

SHELLY L. MILLER

1111 Engineering Drive, 427 UCB, University of Colorado, Boulder, CO 80309-0427

Phone: 303-492-0587; Email: shelly.miller@colorado.edu

Shellym80304.com; [LinkedIn](#); [Google Scholar](#); [Wikipedia](#)

Professional Preparation

Harvey Mudd College, Applied Mathematics with honors, BS, 1986

Claremont Graduate School, Operations Research and Statistics, MS, 1987

University of California, Berkeley, Environmental Engineering, MS, 1991

University of California, Berkeley, Civil and Environmental Engineering, PhD, 1996

Academic/Professional Appointments University of Colorado Boulder

Professor, 2015-present, Mechanical Engineering

Associate Professor, 2006-2015, Mechanical Engineering

Assistant Professor, 1998-2006, Mechanical Engineering

Chancellor's Postdoctoral Fellow, 1996-1998

Journal Publications

1. Glade, S., Schmitz, C., Barron, B.N., Dashti, S., Roudbari, S., Liel, A.B., Pezzullo, P.C. and Miller, S.L., 2024. Hazards and incarceration facilities: evaluating facility-level exposure to floods, wildfires, extreme heat, and landslides in Colorado. *Natural Hazards Review*, 25(1), p.04023047.
2. Sankhyan, S., Clements, N., Heckman, A., Hollo, A.K., Gonzalez-Beltran, D., Aumann, J., Morency, C., Leiden, L. and Miller, S.L., 2023. Optimization of a Do-It-Yourself Air Cleaner Design to Reduce Residential Air Pollution Exposure for a Community Experiencing Environmental Injustices. *Atmosphere*, 14(12), p.1734.
3. Mihelcic, J.R., Barra, R.O., Brooks, B.W., Diamond, M.L., Eckelman, M.J., Gibson, J.M., Guidotti, S., Ikeda-Araki, A., Kumar, M., Maiga, Y. McConville, J., Miller, S.L., Pizarro, V., Rosario-Ortiz, F., Wang, S., and Zimmerman, J.B., 2023. Accelerating Environmental Research to Achieve Sustainable Development Goals. *Environmental Science & Technology*, 57(45), pp.17167-17168.
4. Peng, Z., Miller, S.L., and Jimenez, J.L., 2023. Correction to "Model Evaluation of Secondary Chemistry due to Disinfection of Indoor Air with Germicidal Ultraviolet Lamps". *Environmental Science & Technology Letters*, 10(8), pp.718-718.
5. Morawska, L., Bahnfleth, Q., Bluysen, P.M., Boerstra, A., Buonanno, G., Dancer, S.J., Floto, A., Franchimon, F., Haworth, C., Hogeling, J., Isaxon, C., Jimenez, J.L., Kurnitski, J., Li, Y., Loomans, M., Marks, G., Marr, L.C., Mazzarella, L., Melikov, A.K., Miller, S.L., Milton, D.K., Nazaroff, W.W., Nielsen, P.V., Noakes, C., Peccia, J., Querol, X., Sekhar, C., Seppänen, O., Tanabe, S., Tellier, R., Tham, K.W., Wargocki, P., Wierzbicka, A., 2023. Coronavirus disease 2019 and Airborne Transmission: Science Rejected, Lives Lost. Can Society Do Better? *Clinical Infectious Diseases*, 76, pp. 1854-1859 <https://doi.org/10.1093/cid/ciad068>
6. Mihelcic, J.R., Barra, R.O., Brooks, B.W., Diamond, M.L., Eckelman, M.J., Gibson, J.M., Guidotti, S., Ikeda-Araki, A., Kumar, M., Maiga, Y. McConville, J., Miller, S.L., Pizarro, V., Rosario-Ortiz, F., Wang, S., and Zimmerman, J.B., 2023. Environmental Research Addressing Sustainable Development Goals. *Environmental Science & Technology*, 57(9), pp.3457-3460.
7. Yan, S., Wang, L., Birnkrant, M.J., Zhai, Z. and Miller, S.L., 2022. Multizone Modeling of Airborne SARS-CoV-2 Quanta Transmission and Infection Mitigation Strategies in Office, Hotel, Retail, and School Buildings. *Buildings*, 13(1), p.102. <https://doi.org/10.3390/buildings13010102>

