

MEASURING THE FACTORS THAT IMPACT RESPIRATOR COMFORT AND TOLERABILITY

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Abstract: The protection afforded by respiratory protective equipment (RPE) is related to the time it is properly worn. If RPE is uncomfortable, compliance suffers and, by extension, so does protection. Among the more common reasons cited for discomfort attributable to RPE are increased facial heat and sweating, difficulty breathing, facial pressure, and increased fatigue. The National Personal Protective Technology Laboratory has undertaken a number of studies in order to clarify the mechanisms of these complaints. The use of various monitoring technologies has enabled the evaluation of respirator deadspace parameters (i.e., heat, relative humidity, oxygen, carbon dioxide), respirator mechanical features (e.g. strap pressures, facial pressure) and associated physiological variables (i.e., heart rate, respiratory rate, tidal volume, oxygen saturation, transcutaneous carbon dioxide levels, breathing resistance). Various analogue scales have been utilized to evaluate subjective perceptions of exertion, comfort and breathing effort. Respirator comfort and tolerability are related to a complex interplay of various factors that impact individual users differently.