

# The Assessment of Common Off The Shelf Personnel Decontamination Products on a Skin Surrogate Material

Shawn Stevenson<sup>1</sup>, Matt Shue<sup>1</sup>, Janlyn Eikenberg<sup>2</sup>, Stefanie Quinones<sup>2</sup>, Michelle Sheahy<sup>2</sup>

<sup>1</sup>Edgewood Chemical Biological Center, Aberdeen Proving Ground, MD, <sup>2</sup>Leidos, P.O. Box 68, Gunpowder, MD

## Background

Historical approaches to mass casualty decontamination have focused on human remains and/or decontamination of personal items. When faced with a mass casualty, live-person decontamination event, preventing the absorption of chemical warfare agents (CWAs) into human skin is critical in reducing adverse health effects. Military skin decontamination methods have included the use of "Skin Exposure Reduction Paste against Chemical Warfare Agents (SERPACWA) as a barrier skin cream and the M291 Skin Decontamination Kit (SDK), 0.5% hypochlorite solution (household bleach diluted 1 to 10) and 1% soapy water solution"(Braue 2010) along with Reactive Skin Decontamination Lotion (RSDL). Typically, decontaminants such as RSDL and soapy water have been evaluated for protective ratios. A data gap exists regarding the quantitative contaminant reduction observed from skin when using these technologies or other common off the shelf (COTS) products approved for use on humans.

## Decontaminant and Barrier Screening

COTS products were screened for their efficacy as a physical removal decontaminant after CWA contamination on Strat-M (EMD Millipore) skin surrogate, and also as a barrier to CWA absorption into silicone.

	Decontamination	Barrier
Agents	HD, GD, VX	
Material	Strat-M	Silicone
Starting Challenge	1-2 $\mu$ L drop	
Agent-Material Interaction Time	5 min	Product was applied to panel 15 min prior to contamination (~0.1mm thick)
Decontamination Time	10 min	Agent resided on the panel for 30 min

