

William W Nazaroff — PUBLICATIONS

Publications (in archival, refereed journals):

1. Budnitz R.J., Berk J.V., Hollowell C.D., Nazaroff W.W., Nero A.V., and Rosenfeld A.H., Human disease from radon exposures: The impact of energy conservation in residential buildings, *Energy and Buildings*, **2**, 209-215, 1979.
2. Nazaroff W.W., An improved technique for measuring working levels of radon daughters in residences, *Health Physics*, **39**, 683-686, 1980.
3. Nazaroff W.W., Boegel M.L., Hollowell C.D., and Roseme G.D., The use of mechanical ventilation with heat recovery for controlling radon and radon-daughter concentrations in houses, *Atmospheric Environment*, **15**, 263-270, 1981.
4. Offermann F.J., Hollowell C.D., Nazaroff W.W., Roseme G.D., and Rizzuto J.R., Low-infiltration housing in Rochester, New York: A study of air-exchange rates and indoor air quality, *Environment International*, **8**, 435-445, 1982.
5. Nazaroff W.W., Offermann F.J., and Robb A.W., Automated system for measuring air-exchange rate and radon concentration in houses, *Health Physics*, **45**, 525-538, 1983.
6. Revzan K.L. and Nazaroff W.W., A rapid spectroscopic technique for determining the potential alpha-energy concentration of radon decay products, *Health Physics*, **45**, 509-524, 1983.
7. Nero A.V., Boegel M.L., Hollowell C.D., Ingersoll J.G., and Nazaroff W.W., Radon concentrations and infiltration rates measured in conventional and energy-efficient houses, *Health Physics*, **45**, 401-406, 1983.
8. Nazaroff W.W., Radon daughter carousel: An automated instrument for measuring indoor concentrations of Po-218, Pb-214, and Bi-214, *Review of Scientific Instruments*, **54**, 1227-1233, 1983.
9. Robb A.W. and Nazaroff W.W., Field data logger with EPROM storage, *Review of Scientific Instruments*, **54**, 1252-1253, 1983.
10. Nazaroff W.W., Optimizing the total-alpha three-count technique for measuring concentrations of radon progeny in residences, *Health Physics*, **46**, 395-405, 1984.
11. Nero A.V. and Nazaroff W.W., Characterising the source of radon indoors, *Radiation Protection Dosimetry*, **7**, 23-39, 1984.
12. Doyle S.M., Nazaroff W.W., and Nero A.V., Time-averaged indoor Rn concentrations and infiltration rates sampled in four U.S. cities, *Health Physics*, **47**, 579-586, 1984.
13. Nazaroff W.W. and Doyle S.M., Radon entry into houses having a crawl space, *Health Physics*, **48**, 265-281, 1985.
14. Nazaroff W.W., Feustel H., Nero A.V., Revzan K.L., Grimsrud D.T., Essling M.A., and Toohey R.E., Radon transport into a detached one-story house with a basement, *Atmospheric Environment*, **19**, 31-46, 1985.
15. Offermann F.J., Sextro R.G., Fisk W.J., Grimsrud D.T., Nazaroff W.W., Nero A.V., Revzan K.L., and Yater J., Control of respirable particles in indoor air with portable air cleaners, *Atmospheric Environment*, **19**, 1761-1771, 1985.
16. Nero A.V., Sextro R.G., Doyle S.M., Moed B.A., Nazaroff W.W., Revzan K.L., and Schwehr M.B., Characterizing the sources, range, and environmental influences of radon-222 and its decay products, *The Science of the Total Environment*, **45**, 233-244, 1985.
17. Nazaroff W.W., and Cass G.R., Mathematical modeling of chemically reactive pollutants in indoor air, *Environmental Science & Technology*, **20**, 924-934, 1986.
18. Sextro R.G., Offermann F.J., Nazaroff W.W., Nero A.V., Revzan K.L., and Yater J., Evaluation of indoor aerosol control devices and their effects on radon progeny concentrations, *Environment International*, **12**, 429-438, 1986.

