

THREAT AGENT DEFEAT MODELING AND TESTING USING WMD SIMULANTS

Simulant Chamber Testing

Cris Lewis Southwest Research Institute

This presentation presents results from test infrastructure used to characterize dispersion devices and real time sensors operated from small Unmanned Aircraft Systems (sUAS) and Unmanned Ground Vehicles (UGV). For these tests, UAS/UGV with embedded chemical sensors were placed within a flow chamber having a variable air exchange rate and internal volume of 3,000 cf. Chemical gases and vapors were released into the chamber using mass flow controllers and heated liquid vaporizers to characterize sensor integration placement positions. Simulants used in this study varied from isobutylene (standard tracer gas used for instrument calibration), methyl salicylate (simulant for blister agent), and di-isopropyl methyl isopropyl phosphonate (simulant for organophosphates nerve agents). Concentration ranges varies from 0.2 to 100 ppm. The goals of these investigations are to establish methods and techniques that can be used for baselining the performance of embedded UxS sensors at larger scales than what can be performed at laboratory bench while under controllable concentrations found in outdoor open airfield tests.