ISRP 1999 abstract

Presenter/author	Title	Abstract
Crutchfield, Cliff F. **Campbell**, R. K. *355th Medical Group/SGPB Davis-Monthan AFB, AZ 85707 USA*	**Effect of Eyewear Inserts on the Measured Fit of Military Gas Masks**	A study was conducted to examine the effect of eyewear inserts on measured gas mask fit. Additional study objectives included determining the capabilities of two different fit test technologies for measuring the impact of inserts, and assessing the effect of gas mask donning on measured mask fit. A DNI Fit Tester 3000 (controlled negative pressure (CNP) technology) and a TSI PortaCount Plus (ambient aerosol (AA) technology) were used to make mask fit measurements. Twelve subjects (3 females) donned their assigned gas mask fit (normal breathing exercise only) were made with both fit test systems during each mask donning. Care was taken to not disturb the fit of the mask during filter canister/CNP adapter change-out between each pair of fit tests. The order of fit test systems and eyewear status alternated between mask donning to control for any systematic bias. Study results and conclusions: 1) significant reductions ($p<0.0001$) in gas mask fit related to eyewear inserts were measured by both fit test systems; 2) negative pressure “fit checks” performed immediately after each mask donning were not effective in identifying gross levels of mask leakage; 3) without inserts, CNP fit factors were lower than AA fit factors by at least an order of magnitude with low correlation observed between the systems (R^2 =0.035); 4) with eyewear inserts, the AA in mask sampling probe was located in close proximity to insert leak locations and measurements tracked CNP measurements of leakage very well (R^2=0.829); and 5) substantial effect of donning on mask fit evident in this study is consistent with findings of previously reported study.