8. Peng, Z., Miller, S.L. and Jimenez, J.L., 2022. Model Evaluation of Secondary Chemistry due to Disinfection of Indoor Air with Germicidal Ultraviolet Lamps. *Environmental Science & Technology Letters*, 10(1), pp.6-13. <https://doi.org/10.1021/acs.estlett.2c00599>
9. Eltarkawe, M., Thomas, G. and Miller, S.L., 2022. Modeling county-level benzene emissions using transportation analysis zones in the Denver metro area. *Atmospheric Environment: X*, 15, p.100180. <https://doi.org/10.1016/j.aeaoa.2022.100180>
10. Glade, S., Niles, S., Roudbari, S., Pezzullo, P.C., Dashti, S., Liel, A.B. and Miller, S.L., 2022. Disaster resilience and sustainability of incarceration infrastructures: A review of the literature. *International Journal of Disaster Risk Reduction*, p.103190. <https://doi.org/10.1016/j.ijdr.2022.103190>
11. Yan, S., Wang, L.L., Birnkrant, M.J., Zhai, J. and Miller, S.L., 2022. Evaluating SARS-CoV-2 airborne quanta transmission and exposure risk in a mechanically ventilated multizone office building. *Building and Environment*, p.109184. <https://doi.org/10.1016/j.buildenv.2022.109184>
12. Jin, L., Apte, J.S., Miller, S.L., Tao, S., Wang, S., Jiang, G. and Li, X., 2022. Global Endeavors to Address the Health Effects of Urban Air Pollution. *Environmental Science & Technology*, 56(11), pp.6793-6798. <https://doi.org/10.1021/acs.est.2c02627>
13. Wang, L., Lin, T., Da Costa, H., Zhu, S., Stockman, T., Kumar, A., Weaver, J., Spede, M., Milton, D.K., Hertzberg, J. and Toohey, D.W., 2022. Characterization of aerosol plumes from singing and playing wind instruments associated with the risk of airborne virus transmission. *Indoor air*, 32(6), p.e13064. <https://doi.org/10.1111/ina.13064>
14. Peng, Z., Pineda Rojas, A.L., Kropff, E., Bahnfleth, W., Buonanno, G., Dancer, S.J., Kurnitski, J., Li, Y., Loomans, M.G., Marr, L.C. and Morawska, L., 2022. Correction to Practical Indicators for Risk of Airborne Transmission in Shared Indoor Environments and Their Application to COVID-19 Outbreaks. *Environmental Science & Technology*, 56(5), pp.3302-3303. <https://doi.org/10.1021/acs.est.2c00792>
15. Peng, Z., Rojas, A.P., Kropff, E., Bahnfleth, W., Buonanno, G., Dancer, S.J., Kurnitski, J., Li, Y., Loomans, M.G., Marr, L.C. and Morawska, L., 2022. Practical indicators for risk of airborne transmission in shared indoor environments and their application to COVID-19 outbreaks. *Environmental science & technology*, 56(2), pp.1125-1137. <https://doi.org/10.1021/acs.est.1c06531>
16. McNeill, V.F., Corsi, R., Huffman, J.A., King, C., Klein, R., Lamore, M., Miller, S.L., Ng, N.L., Olsiewski, P., Pollitt, K.J.G. and Segalman, R., 2022. Room-level ventilation in schools and universities. *Atmospheric Environment: X*, 13, p.100152. <https://doi.org/10.1016/j.aeaoa.2022.100152>
17. Wagner, J., Sparks, T.L., Miller, S., Chen, W., Macher, J.M. and Waldman, J.M., 2021. Modeling the impacts of physical distancing and other exposure determinants on aerosol transmission. *Journal of Occupational and Environmental Hygiene*, 18(10-11), pp.495-509. <https://doi.org/10.1080/15459624.2021.1963445>
18. Wilson, J., Miller, S.L., and Mukherjee, D. 2021. A Lagrangian approach towards quantitative analysis of flow-mediated infection transmission in indoor spaces with application to SARS-COV-2. *International Journal of Computational Fluid Dynamics*, 35(9), pp.727-742. <https://doi.org/10.1080/10618562.2021.1991328>
19. Stockman, T., Zhu, S., Kumar, A., Wang, L., Patel, S., Weaver, J., Spede, M., Milton, D.K., Hertzberg, J., Toohey, D. Vance, M., and Miller, S.L. 2021. Measurements and Simulations of Aerosol Released while Singing and Playing Wind Instruments. *ACS Environmental Au*, 1(1), 71-84. <https://doi.org/10.1021/acsenvironau.1c00007>

