



Advanced Topics in Hazard Prediction

Model of Interior of C-130 Hercules in the Event of CBRN Exposure and Cross Contamination During Medical Air Evacuation Patient Transport

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Based on a review of literature and military tactics, techniques and procedures the Department of Defense can benefit from additional assessments of quantifiable patient decontamination prior to air evacuation of chemical or biological exposures. Cross contamination from personnel or material to flight crews or air frame could result in catastrophic loss in air assets and impact the ability to accomplish the mission in deployed environments from CBRN contaminants. Utilizing three dimensional (3D) scanning technology create an accurate 3D interior model of C-130H Hercules Aircraft cargo compartment to be utilized for future modeling. (Future Work in progress) Utilizing the 3D model create a computational fluid dynamics (CFD) model to simulate airflow during flight. The model will be built using data gathered from flights of actual aircraft and technical order specifications to accurately position temperature and air flow within the cabin model. The predicted airflows along with dispersal modeling can be used to predict potential risk from transporting patients exposed to CBRN agents. A variety of commercial and open source software packages can be utilized to create CFD models with 3D model and real world data input for validation. Thesis Research Objective: Generate 3D model of interior cargo/patient transport bay in a C-130 Hercules to accurately create a model for the interior of the aircraft to characterize exposure threats during air evacuation and transport.