Canadian Aerosol Transmission Coalition

Protecting health through science and standards

A statement supporting CSA Z94.4

From the Canadian Aerosol Transmission Coalition (CATC) and endorsing organizations and individuals – August, 2025

As professionals, organizations and community members committed to advancing evidence-based standards in public health, occupational health and safety, engineering, medicine, and infection prevention and control, we stand in strong support of the proposed revision of ***CSA Z94.4: Selection, Use, and Care of Respirators***.

The first version of this Canadian Standards Association (CSA) standard came out in 1982. Since then, it has been incorporated into health and safety legislation and practice across the country. Its 2011 version was the first in the world to provide selection guidance for workers needing protection from bioaerosols (tiny invisible airborne particles often from fungi, pollen, bacteria and viruses).

The proposed revision reflects a much-needed evolution in Canadian health and safety practice — one that finally aligns respiratory protection with the **current science of aerosols and airborne transmission** and the **ethical obligation** to protect healthcare staff, patients, and the public. The largely female healthcare workforce – including nurses, dietary, cleaning and administrative personnel – deserves the same kind of protection accepted and used in other sectors for years.

The science is clear: *Airborne transmission demands a new paradigm*

Airborne transmission is now widely recognized as the **predominant mode** of spread for many respiratory pathogens, including **SARS-CoV-2, influenza, respiratory syncytial virus (RSV)**, **measles, TB**, and others. These findings are supported by:

- The recognition of **asymptomatic infection transmission** of SARS-CoV-2 implies that simply breathing spreads the virus. With the finding that **coughs and sneezes generate aerosols a hundredfold more** than traditional aerosol generating medical procedures, it means that hospital visitors and healthcare workers can be as much of an infection hazard as patients.
- The federal **Canadian Nosocomial Infection Surveillance Program** involves 70 hospitals across Canada to establish the origin of infections for people admitted to hospital for treatment of viral respiratory diseases (e.g., COVID, RSV, flu). It shows that, over the last two years (despite the "end of Covid" in the public eye), **between a quarter and a half of patients in hospital with COVID were infected in hospital while seeking care for another medical conditions.** This demonstrates that hospitals are still a reservoir of the disease, and existing infection prevention and control measures are clearly inadequate. Since other healthcare settings -- long term care facilities, clinics, medical/dental offices, medical

laboratories, etc. – don't have the ventilation required in hospitals, it's also likely that patients are being infected in those spaces.

- **Respirators are effective and regularly used in other workplaces** (outside healthcare) where people are exposed to hazardous aerosols, with clearly beneficial health outcomes for workers. There is no reason, and it is unjust, that the healthcare community should be any less well-protected.
- The British Occupational Hygiene Society (BOHS) -- representing professionals trained to protect workers' health – new **guidance for healthcare employers** explains the differences between, and how to use, fluid-resistant surgical masks (not designed as personal protective equipment) and respirators (specifically designed as personal protective equipment). It is consistent with the CSA standard and other international practices and requirements.
- The **World Health Organization's 2024 ARIA policy document** (*Indoor airborne risk assessment in the context of SARS-CoV-2: description of airborne transmission mechanism and method to develop a new standardized model for risk assessment*), formally recognizing aerosol transmission mechanisms and recommending practical tools for airborne risk assessment.
- The **ARIA risk assessment model**, co-developed by WHO and CERN, tested by members of our Coalition, amongst others, and deemed effective for real-world application in diverse healthcare and workplace settings.
- Global scientific **consensus** from aerosol researchers, occupational hygienists, engineers, microbiologists and infectious disease physicians that **small particle inhalation** — not surface contact or large droplets—is the primary pathway for transmission in indoor environments, including workplaces.

To ignore this growing body of evidence is not only scientifically indefensible — it is ethically negligent and entrenches a barrier to accessing healthcare for those who cannot risk infection. With the accumulating body of research, it is clear that repeated COVID infections renders everyone at risk of long-term harmful health effects from post-COVID conditions.