19. Nero A.V., Schwehr M.B., Nazaroff W.W., and Revzan K.L., Distribution of airborne radon-222 concentrations in U.S. homes, *Science*, **234**, 992-997, 1986.
20. Nazaroff W.W., Doyle S.M., Nero A.V., and Sextro R.G., Potable water as a source of airborne radon-222 in U.S. dwellings: A review and assessment, *Health Physics*, **52**, 281-295, 1987.
21. Nazaroff W.W., Lewis S.R., Doyle S.M., Moed B.A., and Nero A.V., Experiments on pollutant transport from soil into residential basements by pressure-driven air flow, *Environmental Science & Technology*, **21**, 459-466, 1987.
22. Nazaroff W.W., and Cass G.R., Particle deposition from a natural convection flow onto a vertical isothermal flat plate, *Journal of Aerosol Science*, **18**, 445-455, 1987.
23. Nazaroff W.W., Predicting the rate of radon entry from soil into the basement of a dwelling due to pressure-driven air flow, *Radiation Protection Dosimetry*, **24**, 199-202, 1988.
24. Nazaroff W.W., and Cass G.R., Mathematical modeling of indoor aerosol dynamics, *Environmental Science & Technology*, **23**, 157-166, 1989.
25. Nazaroff W.W., and Sextro R.G., Technique for measuring the indoor ²²²Rn source potential of soil, *Environmental Science & Technology*, **23**, 451-458, 1989.
26. Nazaroff W.W., and Cass G.R., Mass-transport aspects of pollutant removal at indoor surfaces, *Environment International*, **15**, 567-584, 1989.
27. Nazaroff W.W., Salmon L.G., and Cass G.R., Concentration and fate of airborne particles in museums, *Environmental Science & Technology*, **24**, 66-77, 1990.
28. Nazaroff W.W., and Teichman K., Indoor radon: Exploring U. S. federal policy for controlling human exposures, *Environmental Science & Technology*, **24**, 774-782, 1990.
29. Salmon L.G., Nazaroff W.W., Ligocki M.P., Jones M.C., and Cass G.R., Nitric acid concentrations in Southern California museums, *Environmental Science & Technology*, **24**, 1004-1013, 1990.
30. Wooley J., Nazaroff W.W., and Hodgson A.T., Release of ethanol to the atmosphere during use of consumer cleaning products, *Journal of the Air & Waste Management Association*, **40**, 1114-1120, 1990.
31. Nazaroff W.W., Ligocki M.P., Ma T., and Cass G.R., Particle deposition in museums: Comparison of modeling and measurement results, *Aerosol Science and Technology*, **13**, 332-348, 1990.
32. Cass G.R., Nazaroff W.W., Tiller C., and Whitmore P.M., Protection of works of art from damage due to atmospheric ozone, *Atmospheric Environment*, **25A**, 441-451, 1991.
33. Nazaroff W.W., and Cass G.R., Protecting museum collections from soiling due to the deposition of airborne particles, *Atmospheric Environment*, **25A**, 841-852, 1991.
34. Nazaroff W.W., Radon transport from soil to air, *Reviews of Geophysics*, **30(2)**, 137-160, 1992.
35. Nazaroff W.W., Kong D., and Gadgil A. J., Numerical investigations of the deposition of unattached ²¹⁸Po and ²¹²Pb from natural convection enclosure flow, *Journal of Aerosol Science*, **23**, 339-352, 1992.
36. Little J.C., Daisey J.M., and Nazaroff W.W., Transport of subsurface contaminants into buildings: An exposure pathway for volatile organics, *Environmental Science & Technology*, **26**, 2058-2066, 1992.
37. Gadgil A.J., Kong D., and Nazaroff W.W., Deposition of unattached radon progeny from enclosure flows, *Radiation Protection Dosimetry*, **45**, 337-341, 1992.
38. Ligocki M.P., Salmon L.G., Fall T., Jones M.C., Nazaroff W.W., and Cass G.R., Characteristics of airborne particles inside Southern California museums, *Atmospheric Environment*, **27A**, 697-711, 1993.

