

POF019: General platform presentation

Can the SWPF Study be the New WPF study?

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Abstract

Situation/Problem: To determine respirator assigned protection factors (APF), workplace protection factors (WPF) have been used to measure respirator workplace performance. For many reasons (cost, workplace logistics and reproducibility between worksites, among other things) the simulated workplace protection factor (SWPF) has been considered a good substitute for the WPF by some. To use an APF of OSHA states the employer must have evidence that testing of these respirators can be demonstrated by performing a WPF, SWPF or equivalent testing. These types of testing can be very different; one is done in the workplace and the other in the laboratory. However, no one has determined if they give similar results.

Resolution: The SWPF protocols were found to use different exercises, testing equipment and aerosol challenges, among other things. A search of the literature for definitions of WPF, SWPF and equivalent testing were conducted.

Results: First a thorough understanding of the differences between these studies needs to be understood. To date these differences have not been identified in the published definitions. Some studies do a better job of “simulating” work than others. Some studies have used a “safety factor.” No guidance or standards exist for establishing a safety factor for all respirator types or the type of testing. The review of laboratory testing protocols identified several factors that may contribute to differences including aerosol particle size, work rate, environmental conditions, work activities and test duration.

Lessons learned: WPF studies appear to be the most direct measurement of respirator performance in the workplace. SWPF studies have used a wide range of exercises and test conditions which may account for differences between laboratory and workplace results. Some SWPF studies use test protocols that more closely resemble the workplace than others. Stricter definitions or use of SWPF may help define better SWPF studies.