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All-weather Dry Decontaminant Fibers For Hd Degradation

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Hydrogen peroxide (H2O2) is a highly effective decontaminant against chemical warfare agents (CWA), both when present in a liquid or as a solid powder. For the latter this can be in the form of the H2O2 being complexed to a polymer, such as polyvinylpyrrolidone (PVP). However, this complex dissociates at high levels of relative humidity, releasing the H2O2- and thereby making the complex ineffective as a CWA decontaminate. In this paper, we demonstrate that the crosslinked version of PVP is a highly stable complex with H2O2 that can withstand a large temperature range (-20 to 40 °C) and large RH (90%) over the course of several days. We show that when the crosslinked complex is exposed to these extreme conditions, it remains an effective decontaminate against mustard (HD) and its simulant 2-CEES. Finally, using the above as a framework we demonstrate that the H2O2-PVP complex can be processed in a variety of form factors and we highlight its use as a decontaminate fibrous wipe.