39. Nazaroff W.W., Hung W.-Y., Sasse A.G.B.M., and Gadgil A.J., Predicting regional lung deposition of environmental tobacco smoke particles, *Aerosol Science and Technology*, **19**, 243-254, 1993.
40. Cano-Ruiz J.A., Kong D., Balas R.B., and Nazaroff W.W., Removal of reactive gases at indoor surfaces: Combining mass transport and surface kinetics, *Atmospheric Environment*, **27A**, 2039-2050, 1993.
41. Lin T.-F., Little J.C., and Nazaroff W.W., Transport and sorption of volatile organic compounds and water vapor within dry soil grains, *Environmental Science & Technology*, **28**, 322-330, 1994.
42. Xu M., Nematollahi M., Sextro R.G., Gadgil A.J., and Nazaroff W.W., Deposition of tobacco smoke particles in a low ventilation room, *Aerosol Science and Technology*, **20**, 194-206, 1994.
43. Sasse A.G.B.M., Gadgil A.J., and Nazaroff W.W., Particle filter based on thermophoretic deposition from natural convection flow, *Aerosol Science and Technology*, **20**, 227-238, 1994.
44. Yost M. G., Gadgil A.J., Drescher A.C., Zhou Y., Simonds M.A., Levine, S.P., Nazaroff W.W., and Saisan P.A., Imaging indoor tracer-gas concentrations with computed tomography: Experimental results with a remote sensing FTIR system, *American Industrial Hygiene Association Journal*, **55**, 395-402, 1994.
45. Baughman A.V., Gadgil A.J., and Nazaroff W.W., Mixing of a point source pollutant by natural convection flow within a room, *Indoor Air*, **4**, 114-122, 1994.
46. Sasse A.G.B.M., Gadgil A.J., and Nazaroff W.W., On the measurement of ²¹⁸Po diffusivity using the two-filter method, *Journal of Aerosol Science*, **25**, 689-697, 1994.
47. Wampler D.A., Miller-Leiden S., Nazaroff W.W., Litvak A., Mahanama K. R. R., Nematollahi M., and Gadgil A.J., Effectiveness of smokeless ashtrays, *Journal of the Air & Waste Management Association*, **45**, 494-500, 1995.
48. Drescher A.C., Lobascio C., Gadgil A.J., and Nazaroff W.W., Mixing of a point source indoor pollutant by forced convection, *Indoor Air*, **5**, 204-214, 1995.
49. Drescher A.C., Gadgil A.J., Price P.N., and Nazaroff W.W., Novel approach for tomographic reconstruction of gas concentration distributions in air: Use of smooth basis functions and simulated annealing, *Atmospheric Environment*, **30**, 929-940, 1996.
50. Lin T.-F., Little J.C., and Nazaroff W.W., Transport and sorption of organic gases in activated carbon, *ASCE Journal of Environmental Engineering*, **122**, 169-175, 1996.
51. Lin T.-F., and Nazaroff W.W., Transport and sorption of water vapor in activated carbon, *ASCE Journal of Environmental Engineering*, **122**, 176-182, 1996.
52. Garbesi K., Sextro R.G., Robinson A.L., Wooley J.D., Owens J.A., and Nazaroff W.W., Scale dependence of soil permeability to air: Measurement method and field investigation, *Water Resources Research*, **32**, 547-560, 1996.
53. Riley W.J., Gadgil A.J., Bonnefous Y.C., and Nazaroff W.W., The effect of steady winds on radon-222 entry from soil into houses, *Atmospheric Environment*, **30**, 1167-1176, 1996.
54. Lin T.-F., Van Loy M.D., and Nazaroff W.W., Gas-phase transport and sorption of benzene in soil, *Environmental Science & Technology*, **30**, 2178-2186, 1996.
55. Miller-Leiden S., Lobascio C., Nazaroff W.W., and Macher J., Effectiveness of in-room air filtration and dilution ventilation for tuberculosis infection control, *Journal of the Air & Waste Management Association*, **46**, 869-882, 1996.
56. Riley W.J., Gadgil A.J., and Nazaroff W.W., Wind-induced ground-surface pressures around a single-family house, *Journal of Wind Engineering and Industrial Aerodynamics*, **61**, 153-167, 1996.
57. Fischer M.L., Bentley A.J., Dunkin K.A., Hodgson A.T., Nazaroff W.W., Sextro R.G., and Daisey J.M., Factors affecting indoor air concentrations of volatile organic compounds at a

