Executive Summary

In August 2009, the Health Sciences Association of British Columbia ("HSABC") and the National Union of Public and General Employees ("NUPGE") retained Resource Environmental Associates Limited ("REA") to provide commentary and advice with respect to scientific positions, statements and recommendations made in the following documents with respect to usage of N95 respirators versus procedure / surgical masks for protection of health care workers providing care to influenza patients:

(a) "Prevention and Control of Influenza during a Pandemic for all Healthcare Organizations", prepared by the Public Health Agency of Canada ("PHAC"), draft in-progress version dated July 16, 2009, and

(b) "SHEA Position Statement: Interim Guidance on Infection Control Precautions for Novel Swine-Origin Influenza H1N1 in Healthcare Facilities", released by the Society for Healthcare Epidemiology in America, dated June 10, 2009, and

In these documents, both PHAC and SHEA take the position that N95 usage is warranted only when performing procedures that generate substantial quantities of respiratory aerosols, and that N95 respirators are unnecessary for routine patient care.

In this paper we describe and cite the relevant science with respect to influenza transmission by respiratory aerosols, and the effectiveness of various types of respiratory protection equipment. This information is the basis for our critique of the PHAC and SHEA positions, as well as the basis for our recommendations with respect to appropriate respiratory protection for personnel providing care to influenza patients.

While not proven conclusively, there is now a considerable body of evidence, from various lines of viral disease aerosol transmission and survival research, animal experiments, and case reports, to suggest that inhalation of non-visible aerosols containing influenza virus (i.e. *exposure*) can cause disease transmission. Diligent use of well-fitting NIOSH-approved high efficiency particulate aerosol filtering respirators (e.g. N95) when providing care within a 2 meter zone of an influenza patient will result in significantly reduced *exposures* to respiratory aerosols, in comparison with using no respiratory protection at all, or using only surgical or procedure masks. Reducing inhalation exposure to respiratory aerosols should in turn reduce incremental risks of contracting influenza in providing patient care in the proximal atmosphere.

Our conclusion is that PHAC and SHEA are incorrect in asserting that N95 respirator use is warranted only for procedures generating high concentrations of respiratory aerosols. We are also of the opinion that there are factual errors, misstatements and unsubstantiated assertions in both the PHAC and SHEA documents.

We recommend the use of N95 respirators by health care workers to the extent practicable whenever those workers are within a 2 meter zone of an influenza patient.