

A submission to the Military Technology Working Group:

Decontamination of Sensitive Electronic Equipment with a Fluorinated Ketone

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The current and precarious geopolitical situation guarantees that all Armed Forces can and will be deployed to various parts of the world at a moment's notice. While on deployment, there is a real possibility that both personnel and equipment be exposed to hazardous materials, requiring immediate and effective decontamination. These contaminants may come from a wide range of Chemical, Biological, and Radiological (CBR) warfare agents and Toxic Industrial Materials (TIMs) from both conventional actors and/or non-conventional, non-state, players. Once contaminated, the force is placed in jeopardy, as now time, money, and resources must be deployed for decontamination, ultimately reducing military might and effectiveness.

Fighting in the 21st century has evolved into a highly technical and electronically advanced battlespace. It is now common for the average soldier on the ground to have a variety of electronic equipment issued to them at any given time for a myriad of purposes. To control the movements of soldiers, the various command posts utilize the latest in electronic equipment to track the whereabouts and communication between units, groups, and even countries. The advancement of consumer electronics has far exceeded that of military development. As such, it is now commonplace to see commercial-off-the-shelf (COTS) electronic equipment both in the field on the front lines and in the command posts. As the possibility of CBR contamination is not a factor in the development of commercially available electronics, the decontamination of such poses a large technical and physical challenge for the CAF. This equipment can be critical to mission success and once exposed to contaminants, decontamination must occur.

In this presentation, the viability of a decontamination protocol for sensitive electronic equipment involving a fluorinated solvent will be explored. Studies will present the successful removal of both sulfur mustard and phosphorus-based nerve agent simulants from a variety of common surfaces, analyzing the removal via neutron activation analysis. The applicability of the fluorinated ketone towards decontamination with effective equipment reintegration will be discussed.