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Joint Consensus Statement on Addressing the Aerosol Transmission of SARS CoV-2 and Recommendations for Preventing Occupational Exposures

Fact Sheet

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Sponsored by the AIHA Indoor Environmental Quality Committee, AIHA Respiratory Protection Committee, and the COVID-19 Project Team

The consensus and recommendations herein have been endorsed by the occupational health and infection prevention professional associations listed at the end of this statement. Understanding the role of aerosol transmission of SARS CoV-2 is an important component of adopting appropriate worker and community protection strategies. This document is designed to summarize what is currently known about inhalation transmission and the need for regulation, research, and funding to prevent airborne transmission.

This document is intended for professionals, advocates, and policy-makers who are responsible for occupational safety and health, public health, infection prevention, and infectious disease.

Background

Early in the pandemic, the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) did not recognize aerosol transmission, resulting in guidance that focused on contact and droplet precautions. On July 6, 2020, 239 scientists from 32 countries submitted a letter to the WHO stating, in part,

There is significant potential for inhalation exposure to viruses in microscopic respiratory droplets (microdroplets) at short to medium distances (up to several meters, or room scale), and we are advocating for the use of preventive measures to mitigate this route of airborne transmission. We are concerned that the lack of recognition of the risk of airborne transmission of COVID-19 and the lack of clear recommendations on the control measures against the airborne virus will have significant consequences: people may think that they are fully protected by adhering to the current recommendations, but in fact, additional airborne interventions are needed for further reduction of infection risk (Morawska & Milton, 2020).

Subsequently, on July 9, 2020, WHO issued a scientific brief on transmission of SARS CoV-2 that partially acknowledged aerosol transmission. However, WHO did not revise its guidelines for worker and community protection. The CDC issued a scientific brief on October 5, 2020, that addressed these issues but again did not alter protection guidelines.

Below is a summary of the state of science on inhalation transmission of SARS CoV-2 and relevant policy, funding, and research recommendations for improving protection in workplaces.

The Role of Inhalation Transmission of SARS-CoV-2

- People generate aerosols while breathing, talking, singing, coughing, and sneezing in a wide range of particle sizes (0.1 to > 100 μm). Some of the larger-sized particles will rapidly settle while some will rapidly evaporate to smaller droplet nuclei. Particles less than 10 μm will take minutes and hours to settle, during which time they can be distributed throughout a space by diffusion and air currents.
- SARS-CoV-2 can remain viable in air up to and perhaps longer than 3 hours. Thus, someone located both near and far from an infectious source could inhale infectious SARS-CoV-2 particles.
- The receptors for SARS-CoV-2 in the body (ACE2) are located throughout the respiratory system. People are capable of inhaling particles over the entire particle size range of aerosols, with larger particles more likely to deposit in the upper respiratory system and smaller particles having a greater probability of penetrating into and depositing in the lungs, bronchioles, and alveoli.
- None of the modes of transmission—contact, droplet, airborne, and aerosol—should be ruled out, although inhalation appears to be more important than contact transmission.



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- We do not yet know what level or amount of virus is associated with transmission person to person. Recent data suggest that viral RNA levels greater than 10^6 are more likely to be associated with culturable virus and that people shed infectious virus for only the first 8 days after symptom onset.
- So much of infection prevention and control is based on practices in healthcare that are focused on patient safety. Now it is clear that public health efforts also need to focus on worker safety in all industries.

Recommendations

1. The CDC and state health departments should review their guidance for occupational prevention and respiratory protection in light of the concern about aerosol transmission of SARS-CoV-2.
2. OSHA should issue an emergency temporary standard for SARS-CoV-2 (COVID-19) to ensure a unified national approach to worker protection, harmonizing a single federal standard.
3. OSHA needs to continue rulemaking for an infectious disease standard and issue it as soon as possible, with application to all industries.
4. Federal funding should be provided to support state, local, and professional efforts to develop workplace hazard-assessment and control programs that include recognition and identification of aerosol exposures and prioritize workplace controls at the top of the hierarchy of controls. Funding would support:
 - research on the role and design of dilution and local-exhaust ventilation in a wide variety of workplaces
 - development and deployment of effective, simple-to-use, and inexpensive ventilation assessment tools and methods
 - training, fit-testing, and related respiratory-protection program support for all essential industries that lack the necessary resources and expertise to establish effective respiratory-protection programs
5. Additional funding should be allocated to NIOSH and other federal health agencies to address research gaps.
6. Priority should be given to providing better respiratory-protection options, including elastomeric respirators and powered air-purifying respirators, for frontline healthcare workers. This would free up supplies of filtering facepiece respirators for other healthcare and all other essential workers whose jobs involve prolonged or close contact with co-workers or the public.
7. Full implementation of the Defense Production Act should address the critical shortage of respiratory-protection equipment, personal protective equipment, and medical supplies.

References

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And other volunteers from AIHA and allied associations

Co-Sponsoring Organizations

AIHA is pleased to acknowledge the support of the following scientific societies, listed in alphabetical order. If your organization would like to sign in, please contact [Larry Sloan](#) at AIHA.



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