

**Respirator Filter Collection Efficiency and US Respirator Recommendations
for Biological Aerosols: A Review**

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ABSTRACT

Between 1985 and 1992, emerging concerns in the United States (US) with tuberculosis (TB) triggered greater use of personal respiratory protective equipment against Mycobacterium tuberculosis containing droplet nuclei. Recently, concern for protection against other biological aerosols has grown as a result of infections from exposure to hantavirus, anthrax spores, monkeypox virus and coronavirus (SARS). Various US agencies either regulate or make recommendations regarding the use of respirators for protection from these agents. Current aerosol and filtration theory are based on the physical parameters (size, shape, density) of a particle and do not incorporate viability or biological nature of the particle. Debate has arisen about the effectiveness of particulate removing respirators to reduce exposure to biological aerosols. As a result several investigators have evaluated respirator filters against biological aerosols. Additionally, respirator selection and use recommendations have been made for various biological aerosols. This literature and the US recommendations will be reviewed.