Draft CSA Z94.4 Update: *A risk-based, tiered, and transparent standard*

The draft update to the CSA Z94.4 standard does not impose a blanket requirement for respirator use or disrupt healthcare operations, as recent opposition suggests. Rather, it introduces:

- A **risk-based decision model** that reverses the outdated presumption of "safe unless proven dangerous". Instead, it demands clear demonstration of protecting health and safety – hazard assessment – **before** reducing protection, a common legal requirement in occupational hygiene/health and safety.
- A **tiered framework** based on microbial risk groups (RG1–RG4), where:
  - **RG1 (non-pathogenic)** micro-organisms are assessed for respiratory protection if warranted by the extent of exposure due to toxicity, sensitization or allergenic properties;
  - **RG2/3** pathogen (e.g., SARS-CoV-2, TB, influenza) exposure calls for a minimum of a filtering facepiece **N95 or equivalent**;
  - **RG4** (e.g., viral hemorrhagic fevers) necessitate Powered Air-Purifying Respirators (**PAPRs**) with an assigned protection factor (APF) of 1000.

- An **evidence-based and peer-reviewed methodology**, with **full citation of scientific sources** and an emphasis on usability, clarity, and proportionality.

This is not "one-size-fits-all." It is the precise opposite: a **pragmatic and modern standard** rooted in infection prevention and control science, occupational health best practices, and decades of international expertise and experiences.

Furthermore, it aligns well with the 2021 CSA Z94.4.1:21, *Performance of filtering respirators*, which introduced the concept of **low resistance** (more breathable) **respirators** now that such products are available.

A transparent and balanced process

The CSA Group follows a well-established, **multi-stakeholder governance structure** with checks and balances to ensure impartiality, rigour, and inclusiveness:

- The Z94.4 committee and working groups included a broad structured matrix of stakeholders from healthcare, occupational health, government, labour, engineering, PPE manufacturing and academia.
- All participants disclosed affiliations. Claims of "commercial influence" are **unfounded and misleading**, particularly given that the manufacturer category was **underrepresented**, not dominant. The final published versions of these standards provide names and affiliations, as prior issues illustrate.
- As for subject matter experts in relevant areas, multiple opportunities were provided for healthcare institutions and professionals to participate in public review and committee consultation but some chose not to. Those who engaged in the process found their expertise and feedback welcomed.

Economics and ethics: *Respirator access, not excess*

Opposition arguments claiming that the new standard will drive up costs, strain supply chains, or enrich manufacturers ignore reality:

- Investing in respiratory protection is **ethically and economically prudent**, especially when the alternative is higher staff and patient infection rates, worker burnout (leading to short staffing), and avoidable system strain.
- Canada is **currently overstocked** with respirators, most procured during this on-going pandemic and at risk of expiring un-used.
- **Provincial and federal contracts** are already in place for key suppliers, removing incentives for opportunistic sales.
- Aligning protection standards with existing inventories **reduces waste** and ensures preparedness for future epidemics/pandemics and other health emergencies.
- Protecting healthcare staff's health is an **investment that reduces internal and externalized costs** with reduced illness, short-staffing, stress and other harm.

This is a moment to build trust, not sow doubt

Healthcare-associated transmission of respiratory viruses is **not rare**. It is responsible for **up to half** of all respiratory infections in hospitals, affecting not only healthcare workers but patients and visitors, including the immunocompromised. Implementation of the proposed update to CSA Z94.4 will:

- Promote **public trust** by demonstrating that health institutions value science and the health and safety of their workforce and patients and increasing equitable access to healthcare by reducing the risk of airborne transmission of disease for everyone.
- Offer **clarity and consistency** across jurisdictions and facilities, replacing the ad hoc and outdated respiratory protection policies of the past.
- Support the **precautionary principle**, a key public health principle ensuring that harm is prevented even in the face of uncertainty, as recommended by the Ontario SARS Commission, the earlier Krever Report, and consistent with the medical oath to "do no harm". It also is a key approach in the *Biological Hazards in the Working Environment Convention, 2025 (No. 192)*, agreed to by the tripartite (i.e., governments, employers, unions) International Labour Organization in June.

We urge Canada's health authorities, healthcare leadership, public health institutions, and regulators to endorse and implement the update of CSA Z94.4. It is a long-overdue step towards ensuring respiratory protection for all is **proportionate, practical, and aligned with scientific evidence.**

We call on all professionals and community members concerned with health, safety, science, and ethics to support this standard as a critical part of pandemic resilience and healthcare sustainability. In doing so, we recognize that it is only one ingredient in much-needed layered and transdisciplinary pandemic responses, including ventilation, air filtration, vaccines and other measures.

You can review the full draft standard, and provide comments about specific sections, on the CSA website. The deadline is August 19.

In an era of growing biological threats and eroding public trust, this proposed standard is a **model of how science can guide protection for all,** wherever they work, live or play, and how policy can be a force for health and justice.

Signed,

Canadian Aerosol Transmission Coalition