Conceptual Development and Testing of a Chitosan/Graphene Oxide (CSGO) "Bandage" to Isolate and Remove Chemical Contamination from Surfaces

Jessie Pope | *Mississippi State University*

This study describes the conceptual development and testing of a protective "bandage" prepared of a composite chitosan/graphene oxide (CSGO) material that can be applied over surfaces to isolate contamination, such as that occurring from a chemical weapon attack. The bandage can be applied either as a wet dispersion or as a dry, preset membrane. Dry bandage application can be implemented by wetting the material with acetic acid and setting on the surface, or the bandage can be placed on the surface and acetic acid brushed over the bandage. The bandage isolates the contaminant by covering the contaminated area and preventing exposure, or by absorbing the contaminant into its structure. The bandage can then be removed, thereby, removing the contaminant. The efficacy of this approach was demonstrated with experiments on metal coupons using methylene blue as a simulant for a contaminant. Applications on government/military vehicles are also presented. The goal is to develop a means in which vehicles contaminated with chemical agents can be treated with minimal water and returned to service quickly without any spread of contamination or damage to the vehicle.