

CONCURRENT SESSION 1 – BIOLOGICAL AGENT DECONTAMINATION

Dahlgren Decon Skin Soap, Development and Testing of a Safe Skin and Surface Decontamination Soap

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Dahlgren Decon is established as a broad-spectrum, low-volume decontaminant which shows good reactivity and efficacy against a broad array of Chemical and Biological Warfare Agents, however is excessive for many common hazardous materials. A multi-phase research and development effort funded by the Irregular Warfare Technical Support Directorate (formerly Combatting Terrorism Technical Support Office)* examined a reformulated and diluted version of the Dahlgren Decon chemistry known as Dahlgren Decon Skin Soap (DDSS). This formulation seeks to provide a decontamination solution for use on a variety of common hazardous threat materials on all surfaces to include human skin. Hazardous materials of concern were chosen for testing by a stakeholder committee of military, federal, state and local agency representatives. These include ten Toxic Industrial Chemicals (TICs), each representing broader classes of hazardous materials, *Bacillus anthracis*, causal agent of anthrax, spores. While not included in the original planning, in response to the COVID-19 pandemic efficacy against SARS-CoV-2 was added as an additional test.

DDSS was evaluated against TICs by MRIGlobal in a stirred reactor at application rates of 1:10 and 1:50 target chemical to active decontaminant. DDSS showed activity against six of ten target chemicals at the 1:10 ratio, and showed activity against all targets at 1:50 ratio, reducing seven of ten by 95% or greater in 50 minutes or less. Work also done by MRIGlobal demonstrated 99.99% efficacy on SARS-CoV-2 virus on stainless steel coupons with a one-minute contact time.

DDSS was evaluated by Naval Surface Warfare Center, Dahlgren Division against *B. anthracis* spores. The testing was conducted in accordance with ASTM E3178, a standard developed at NSWC Dahlgren for the purpose of testing advanced decontaminants against bacterial endospores like *B. anthracis*. Results showed DDSS yielded complete spore inactivation of $\geq 7 \log_{10}$ of *B. anthracis* Δ Sterne spores from all test coupons treated with DDSS at room temperature for a five-minute contact time.

The DDSS formula shows promise as an effective decontaminant which is also non-toxic, non-hazardous, non-corrosive, and environmentally friendly. Additional Phase 2 studies are ongoing which examine efficacy against emerging biological threats, toxicity, and skin efficacy.

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