuitive graphical user interface via the Countermeasure Assessment and Planning Tool (CAPT) / Chemical Consequence Assessment Tool (CCAT). CAPT / CCAT allows users to easily customize simulation parameters (e.g., chemical, outdoor event size, chemical payload, release location, or outdoor dispersion parameters) and analyze results to better understand the potential impact of a chemical terrorist event.



The CAPT / CCAT Home Page



The advanced analytics CAPT / CCAT page analyzing an outdoor chemical dispersion scenario.

SIMULATION ANALYSIS TO ASSESS POTENTIAL CHEMICAL TERRORIST THREATS

The Chemical Dispersion Consequence Model answers difficult questions, such as:

- What are the human health impacts of events such as: outdoor chemical dispersion attacks on city centers, urban events, and outdoor stadiums via multiple drones; venting of gases from subways, point sources, mobile sprayers, and aerial devices; or attacks on the chemical supply chain?
- Can prevention or mitigation mechanisms (detectors, exclusion zones, etc.) be put in place to prepare for or reduce the impact of a chemical terrorist event?
- What locations and events pose the largest potential threat due to an outdoor chemical terrorist event?

POTENTIAL FOR FUTURE ENHANCEMENT

With newly arising and evolving terrorist threats, the Outdoor Chemical Dispersion Consequence Model can be enhanced to estimate the impact of emerging chemical terrorist threats.

INDUSTRY PARTNER

CAPT / CCAT is owned by the Department of Homeland Security Science and Technology Directorate and Battelle Memorial Institute, Columbus, Ohio is the performer for this task.

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12-2020