20. Price, D.J., Day, D.A., Pagonis, D., Stark, H., Handschy, A.V., Algrim, L.B., Miller, S.L., de Gouw, J.A., Ziemann, P.J. and Jimenez, J.L., (2021). Sources of Gas-Phase Species in an Art Museum from Comprehensive Real-Time Measurements. *ACS Earth and Space Chemistry*, 5(9), pp.2252-2267. <https://doi.org/10.1021/acsearthspacechem.1c00229>
21. Hayes, A. C., Osio-Norgaard, J., Miller, S. L., Whiting, G. L., & Vance, M. E. (2021). Air pollutant emissions from multi jet fusion, material-jetting, and digital light synthesis commercial 3D printers in a service bureau. *Building and Environment*, 202, 108008. <https://doi.org/10.1016/j.buildenv.2021.108008>
22. Morawska, L., Allen, J., Bahnfleth, W., Bluysen, P.M., Boerstra, A., Buonanno, G., Cao, J., Dancer, S.J., Floto, A., Franchimon, F. Greenhalgh, T., Haworth, C., Hogeling, J., Isaxon, C., Jimenez, J.L., Kurnitski, J., Li, Y., Loomans, M., Marks, G., Marr, L.C., Mazzarella, L., Melikov, A.K., Miller, S.L., Milton, D.K., Nazaroff, W.W., Nielsen, P.V., Noakes, C., Peccia, J., Prather, K., Querol, X., Sekhar, C., Seppanen, O., Tanabe, S., Tang, J.W., Tellier, R., Tham, K.W., Wargocki, P., Wierzbicka, A., and Yao, M. 2021. A paradigm shift to combat indoor respiratory infection. *Science*, 372(6543), pp.689-691. <https://doi.org/10.1126/science.abg2025>
23. Miller, S. L., Mukherjee, D., Wilson, J., Clements, N., & Steiner, C. (2020). Implementing a negative pressure isolation space within a skilled nursing facility to control SARS-CoV-2 transmission. *American Journal of Infection Control*, 49(4), 438-446. <https://doi.org/10.1016/j.ajic.2020.09.014>
24. Miller, S.L., Nazaroff, W. W., Jimenez, J.L., Boerstra, A., Buonanno, G., Dancer, S.J., ... & Noakes, C. (2021). Transmission of SARS-CoV-2 by inhalation of respiratory aerosol in the Skagit Valley Chorale superspreading event. *Indoor air*, 31(2), 314-323. <https://doi.org/10.1111/ina.12751>
25. Tang, J. W., Bahnfleth, W. P., Bluysen, P. M., Buonanno, G., Jimenez, J. L., Kurnitski, J., Li, Y., Miller, S. L., Sekhar, C., Morawska, L. and Marr, L. C. (2021). Dismantling myths on the airborne transmission of severe acute respiratory syndrome coronavirus (SARS-CoV-2). *Journal of Hospital Infection*, 110, 89-96. <https://doi.org/10.1016/j.jhin.2020.12.022>
26. Guo, M., Xu, P., Xiao, T., He, R., Dai, M., & Miller, S. L. (2021). Review and comparison of HVAC operation guidelines in different countries during the COVID-19 pandemic. *Building and Environment*, 187, 107368. <https://doi.org/10.1016/j.buildenv.2020.107368>
27. Hayes, A. C., Osio-Norgaard, J., Miller, S., Vance, M. E., & Whiting, G. L. (2020). Influence of Powder Type on Aerosol Emissions in Powder-Binder Jetting with Emphasis on Lunar Regolith for In Situ Space Applications. *ACS ES&T Engineering*, 1(2), 183-191. <https://doi.org/10.1021/acsestengg.0c00045>
28. Lowry, G., Field, J., Westerhoff, P., Zimmerman, J., Alvarez, P., Boehm, A., Crittenden, J., Dachs, J., Diamond, M., Eckelman, M., Gardea-Torresdey, J., Giammar, D., Hofstetter, T., Hornbuckle, K., Jiang, G., Li, X., Leusch, F., Mihelcic, J., Miller, S., ... Wang, S. (2020). Why Was My Paper Rejected without Review? *Environmental Science & Technology*, 54(19), 11641–11644. <https://doi.org/10.1021/acs.est.0c05784>
29. Morawska, L., Tang, J. W., Bahnfleth, W., Bluysen, P. M., Boerstra, A., Buonanno, G., Cao, J., Dancer, S., Floto, A., Franchimon, F., Haworth, C., Hogeling, J., Isaxon, C., Jimenez, J. L., Kurnitski, J., Li, Y., Loomans, M., Marks, G., Marr, L. C., ... Yao, M. (2020). How can airborne transmission of COVID-19 indoors be minimised? *Environment International*, 142, 105832. <https://doi.org/10.1016/j.envint.2020.105832>
30. Dancer, S. J., Tang, J. W., Marr, L. C., Miller, S., Morawska, L., & Jimenez, J. L. (2020). Putting a balance on the aerosolization debate around SARS-CoV-2. *Journal of Hospital Infection*, 105(3), 569–570. <https://doi.org/10.1016/j.jhin.2020.05.014>
31. Humphrey, J.L., Barton, K.E., Shrestha, P.M., Carlton, E.J., Newman, L.S., Root, E.D., Adgate, J.L. and Miller, S.L., 2020. Air infiltration in low-income, urban homes and its relationship to lung

