

The Effect of Facial Hair Growth on the Performance of Loose-fitting Respirators

Mike Clayton¹ and Bob Rajan²

¹Health and Safety Laboratory, Harpur Hill, Buxton SK17 9JN, UK
Email: mike.clayton@hsl.gov.uk

²Sithamparanadarajah
Health and Safety Executive, Bootle L20 7HS, UK

The UK Health and Safety Executive's guidance on respiratory protective devices (RPD) recommends that wearers with facial hair should not use tight-fitting facepieces but instead use RPD with loose-fitting facepieces. However, some RPD manufacturer's user instructions on loose-fitting devices now recommend that wearers should be clean-shaven. This has caused an inconsistency in guidance and calls into question the recommendations in HSE guidance. To determine whether facial hair does increase the potential for inward leakage into loose-fitting devices, and therefore warrants a change to guidance, a series of inward leakage tests were conducted on wearers with varying degrees of facial hair from clean-shaven to 28-days of growth. These inward leakage tests were conducted on two different types of powered respirators using a challenge of sodium chloride aerosol and on two different types of compressed air-supplied breathing apparatus using a challenge of sulfur hexafluoride gas. Four test subjects took part in the study. Test exercises were based on those in EN12941.

There was no significant difference between the inward leakage measured clean-shaven and at any stage of facial hair growth for any of the test subjects. Inward leakage into all devices differed by subject and can be related to the subjects' breathing rate. An increase in inward leakage was also noted when the subjects' breathing demand increased during the talking exercise.