State of California—Health and Human Services Agency
California Department of Public Health

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Mr. Doug Parker
Chief
Division of Occupational Safety and Health (Cal/OSHA)
1515 Clay Street, Suite 1901
Oakland, CA 94612

REVISIONS TO CAL/OSHA **AEROSOL TRANSMISSIBLE DISEASES STANDARD**,
8 CCR §5199

Dear Mr. Parker:

I am writing on behalf of the California Department of Public Health (CDPH) to voice the Department's support for adopting revisions to Cal/OSHA's **Aerosol Transmissible Diseases** standard, Title 8, California Code of Regulations, §5199.

This standard, which became effective in 2009, provides California workers with enforceable protections and gives employers clear direction on airborne infection prevention measures. Initially, COVID-19 qualified as a novel airborne infectious disease under the standard, as it was not possible to rule out airborne transmission with reasonable certainty. With the knowledge we have gained since the start of the pandemic, it is now abundantly clear that COVID-19 is an airborne infectious disease. As such, it is important that Cal/OSHA's requirements be updated to be consistent with current scientific evidence and public health guidance for preventing COVID-19.

CDPH supports revisions to Appendices A, D, and E of §5199 that address the emergence of COVID-19 and SARS-CoV-2. These revisions are:

1. Adding COVID-19 to Appendix A's list of Diseases/Pathogens requiring Airborne Infection Isolation *(this is the list of diseases associated with airborne transmission; listing here also triggers required use of respiratory protection)*
2. Adding SARS-CoV-2 to Appendix D, list of Aerosol Transmissible Pathogens – Laboratory

3. Adding the COVID-19 vaccine to Appendix E, Aerosol Transmissible Disease Vaccination Recommendations for Susceptible Health Care Workers

Peer-reviewed air sampling studies, experimental animal models, and epidemiological studies clearly support a primary role for airborne transmission of COVID-19. Respiratory tract aerosol particles are emitted during normal exhalation, talking, coughing, and sneezing. The aerosol particles contain viable virus and are small enough to remain airborne.[i] Airborne transmission has traditionally referred to transmission by infectious particles defined as 5 micrometer (μm) or smaller in size that are capable of traveling distances of more than one to two meters away from the infected individual. In a recent review, a National Institutes of Health researcher said that the majority of aerosol particles in exhaled breath are smaller than 5 μm. "Humans produce infectious aerosols in a wide range of particle sizes, but pathogens predominate in small particles (<5 μm) that are immediately respirable by exposed individuals."[ii]

In a recent literature review of air sampling for SARS-CoV-2, Borges described eight studies in health care settings in which SARS-CoV-2 RNA was detected in air samples.[iii] In two of these studies, viable airborne virus was also isolated. In one, air samplers collected viable virus 2 to 4.8 meters from a COVID-positive patient inside the patient's room[iv] and, in a second study, viable airborne virus was collected in a hallway outside patients' rooms.[v] In a recently published study in a hospital, researchers used size-selective air sampling and found viable SARS-CoV-2 virus in aerosols that were smaller than 5 μm indicating the potential for transmission via the airborne route and deposition throughout the respiratory tract.[vi] SARS-CoV-2 viruses in experimentally generated aerosols remain viable for up to 3 hours.[vii]

Airborne transmission of SARS-CoV-2 has also been demonstrated in an experimental animal (ferret) model where the only exposure source was by inhalation of air from an infectious ferret that passed through an air duct more than one meter long.[viii]

In epidemiological studies, COVID infections at distances greater than six feet from an infectious person have been documented in several indoor settings including in a poorly ventilated restaurant,[ix] in a hotel quarantine center,[x] in a church,[xi] and during choir practice.[xii] Such transmission at a distance is most reasonably explained by an airborne route of exposure.