Strat-M



Silicone

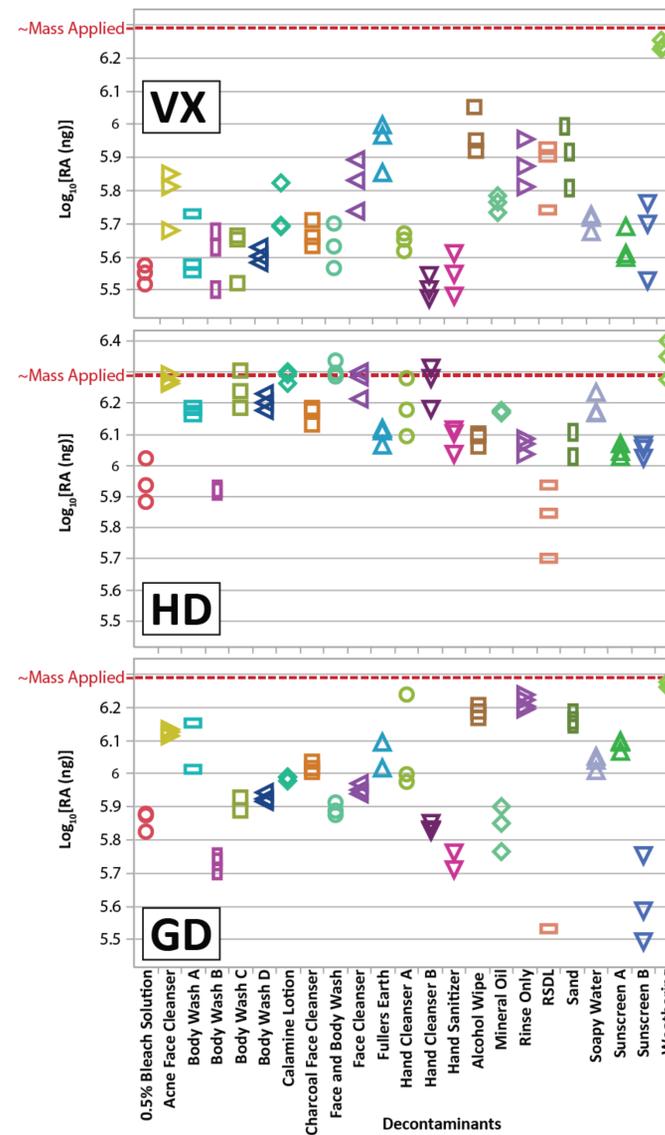


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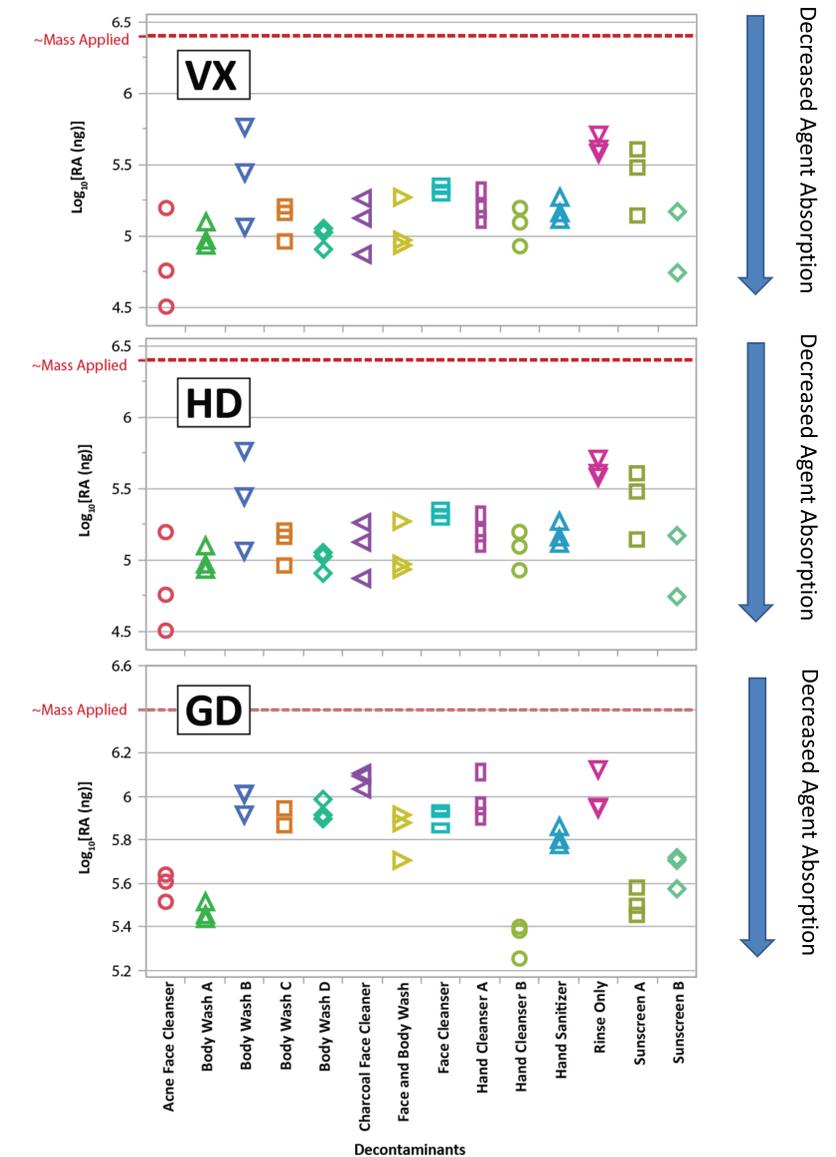
## Decontaminant Results

- Screening provided a quantitative measure of agent removal from a skin surrogate
- Physical removal varied across HD, GD, VX.
- RSDL is a top performer; Body Wash B and 0.5% bleach also show increased removal over the rinse only control.



## Barrier Results

- A good barrier product will limit agent absorption into the skin
- Product performance varied across agents
- No product fully prevented agent absorption after a 30 min residence time



## Path Forward

- Further studies will investigate if the method of product application (such as liquid or wipe delivery) impacts decontamination or barrier performance
- Efforts are also ongoing to develop a novel cream and wipe personnel decontaminant using  $Zr(OH)_4$