ONTARIO SOCIETY OF PROFESSIONAL ENGINEERS

August 22, 2023

Home and Long-Term Care Unit
Health Canada
Jeanne Mance Building, 4th floor
200 Eglantine Driveway, Tunney's Pasture
Ottawa, Ontario
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Subject: Consultation on Safe Long-Term Care

The **Ontario Society of Professional Engineers (OSPE)** is the advocacy body and voice of the engineering profession. Ontario currently has over 85,000 professional engineers, 250,000 engineering graduates, 6,600 engineering post-graduate students, and 37,000 engineering undergraduate students. OSPE is pleased to respond to Health Canada's request for comments on safe long-term care.

OSPE understands the critical importance of ensuring the safety and well-being of vulnerable individuals residing in long-term care facilities and the staff who care for them, particularly in the wake of the challenges faced during the COVID-19 pandemic.

As such, OSPE's Indoor Air Quality Advisory Group, comprised air quality subject matter experts and engineers, wishes to bring to Health Canada's attention the importance of indoor air quality in long-term care situations, and any development of federal long-term care legislation.

Long-term care centers, by their nature, can be susceptible to the spread of airborne diseases, which necessitates a comprehensive approach to indoor air quality management and personal protection. As an organization deeply committed to promoting excellence in engineering and advocating for the highest standards of safety, OSPE would like to propose specific measures that can help protect residents and healthcare workers from airborne diseases in these facilities.

These recommendations are consistent with the reports that OSPE produced on indoor air quality and face coverings for prevention of infectious disease transmission. These reports, which provide more details relevant to our recommendations, can be viewed on our website [1]

Recommendation 1: Implementation of **ASHRAE Standard 241-2023** Control of Infectious Aerosols

- We recommend the adoption and implementation of **ASHRAE Standard 241-2023**, which outlines guidelines for controlling infectious aerosols and to operate buildings in infection risk management mode.[2] This standard ensures a minimum of 35 liters/second/person of equivalent clean airflow under maximum occupancy conditions (including visitors), reducing the risk of airborne disease transmission among residents.

Recommendation 2: Compliance with Ventilation Requirements

- To improve indoor air quality and minimize the risk of airborne disease transmission, we advocate for strict compliance with the current ventilation standard, CSA Z317.2:19.[3] This standard requires two (2) air changes per hour of outdoor air and a total of four (4) equivalent air changes per hour in resident rooms. Compliance with outdoor airflow requirements should be confirmed by CO_2 monitoring.

Recommendation 3: Upgrading Filtration in HVAC Units

- Upgrading the filtration systems in HVAC units to at least **MERV-13** can significantly enhance indoor air quality and aid in achieving the necessary airflow rates prescribed by **ASHRAE 241-2023** and **CSA Z317.2:19**.[2,3] This measure will also protect long-term care residents from fine particulate matter and potential outdoor pollution events including wildfire smoke.[4] When upgrading filtration in HVAC is not possible or additional air cleaning is required, in-room air cleaners with high efficiency filtration should be used.

Recommendation 4: Implementation of Upper Room UV Systems

- The installation of upper room UV systems, which have a proven track record of reducing airborne disease transmission,[5,6] should be considered in conjunction with existing control measures, especially in common areas. These systems can further create safer environments for residents in conjunction with required ventilation and enhanced filtration.

Recommendation 5: Avoid Alternative Air Cleaning Devices

- OSPE strongly advises against the use of alternative air cleaning devices, such as ionization, photocatalytic oxidation, plasma, hydrogen peroxide, and hydroxyl generators, until they are properly regulated.[7] Currently, there is uncertainty regarding their safety and effectiveness in mitigating airborne diseases. OSPE has called for the regulation of these devices in accordance with **ASHRAE 241-2023** Normative Appendix A to ensure their safety and efficacy.[2] Until proper regulation is in place, air cleaning methods should be solely limited to well established technologies, including outdoor air ventilation, filtration, and germicidal ultraviolet light.

Recommendation 6: Transparency and Disclosure of Indoor Air Quality

- To enhance transparency and ensure adequate indoor air quality, OSPE recommends the implementation of the following measures:

6.1. **Providing CO_2 Monitors with Visible Displays:** Installing CO_2 monitors with visible displays is crucial to monitor ventilation effectiveness in real-time.[7] Given typical densities in resident rooms, outdoor airflow per person should be greater than 35 liters/second, resulting in a steady state CO_2 concentration below 600 ppm. While visitors enter the space, CO_2 may increase above these levels, but total equivalent clean airflow per person should be maintained. Continuous monitoring will ensure that the ventilation systems are functioning optimally and maintaining safe indoor air quality levels for residents and staff.

6.2. **Building Readiness Plan:** Long-term care centers should develop and maintain a Building Readiness Plan as outlined in **ASHRAE Standard 241-2023** section 8.1.[2] This document should contain detailed information on all engineering and non-engineering controls used to ensure a safe environment for residents. The Building Readiness Plan should be readily available to the occupants of the building, including staff, residents, and visitors, to promote transparency and understanding of the measures in place to safeguard against airborne diseases.

6.3. **Communication Through Proper Signage:** Implementing clear and informative signage is essential for effective communication with occupants and visitors.[7] Signage should include building operation mode, capacity limits, and instructions for the operation of adjustable equipment. Transparent and visible communication will ensure that everyone within the long-term care facility is aware of the safety measures in place and can contribute to maintaining a safe environment.

Recommendation 7: Effective respiratory protection

- Long-term care workers and residents who are exposed to infectious aerosols should wear the best possible respiratory protection, both as source control and to protect the user. As described in OSPE's guidance on face coverings,[8] where there is a transmission risk of a highly infectious and virulent disease like COVID-19 this protection should, at minimum, be the equivalent of an N95 filtering facepiece respirator. The employer's respiratory protection program, required under occupational health and safety legislation, should include selection and use of respirators to protect workers from infectious aerosols.

Implementing these core recommendations can significantly improve the safety and well-being of workers and residents in long-term care centers and protect them from airborne diseases. We would like to extend our willingness to collaborate with **Health Canada** and other stakeholders to support the successful implementation of these measures.

Thank you for considering OSPE's expert input. We remain committed to ensuring the highest standards of safety and quality in long-term care facilities, and we look forward to contributing to the development of safe practices for the betterment of the community.

If you have any further questions or require any clarifications, please contact Paola Cetares, Manager of Public Affairs at pcetares@ospe.on.ca.

Sincerely,

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References

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