Solid evidence that COVID-19 transmission occurs in poorly ventilated indoor spaces, and that it is more likely to occur in indoor rather than outdoor spaces, are arguments for airborne transmission since only small-sized aerosols, and not large droplets, are affected by ventilation.[xiii,xiv]

Since the start of the COVID-19 pandemic, inquiry across a range of disciplines has arrived at the same conclusion: inhalation of infectious aerosols is the main transmission mode of SARS-CoV-2.[xv] Recognizing this airborne transmission route is essential for implementing effective measures needed to prevent exposures to SARS-CoV-2. The proposed revisions to the Aerosol Transmissible Diseases standard will ensure that the preventive measures required under the standard, including source control, respiratory protection, and vaccination, will apply to COVID-19 in covered workplaces across the state.

In closing, we appreciate the opportunity to state our Department's support for the proposed revisions to the Aerosol Transmissible Diseases standard, specifically in Appendices A, D, and E.

Sincerely,

Tomás J. Aragón, MD, DrPH
Director and State Public Health Officer
California Department of Public Health

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[i] CDC, Scientific Brief: SARS-CoV-2 Transmission, May 7, 2021. https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/sars-cov-2-transmission.html

[ii] Fennelly KP. Particle sizes of infectious aerosols: implications for infection control. *Lancet Respir Med.* 2020;8(9):914-924.

[iii] Borges JT, Nakada LYK, Maniero MG, Guimaraes JR. SARS-CoV-2: a systematic review of indoor air sampling for virus detection. *Environ Sci Pollut Res Int.* 2021. https://www.ncbi.nlm.nih.gov/pubmed/33630259

[iv] Lednicky JA, Lauzardo M, Fan ZH, et al. Viable SARS-CoV-2 in the air of a hospital room with COVID-19 patients. *International journal of infectious diseases: IJID : official publication of the International Society for Infectious Diseases.* 2020;100:476-482.

[v] Santarpia JL, Rivera DN, Herrera VL, et al. Aerosol and surface contamination of SARS-CoV-2 observed in quarantine and isolation care. *Sci Rep.* 2020;10(1):12732.

[vi] Santarpia JL, Herrera VL, Rivera DN, et al. The size and culturability of patient-generated SARS-CoV-2 aerosol. *J Expo Sci Environ Epidemiol.* 2021.

[vii] Van Doremalen N, Bushmaker, T. Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. *NEJM.* 2020. https://www.nejm.org/doi/full/10.1056/NEJMc2004973

[viii] Kutter JS, de Meulder D, Bestebroer TM, et al. SARS-CoV and SARS-CoV-2 are transmitted through the air between ferrets over more than one meter distance. *Nat Commun.* 2021;12(1):1653.

[ix] Lu J, Gu J, Li K, et al. COVID-19 Outbreak Associated with Air Conditioning in Restaurant, Guangzhou, China, 2020. *Emerg Infect Dis.* 2020;26(7):1628-1631.

[x] Eichler N, Thornley C, Swadi T, et al. Transmission of Severe Acute Respiratory Syndrome Coronavirus 2 during Border Quarantine and Air Travel, New Zealand (Aotearoa). *Emerg Infect Dis.* 2021;27(5):1274-1278.

[xi] Katelaris A, Wells J, Clark P, et al. Epidemiologic Evidence for Airborne Transmission of SARS-CoV-2 during Church Singing, Australia, 2020. *Emerging Infectious Disease journal.* 2021;27(6):1677. https://doi.org/10.3201/eid2706.210465

[xii] Miller SL, Nazaroff WW, Jimenez JL, et al. Transmission of SARS-CoV-2 by inhalation of respiratory aerosol in the Skagit Valley Chorale superspreading event. *Indoor Air.* 2021;31(2):314-323.

[xiii] Wang CC, Prather KA, Sznitman J, et al. Airborne transmission of respiratory viruses. *Science (New York, NY).* 2021;373(6558).

[xiv] Greenhalgh T, Jimenez JL, Prather KA, Tufekci Z, Fisman D, Schooley R. Ten scientific reasons in support of airborne transmission of SARS-CoV-2. *The Lancet.* 2021.

[xv] Wang CC, Prather KA, Sznitman J, et al. Airborne transmission of respiratory viruses. *Science (New York, NY).* 2021;373(6558).