Removal of 2-CEES and DMMP by using MgO composites

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Metal oxide particles are considered as reactive adsorbents for the decontamination of toxic materials. The important feature is to enhance the surface chemical reactivity toward incoming adsorbates. In this study, the MgO composites such as $MgO•SiO_2$ and $MgO•Fe_2O_3$ were synthesized using aerogel method and characterized by X-ray diffraction, N2-BET, SEM, TEM and FT-IR. The as-synthesized composites had mesopores with high surface area and high pore volume. And the composites were applied as an adsorbent for removal of chemical warfare simulants, 2-CEES and DMMP, using breakthrough adsorption method. The $MgO•SiO_2$ composite with larger surface area shows higher sorption capacity than the others. And the reactivity of each particles such as MgO, $MgO•SiO_2$ and $MgO•Fe_2O_3$ was compared to each other.