NEXT GENERATION CB HAZARD PREDICTION AND CONSEQUENCE ASSESSMENT WITH MULTI-ECHELON DECISION SUPPORT APPLICATIONS

Chemical Fires Module (CFM) Updates – Battery Fire

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The Defense Threat Reduction Agency (DTRA) Technical Reachback commonly employs HPAC (Hazard Prediction and Assessment Capability) for CBRN threat modeling. One of newest incident source modules (ISM) now included in HPAC is the novel Chemical Fires Module (CFM). Earlier versions of the CFM were developed to model a variety of indoor and outdoor scenarios involving liquid pool fires of toxic industrial chemicals and materials (TIC/TIM) with four reaction types (overoxidized, near-stoichiometric, under-oxidized, and near-pyrolytic) included in the database.   Upgrades to the CFM have extended the database to include additional TIC/TIM combustion and pyrolysis reactions and product species.

Most recently, a new class of materials associated with lithium-ion batteries (LIB) has been included in the CFM database. LIB are used in a wide variety of applications ranging from small hand tools to vehicles to large power storage facilities, with reliance on these systems growing. Hazards related to Li-ion batteries and Li-ion battery fires are active areas of research. Updates and recent developments for the CFM will be discussed, focusing on LIB fire modeling.