

## ANALYSIS OF INNOVATIVE RESPIRATORY PROTECTION PRACTICES FOR EMERGING INFECTIOUS DISEASES

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With the threat of emerging infectious diseases (such as pandemic influenza, avian influenza, Severe Acute Respiratory Syndrome [SARS] etc.) significant emphasis has been placed upon the use of respiratory protective equipment by healthcare workers. Innovative respiratory protection strategies such as the use of filtering facepiece respirators (e.g. N-95 models) in-line with powered loose-fitting air-purifying respirators during potential aerosol-generating medical procedures (e.g. intubation suctioning etc.) and the use of a surgical mask overlay as a protective barrier over filtering facepiece respirators to prolong respirator life during shortages were employed by healthcare workers during the SARS outbreaks. These strategies have been proposed by various scientific and public health agencies for possible use during future emerging infectious disease outbreaks. However these configurations have not heretofore been subjected to scientific scrutiny for effects on wearers and are not certified by the U.S. National Institute for Occupational Safety and Health (NIOSH). Concerns have been raised over the use of these strategies with respect to possible effects on protection factors, carbon dioxide retention, oxygen saturation, ventilation and breathing resistance, together with their corresponding physiological effects on the wearer (headache, shortness of breath, facial discomfort etc.). This presentation will describe experiments conducted by the National Personal Protective Technology Laboratory (NPPTL) over the course of the past year to investigate a number of these issues and present findings to allow healthcare workers to make more informed decisions regarding the use of respiratory protective equipment.