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Presenter/author	Title	Abstract
Coffey, Christopher **Zhuang**, Z. **Campbell**, D. *NIOSH/DRDS Laboratory Research Branch 1095 Willowdale Road Mailstop H-117 Morgantown, WV 26505-2888 USA*	**The Efficacy of the Bitrex™ Qualitative Fit Test Method with N95 Filtering-Facepiece Respirators**	The Bitrex ™ qualitative fit test is one of the qualitative fit tests referenced in the Occupational Safety and Health Administration regulations on respirators (Title 29, Code of Federal Regulations, 1910.134) and recommended by the National Institute for Occupational and Health for screening out respirators having poor facepiece fits. In this study, the results of Bitrex ™ qualitative fit tests were compared to a total penetration test, an indicator of whether a respirator provided an adequate facepiece fit to its wearer using the PortaCount Plus™. Total penetration as defined in this study is comprised of face seal leakage and filter penetration. A respirator was determined to provide adequate protection if the total penetration is less than 10 percent (a protection factor greater than 10). This is the level of protection often expected for a half−mask respirator. Five different models of N95 half−mask filtering−facepiece respirators were tested on a panel of 25 subjects with varying facial sizes resulting in 125 tests. The order in which the Bitrex ™ test and total penetration tests were performed was randomized. There was no re−donning of the respirator between the Bitrex ™ fit test and the total penetration test. In 59% of the tests, passing a Bitrex ™ test correctly identified respirators having an adequate fit. In 9% of the cases, wearers passed the Bitrex ™ test but received inadequate protection. In 41% of the tests, Bitrex ™ results caused respirators providing adequate protection to be rejected. In 91% of the tests, failing a Bitrex ™ test correctly identified respirators which did not provide adequate protection. These results suggest passing a Bitrex ™ may not ensure an adequately fitting respirator.