Evaluation of the NIOSH Proposed STP for Fit Testing Half Facepiece Respirators

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ABSTRACT

The National Institute for Occupational Safety and Health (NIOSH) proposed changing the certification requirements for half mask air-purifying respirators by adding new fit test requirements. The proposed requirements [74 *Federal Register 56141*] and standard test procedure (STP) were never evaluated to determine if NIOSH's STP and the proposed acceptance criteria were capable of eliminating poor-fitting respirators from the workplace without eliminating well-fitting respirators. In this study, the proposed requirements and STP were followed in evaluating several well-fitting and one poor-fitting respirator to determine the test's capability to distinguish between them and if not, what criteria would be appropriate for such a test procedure. The results of this study indicate that the proposed STP and the acceptance criteria cannot distinguish between well- and poor-fitting respirators without eliminating well-fitting respirators. As proposed, these new requirements would eliminate at least 40% of the well-fitting respirators from the market. Further analysis indicates that the NIOSH proposal needs to be modified to achieve its purpose by either increasing the bivariate test panel size to 105 subjects using the proposed subject face size distribution or changing the pass/fail criteria. These test results indicate, as an alternative, that changing the passing fit factor to 50 for 18 out of 35 panel subjects and removing the "one pass per cell" requirement will provide good discrimination between well- and poor-fitting filtering facepiece respirators.