- site of subsurface gasoline contamination, *Environmental Science & Technology*, **30**, 2948-2957, 1996.
58. Thatcher T.L., Fairchild W.A., and Nazaroff W.W., Particle deposition from natural convection enclosure flow onto smooth surfaces, *Aerosol Science and Technology*, **25**, 359-374, 1996.
 59. Drescher A.C., Park D.Y., Yost M.G., Gadgil A.J., Levine S.P., and Nazaroff W.W., Stationary and time-dependent indoor tracer-gas concentration profiles measured by OP-FTIR remote sensing and SBFM computed tomography, *Atmospheric Environment*, **31**, 727-740, 1997.
 60. Miller S.L., Leiserson K., and Nazaroff W.W., Nonlinear least-squares minimization applied to tracer gas decay for determining air flow rates in a two-zone building, *Indoor Air*, **7**, 64-75, 1997.
 61. Van Loy M.D., Lee V.C., Gundel L.A., Daisey J.M., Sextro R.G., and Nazaroff W.W., Dynamic behavior of semivolatile organic compounds in indoor air: 1. Nicotine in a stainless steel chamber, *Environmental Science & Technology*, **31**, 2554-2561, 1997.
 62. Thatcher T.L., and Nazaroff W.W., Effect of small-scale obstructions and surface textures on particle deposition from natural convection flow, *Aerosol Science and Technology*, **27**, 709-725, 1997.
 63. Miller S.L., Branoff S., and Nazaroff W.W., Exposure to toxic air contaminants in environmental tobacco smoke: An assessment for California based on personal monitoring data, *Journal of Exposure Analysis and Environmental Epidemiology*, **8**, 287-311, 1998.
 64. Marr L.C., Morrison G.C., Nazaroff W.W., and Harley R.A., Reducing the risk of accidental death due to vehicle-related carbon monoxide poisoning, *Journal of the Air and Waste Management Association*, **48**, 899-906, 1998.
 65. Morrison G.C., Nazaroff W.W., Cano-Ruiz J.A., Hodgson A.T., and Modera M.P., Indoor air quality impacts of ventilation ducts: Ozone removal and emissions of volatile organic compounds, *Journal of the Air and Waste Management Association*, **48**, 941-952, 1998.
 66. Van Loy M.D., Nazaroff W.W., and Daisey J.M., Nicotine as a marker for environmental tobacco smoke: Implications of sorption on indoor surface materials, *Journal of the Air and Waste Management Association*, **48**, 959-968, 1998.
 67. Nazaroff W.W., Nicas M., and Miller S.L., Framework for evaluating measures to control nosocomial tuberculosis transmission, *Indoor Air*, **8**, 205-218, 1998.
 68. Riley W.J., Robinson A.L., Gadgil A.J., and Nazaroff W.W., Effects of variable wind speed and direction on radon transport from soil into buildings: Model development and exploratory results, *Atmospheric Environment*, **33**, 2157-2168, 1999.
 69. Garbesi K., Robinson A.L., Sextro R.G., and Nazaroff W.W., Radon entry into houses: The importance of scale-dependent permeability, *Health Physics*, **77**, 183-191, 1999.
 70. Lai A.C.K., and Nazaroff W.W., Modeling indoor particle deposition from turbulent flow onto smooth surfaces, *Journal of Aerosol Science*, **31**, 463-476, 2000.
 71. Lai A.C.K., Thatcher T.L., and Nazaroff W.W., Inhalation transfer factors for air pollution health-risk assessments, *Journal of the Air & Waste Management Association*, **50**, 1688-1699, 2000.
 72. Morrison G.C., and Nazaroff W.W., The rate of ozone uptake on carpets: Experimental studies, *Environmental Science & Technology*, **34**, 4963-4968, 2000.
 73. Van Loy M.D., Riley W.J., Daisey J.M., and Nazaroff W.W., Dynamic behavior of semivolatile organic compounds in indoor air. 2. Nicotine and phenanthrene with carpet and wallboard, *Environmental Science & Technology*, **35**, 560-567, 2001.
 74. Miller S.L., and Nazaroff W.W. Environmental tobacco smoke particles in multizone indoor environments, *Atmospheric Environment*, **35**, 2053-2067, 2001.