- function. *Journal of Exposure Science & Environmental Epidemiology*, 30(2): 262-270.
<https://doi.org/10.1038/s41370-019-0184-8>
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<https://doi.org/10.1029/2019GH000237>
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<https://doi.org/10.1177/1178630219890876>
 34. Price, D.J., Day, D.A., Pagonis, D., Stark, H., Algrim, L.B., Handschy, A.V., Liu, S., Krechmer, J.E., Miller, S.L., Hunter, J.F. and de Gouw, J.A., 2019. Budgets of organic carbon composition and oxidation in indoor air. *Environmental Science & Technology*, 53(22), 13053-13063.
<https://doi.org/10.1021/acs.est.9b04689>
 35. Pagonis, D., Algrim, L.B., Price, D.J., Day, D.A., Handschy, A.V., Stark, H., Miller, S.L., de Gouw, J.A., Jimenez, J.L. and Ziemann, P.J., 2019. Autoxidation of Limonene Emitted in a University Art Museum. *Environmental Science & Technology Letters*, 6(9), pp.520-524.
<https://doi.org/10.1021/acs.estlett.9b00425>
 36. Pagonis, D., Price, D., Algrim, L.B., Day, D.A., Handschy, A., Stark, H., Miller, S.L., de Gouw, J.A., Jimenez, J.L. and Ziemann, P.J., 2019. Time-Resolved Measurements of Indoor Chemical Emissions, Deposition, and Reactions in a University Art Museum. *Environmental Science & Technology*, 53:4794-4802, 2019. <https://doi.org/10.1021/acs.est.9b00276>
 37. Carlton, E.J., Barton, K., Shrestha, P.M., Humphrey, J., Newman, L.S., Adgate, J.L., Root, E. and Miller, S.L. Relationships between home ventilation rates and respiratory health in the Colorado Home Energy Efficiency and Respiratory Health (CHEER) study. *Environmental Research*, 169:297-307, 2019. <https://doi.org/10.1016/j.envres.2018.11.019>
 38. Shrestha, P.M., Humphrey, J.L., Carlton, E.J., Adgate, J.L., Barton, K.E., Root, E.D. and Miller, S.L., 2019. Impact of Outdoor Air Pollution on Indoor Air Quality in Low-Income Homes during Wildfire Seasons. *International journal of environmental research and public health*, 16(19), p.3535.
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 39. Shrestha, P.M., Humphrey, J.L., Barton, K.E., Carlton, E.J., Adgate, J.L., Root, E.D. and Miller, S.L. Impact of Low-Income Home Energy Efficiency Retrofits on Building Air Tightness and Healthy Home Indicators. *Sustainability*, 11:2667, 2019.
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Book Chapters and Reports

