



# PROTECTING HEALTHCARE WORKERS FROM INFECTIOUS DISEASES



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## CSA GROUP RESEARCH

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In order to encourage the use of consensus-based standards solutions to promote safety and encourage innovation, CSA Group supports and conducts research in areas that address new or emerging industries, as well as topics and issues that impact a broad base of current and potential stakeholders. The output of our research programs will support the development of future standards solutions, provide interim guidance to industries on the development and adoption of new technologies, and help to demonstrate our on-going commitment to building a better, safer, more sustainable world.

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# EXECUTIVE SUMMARY

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Health care workers continually face risks associated with exposure from harmful infectious agents (bioaerosols) in the performance of their duties, which can severely impact their health and safety. Economic and organizational impacts regarding respirator use in health care is substantial. The CSA Z94.4 Technical Committee is currently working to develop a new edition of the standard, *CSA Z94.4 – Selection, Care and Use of Respirators*. A Z94.4 Bioaerosol Working Group was established to review and revise the sections in the standard pertaining to respirator selection for protection against bioaerosols (infectious agents) based on best evidence available. A key objective for the Z94.4 Bioaerosol Working Group is to demonstrate that the respirator selection process to protect against bioaerosols in *CSA Z94.4* is supported by evidence, thus supporting health care organizations in selecting, procuring, and using the appropriate level of respiratory protection as prescribed in *CSA Z94.4*.

The objective the research project was to perform a systematic screening, critical appraisal and synthesis of research papers and scientific articles in an effort to obtain evidence to support the respirator selection process and guidance in *CSA Z94.4* for protection against bioaerosols. Over 200 papers have been screened for critical appraisal.

Full-text research papers and scientific journal articles were screened against nine pre-defined research questions utilizing PICO criteria (population, intervention, comparison, outcome) in order to ensure that methodology and results reported were relevant to the key research questions.

Utilizing various critical appraisal tools as appropriate, including the Infection Prevention and Control Guidelines Critical Appraisal Tool Kit from the Public Health Agency of Canada, papers addressing each of the research questions were identified and the quality of the research was assessed in order to objectively determine the most useful papers based on rigor and reproducibility.

The research project was very successful in meeting its objective to conduct a systematic screening, critical appraisal and synthesis of the research papers and scientific articles that were collected by the Z94.4 Bioaerosol Working Group. The findings will be very valuable in forming the basis for evidence-based decisions by the Z94.4 Technical Committee as they continue to work to revise the *CSA Z94.4* standard. The assessment of the quality of studies and evidence from the research studies will be used to both validate and, where necessary, revise the respirator selection methodology to protect against bioaerosols. This evidence building project will also be beneficial to help facilitate an increased acceptance and uptake the *CSA Z94.4* standard by healthcare organizations, including justifying the costs to procure and use the appropriate type of respiratory protection in order to reduce the risk of exposure to harmful infectious agents.

## About CSA Group

CSA Group is an independent, not-for-profit membership association dedicated to safety, social good and sustainability. CSA's strategic focus and core service offering includes: standards development; training solutions; consumer product evaluation; and global testing & certification. CSA products and services target a range of key businesses, including: hazardous location & industrial; plumbing & construction; medical safety & technology; appliances & gas; alternative energy; lighting; and sustainability. The CSA certification mark appears on billions of products worldwide. For more information about CSA Group visit [www.csagroup.org](http://www.csagroup.org).