75. Liu D.-L., and Nazaroff W.W. Modeling pollutant penetration across building envelopes, *Atmospheric Environment*, **35**, 4451-4462, 2001.
76. Riley W.J., McKone T.E., Lai A.C.K., and Nazaroff W.W., Indoor particulate matter of outdoor origin: Importance of size-dependent removal mechanisms, *Environmental Science & Technology*, **36**, 200-207, 2002.
77. Singer B.C., Hodgson A.T., Guevarra K.S., Hawley E.L., and Nazaroff W.W., Gas-phase organics in environmental tobacco smoke: 1. Effects of smoking rate, ventilation, and furnishing level on apparent emission factors, *Environmental Science & Technology*, 846-853, 2002.
78. Morrison G.C., and Nazaroff W.W., The rate of ozone uptake on carpet: Mathematical modeling, *Atmospheric Environment*, **36**, 1749-1756, 2002.
79. Thatcher T.L., Lai, A.C.K., Moreno-Jackson R., Sextro R.G., and Nazaroff W.W., Effects of room furnishings and air speed on particle deposition rates indoors, *Atmospheric Environment*, **36**, 1811-1819, 2002.
80. Bennett D.H., McKone T.E., Evans J.S., Nazaroff W.W., Margni, M.D., Jolliet O., Smith K.R., Defining intake fraction, *Environmental Science & Technology*, **36**, 206A-211A, 2002.
81. Morrison G.C., and Nazaroff W.W., Ozone interactions with carpet: Secondary emissions of aldehydes, *Environmental Science & Technology*, **36**, 2185-2192, 2002.
82. Liu D.-L., and Nazaroff W.W. Particle penetration through building cracks, *Aerosol Science & Technology*, **37**, 565-573, 2003.
83. Klepeis N.E., Apte M.G., Gundel L.A., Sextro R.G. and Nazaroff W.W., Determining size-specific emission factors for environmental tobacco smoke particles, *Aerosol Science and Technology*, **37**, 780-790, 2003.
84. Marshall J.D., Riley W.J., McKone T.E. and Nazaroff W.W., Intake fraction of primary pollutants: Motor vehicle emissions in the South Coast air basin, *Atmospheric Environment*, **37**, 3455-3468, 2003.
85. Singer B.C., Hodgson A.T. and Nazaroff W.W., Gas-phase organics in environmental tobacco smoke: 2. Exposure-relevant emission factors and indirect exposures from habitual smoking, *Atmospheric Environment*, **37**, 5551-5561, 2003.
86. Siegel J.A. and Nazaroff W.W., Predicting particle deposition on HVAC heat exchangers, *Atmospheric Environment*, **37**, 5587-5596, 2003.
87. Sippola M.R. and Nazaroff W.W., Modeling particle loss in ventilation ducts, *Atmospheric Environment*, **37**, 5597-5609, 2003.

Patents:

- Nazaroff W.W., and Cass G.R., Systems for reducing deposition of fluid-borne particles, No. 5,061,444, October 29, 1991.
- Nazaroff W.W., and Gadgil A.J., An apparatus for treating environmental tobacco smoke (ETS) particle and gas-phase contaminants, No. 5,678,576, October 21, 1997.

Edited Special Issues of Archival Journals:

- Burge H.B., Leovic K.W., and Nazaroff W.W. (Eds.), Engineering solutions to indoor air quality problems, *Journal of the Air & Waste Management Association*, **46**, September 1996.
- Nazaroff W.W., and Leovic K.W. (Eds.), Engineering solutions to indoor air quality problems II, *Journal of the Air & Waste Management Association*, **48**, October 1998.
- Nazaroff W.W., Weschler C.J., and Corsi R.L. (Eds.), Indoor Air Chemistry and Physics: Papers from Indoor Air 2002, *Atmospheric Environment*, **37**, 5451-5646, 2003.

Books:

- Nazaroff W.W., and Nero A.V. (Eds.), *Radon and Its Decay Products in Indoor Air*, John Wiley and Sons, New York, 1988 (ISBN 0-471-62810-7), 518 pp.

Cass G.R., Druzik J.R., Grosjean D., Nazaroff W.W., Whitmore P.M., and Whittman C.L., *Protection of Works of Art from Atmospheric Ozone*, The Getty Conservation Institute, Marina del Rey, California, 1990 (ISBN 0-89236-126-3), 94 pp.

Nazaroff W.W., Ligocki M.P., Salmon L.G., Cass G.R., Fall T., Jones M.C., Liu H.I.H., and Ma T., *Airborne Particles in Museums*, Research in Conservation 6, The Getty Conservation Institute, Marina del Rey, California, 1993 (ISBN 0-89236-187-5), 144 pp.

Nazaroff W.W., and Alvarez-Cohen L., *Environmental Engineering Science*, Wiley, New York, 2001 (ISBN 0-471-14494-0), 690 pp.

