

INNOVATIONS IN NEXT GENERATION CB THREAT CHARACTERIZATION AND ASSESSMENT FOR DECISION SUPPORT

Characterization Of Illicit Synthetic Opioid-based Threat Scenarios In Support Of Physical Modeling And Hazard Prediction

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A critical area of concern for hazard modeling and prediction is the potential weaponization of illicit, highly potent synthetic opioid pharmaceutical-based agents (PBAs) such as fentanyl and its derivatives by foreign or domestic terrorists. While methods exist for predicting hazards from a non-energetic aerosolized release of fentanyl solutions or dry fentanyl powder, methods to predict the hazards associated with energetic releases of compressed bulk forms of fentanyl are nascent. Such compressed forms are commonly encountered on the street by law enforcement agencies. To address this concern, DTRA Reachback and MIT Lincoln Laboratory (MIT LL), in collaboration with first responders and other government stakeholders, are conducting a study focused on characterizing the dispersion properties of compressed forms of a fentanyl simulant via low-tech improvised explosive devices (IEDs). Data from these measurements are proving to be useful in developing and validating models that enhance DTRA's PBA hazard prediction capabilities. This presentation will cover the PBA threat scenarios developed to guide experimental design and measurements. Results from initial chamber and indoor field disseminations of compressed fentanyl simulant will be explored along with predictive modeling of these releases with initial comparison to the experimental data. A path forward to further improve operational modeling of these and related scenarios will also be discussed.