1. Jones, E.R., Rainbolt, M.V., Azimi, P., Keshavarz, Z., Marr, L.C., Michaels, D., Cadet, L.R., Miller, S.L., Levinson, M., Morawska, L., Corsi, R.L., Pollock, N.R., Li, Y., Munro, A.P.S., Grier, K., Chen, Q., Macomber, J.D., Cao, S., Allen, J.G. [Proposed non-infectious air delivery rates \(NADR\) for reducing exposure to airborne respiratory infectious diseases](#). Task Force on Safe Work, Safe School and Safe Travel, The Lancet COVID-19 Commission, 2022.
2. Jones, E.R., Rainbolt, M.V., Marr, L.C., Michaels, D., Cadet, L.R., Miller, S.L., Levinson, M., Morawska, L., Corsi, R.L., Pollock, N.R., Li, Y., Munro, A.P.S., Grier, K., Chen, Q., Macomber, J.D., Cao, S., Allen, J.G. [The first four healthy building strategies every building should pursue to reduce risk from COVID-19](#). Task Force on Safe Work, Safe School and Safe Travel, The Lancet COVID-19 Commission, 2022.
3. Corsi, R., Miller, S.L., VanRy, M.G., Marr, L.C., Cadet, L.R., Pollock, N.R., Michaels, D., Jones, E.R., Levinson, M., Li, Y. and Morawska, L., Macomber, J., Allen, J.G. [Designing infectious disease resilience into school buildings through improvements to ventilation and air cleaning](#). Task Force on Safe Work, Safe School and Safe Travel, The Lancet COVID-19 Commission, 2021.
4. Miller, S. L. "Indoor Air Pollution." *Handbook of Environmental Engineering*, Chapter 17, John Wiley & Sons, Inc. Editor M. Kutz, pp. 519-563, 2018

Current Research Projects

- Pesticide Exposure in Boulder, measuring passive exposures to pesticides, twoyear study, funded by CU Boulder Outreach grant and City of Boulder
- Empowering Environmental Justice Communities with Smart and Connected Technology: Air and Noise Pollution, Social Relations and Wellbeing in Times of Disruption, 3-y study, funded by the National Science Foundation
- Building Pandemic Resilience for Native American Communities focusing on a Flexible Air-Quality Control System, funded by National Institutes of Standards and Technology
- Successful Aging in a Time of Wildfires, funded by National Institutes of Health

Teaching Expertise

Indoor Air Pollution, Fundamentals of Environmental Engineering, Air Pollution Control Engineering, Toxic Chemicals in the Environment, Aerosols, Air Quality Measurements, Engineering First-Year Seminar

Service (select)

- Associate Editor, *Environmental Science & Technology*, 2021-current
- Secretary, International Society of Indoor Air Quality and Climate Academy of Fellows, elected 2020-current
- Chancellor's search committee, 2024
- Chair, Boulder Faculty Assembly, 2023-present
- Faculty Director of Professional Development, Faculty Relations, Office of Faculty Affairs 2019-2021

Honors and Awards (select)

- Faculty Research Award, College of Engineering and Applied Science, University of Colorado Boulder, 2022
- Robert L. Sterns Award, CU Boulder Pandemic Scientific Steering Committee and Science Team, Alumni Awards, University of Colorado Boulder, 2021

- Outstanding Research Award, Mechanical Engineering, University of Colorado Boulder, 2020
- Fellow, International Society of Indoor Air Quality and Climate Academy of Fellows, elected 2018

Synergistic Activities (select)

- Visiting Scholar, Institute of Environmental Assessment and Water Research, Barcelona Spain, Aug 2021-May 2022
- National Academy of Sciences invited speaker, Airborne Transmission of SARS-CoV-2, Aug 2020
- Associate Editor, Environmental Science & Technology, 2020-present
- Plenary Speaker, What to do about the Toll Biomass Burning is taking on our Health, Indoor Environments, and Climate, American Association for Aerosol Research, Annual Conference, Portland OR, Oct 2019
- Tutorial Instructor, Designing and conducting field campaigns that include indoor environments, American Association for Aerosol Research, Annual Conference, St. Louis MO Sept 2018, Oct 2019
- Conference on World Affairs, member of the Board, 2018-present, Board Chair 2019-2020
- ImagineCU Project, Faculty Director, College-wide mentoring program for undergraduate female students, 2018-2020
- Editor for special issue on Indoor Air Pollution for the open Access MDPI journal Atmosphere, 2017-2019
- National Academy of Sciences invited speaker, Microbiomes of the Built Environment study, October 2016 and October 2017
- Conference President for the Healthy Buildings America Conference, Jul 2015, held at the University of Colorado Boulder. This is a biannual Conference of the International Society for Indoor Air Quality and Climate

Collaborators and Other Affiliations

Past Collaborators and Co-authors (Select): Mishra, S. (CU Boulder); Sullivan, E. (CU Denver); Adgate, J. (CU Denver); Carlton, E. (CU Denver); Fierer, N. (CU Boulder); Hannigan, Michael P. (CU Boulder); Jimenez, J. (CU Boulder); Milford, Jana B. (CU Boulder); Root, E. (Ohio State U); Ziemann, P. (CU Boulder)

Graduate Advisor: Nazaroff, William W (UC-Berkeley)