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Skinkast: A Multi-modal Dermal Disclosure Spray For The Rapid Detection Of Chemical Warfare Agents On Intact Skin

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Chemical warfare agents (CWAs) are not only extremely potent, but also in pure form often colorless and odorless, which can lead to undetectable dermal exposures without employing specialized analytical instrumentation. A subset of chemical warfare nerve agents (CWNAs), known as persistent agents, along with sulfur mustard, synthetic opioids, and toxins all demand specialized care and attention following dermal exposure. If left untreated, morbidity and death are certain with severe exposures. At present, no dermal disclosure medical devices are available that can provide visual indication of exposure capable of directing decontamination technologies. A simple but rapid disclosure spray could decouple detection from lab-based instrumentation and specialized methods. SkinKast, a dermal disclosure spray-filming technology, is in early prototype development for detection of exposure to various CWAs on intact skin. The prototype formulation has been impregnated with three separate reagent systems to allow detection of CWNAs, sulfur mustard, and fentanyl. Besides detection, SkinKast will potentially offer other modalities to include the initiation of chemical and physical decontamination along with extraction of the exposing substance or the neutralized product for lab-based identification. Prototype studies will be discussed from proof-of-concept to ex vivo assessments conducted on porcine skin.

This research was supported by the Defense Threat Reduction Agency – Joint Science and Technology Office, CBA S&T Division. The views expressed in this abstract are those of the authors and do not reflect the official policy of the Department of Army, Department of Defense, the U.S. Government, DOE, or ORAU/ORISE.