

Effect of humidity on the decomposition of sulfur mustard gas by reactive nano particles

류삼곤[†], 김민건

국방과학연구소

(sgryu@add.re.kr[†])

Exposure to toxic chemical agents and related toxins is a potential hazard to the armed forces and to civilian populations, since CW agents are stockpiled by several nations and, other nations and groups actively seek to acquire these materials. Bis-(2-chloroethyl) sulfide (HD or mustard gas) is one of the toxic blister agents which was occasionally used by some nation of groups. We conducted a series of decontamination experiments for HD on various nano-particles including Metal-Organic Frameworks at humid and dried conditions. After the decontamination process, remaining HD and decomposition products of HD were extracted with proper solvent. And, the extracted solution were analyzed by GC/MS for determining the reaction rates and the routes of HD decomposition. From the results, we found that humidity accelerates the decomposition of HD on some materials, but negatively affects in the case of zirconium hydroxide particle.