

# **Evaluation of Faster Fit Testing Methods for Respirators Based on the TSI PortaCount<sup>®</sup>**

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TSI, Inc. has developed methods for fit testing respirators that are a modification of the OSHA-accepted ‘Ambient aerosol condensation nuclei counter (CNC) quantitative fit testing protocol’ that reduce the test duration from about 7.2 min to 2.5 min. Three studies were performed, each using a different type of respirator (full-facepiece, elastomeric half-facepiece, and filtering facepiece), to compare the fit factors measured with the TSI modified method to that of a reference method. The method comparison approach was based on American National Standards Institute (ANSI) Z88.10-2010 Annex A2, “Criteria for Evaluating New Fit Test Methods”. Sequential, paired fit tests were performed on test participants with the modified (i.e., faster) method and a reference method during the same respirator donning. The fit factors for both methods were measured using a CNC-based instrument, the PortaCount<sup>®</sup> Model 8030 for the full-facepiece and half-facepiece respirators and the PortaCount<sup>®</sup> Model 8038 operated in the optional N95 Mode (i.e., with the DMA active) for filtering facepiece respirators. The results demonstrated that the new faster methods can identify poorly fitting respirators as well as the reference method, as the test sensitivities were greater than the requirement ( $\geq 0.95$ ) defined in ANSI Z88.10-2010. The new methods also met the requirements for the predictive value of a pass, test specificity, predictive value of a fail, and the kappa statistic contained in the ANSI standard.

I would like to be considered for a presentation.