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Protective Overcoats Could Improve Vehicle Decontamination

By Aeriel Storey

A military vehicle undergoes testing and demonstration of a protective overcoating using sample panels during a demonstration in 2022. (U.S. Army photo by Dugway Proving Ground Public Affairs).

Aberdeen Proving Ground, MD – The U.S. Army Combat Capabilities Development Command Chemical Biological Center (DEVCOM CBC) is exploring the use of protective overcoats on military vehicles to reduce hazards to the warfighter and reduce the resources needed to decontaminate the vehicles. The aim of the project is to reduce the amount of time it takes to decontaminate military equipment and improve the readiness of warfighters during their missions.

When faced with the threat of exposure to hazardous chemicals, warfighters must wear their Personal Protective Equipment (PPE). The PPE is effective in keeping the warfighter safe from hazardous chemicals and protecting them from the possibility of continued exposure. The PPE can be removed or reduced when the threat of contamination is eliminated.

The protective overcoats will ultimately give the warfighter the ability to do an immediate decontamination and allow them to remove or reduce the level of PPE required to accomplish their mission. “Our primary mission is to protect the warfighter. This technology has the potential to reduce the hazards warfighters are exposed to,” said Kevin Morrissey, co-principal investigator for this project. “In addition to reducing the hazards to the warfighter, this technology has the potential to reduce the logistical burden of decontamination operations,” continued Janlyn Eikenberg, co-principal investigator for this project.

The protective overcoats, which consist of a clear topcoat over existing military coatings, are sprayed onto military vehicles similar to spray-painting a car. The coating reduces the amount of chemical agent retained while maintaining the characteristics of the underlying military paint. This coating prevents hazardous chemicals from penetrating into the paint of the vehicles, allowing the chemicals to evaporate off the surface or be more easily removed during decontamination operations.

This project, funded by the Defense Threat Reduction Agency's Joint Science and Technology Office, started in 2019 and is currently ongoing. Continued testing and a series of demonstrations sponsored by the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense will allow the team to gather more information about the product early in the development cycle and figure out if it will be useful for the warfighters in the field. The current series of demonstrations have proven to be promising. The data gathered has allowed scientists and researchers to understand the potential of the coating and how it can assist warfighters in their missions.

One such demonstration took place in 2022. The demonstration allowed scientists and researchers to observe how the solution reacts in a real-world environment, similar to the conditions faced in Army missions. This demonstration, followed by an additional test, provided valuable information which could be monitored and analyzed in a controlled, large-scale setting. It also gave project teams the valuable experience of interacting with the warfighters directly and gathering their feedback.

In continuing these tests and demonstrations, researchers and scientists can refine the product as more information is gathered. It has also allowed the team to determine additional uses for the overcoats. Currently, the team is gearing up for another round of testing where they will put the coated samples out for weathering to get an understanding of how long the overcoats will last in the field.

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For more information about the DEVCOM Chemical Biological Center, visit https://cbc.DEVCOM.army.mil

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