Book Chapters and Articles in Books:

1. Nazaroff W.W., Nero A.V., and Revzan K.L., Alpha spectroscopic techniques for field measurement of radon daughters, *Natural Radiation Environment*, Vohra K.G., et al., eds., Wiley Eastern Ltd., New Delhi, 1982, pp. 350-357.
2. Nero A.V., Boegel M.L., Hollowell C.D., Ingersoll J.G., Nazaroff W.W., and Revzan K.L., Radon and its daughters in energy efficient buildings, *Natural Radiation Environment*, Vohra K.G., et al., eds., Wiley Eastern Ltd., New Delhi, 1982, pp. 473-480.
3. Sextro R.G., Moed B.A., Nazaroff W.W., Revzan K.L., and Nero A.V., Investigations of soil as a source of indoor radon, *Radon and Its Decay Products: Occurrence, Properties and Health Effects*, Hopke P.K., ed., American Chemical Society, Washington, D.C., 1987, pp. 10-29.
4. Nazaroff W.W., Moed B.A., and Sextro R.G., Soil as a source of indoor radon: Generation, migration, and entry, *Radon and Its Decay Products in Indoor Air*, Nazaroff W.W., and Nero A.V. (Eds.), John Wiley and Sons, New York, 57-112, 1988.
5. Nazaroff W.W., Doyle S.M., Nero A.V., and Sextro R.G., Radon entry via potable water, *Radon and Its Decay Products in Indoor Air*, Nazaroff W.W., and Nero A.V. (Eds.), John Wiley and Sons, New York, 131-157, 1988.
6. Nazaroff W.W., Measurement techniques, *Radon and Its Decay Products in Indoor Air*, Nazaroff W.W., and Nero A.V. (Eds.), John Wiley and Sons, New York, 491-504, 1988.
7. Nazaroff W.W., Gadgil A.J., and Weschler C.J., Critique of the use of deposition velocity in modeling indoor air quality, *Modeling Indoor Air Quality and Exposure*, ASTM STP 1205, Nagda N. L. (Ed.), American Society for Testing and Materials, Philadelphia, 81-104, 1993.
8. Nazaroff W.W., Radon hazards, *Encyclopedia of Environmental Science*, Alexander D.E. and Fairbridge R.W. (Eds.), Kluwer Academic Publishers, Dordrecht, 499-501, 1999.
9. Nazaroff W.W., and Klepeis N.E., Environmental tobacco smoke particles, *Indoor Environment: Airborne Particles and Settled Dust*, Morawska L. and Salthammer T. (Eds.), Wiley-VCH, Weinheim, Germany, 2004, pp. 245-274.

Major Committee Reports:

1. Risk Assessment Advisory Committee, *A Review of the California Environmental Protection Agency's Risk Assessment Practices, Policies, and Guidelines*, California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Science Advisory Board, 1996.
2. Committee on Air Quality in Passenger Cabins of Commercial Aircraft, *The Airliner Cabin Environment and the Health of Passengers and Crew*, National Research Council, National Academy Press, Washington, DC, 2002.

Letters, Editorials, and Other Publications:

1. Nazaroff W.W., and Revzan K.L., Comment on "An evaluation of working level measurements using a generalized Kusnetz method" and "Evaluation and modification of working level measurement methods", *Health Physics*, **44**, 703-704, 1983.
2. Nazaroff W.W., Authors' reply, *Atmospheric Environment*, **20**, 1069, 1986.

3. Nazaroff W.W., Entry by pressure-driven flow or molecular diffusion? A reassessment of radon-222 concentrations measured in an energy-efficient house, *Health Physics*, **55**, 1005-1009, 1988.
4. Nazaroff W.W., and Cass G.R., Authors' reply: Particle deposition from a natural convection flow onto a vertical isothermal flat plate, *Journal of Aerosol Science*, **20**, 138-139, 1989.
5. Nazaroff W.W., Discussion: Thermophoresis in boundary layer flows, *Journal of Aerosol Science*, **21**, 827-828, 1990.
6. Nazaroff W.W., Welcome to a special issue on Engineering Solutions to Indoor Air Quality Problems, *Journal of the Air & Waste Management Association*, **46**, 805, 1996.
7. Nazaroff W. and Leovic K., Welcome to a special issue on Engineering Solutions to Indoor Air Quality Problems II, *Journal of the Air & Waste Management Association*, **48**, 897, 1998.
8. Nazaroff W.W. and Weschler C.J., Editorial: Indoor air and the public good, *Indoor Air*, **11**, 143-144, 2001.
9. Nazaroff B., Davidson C., Hering S., and Russell T., Remembering Glen Cass (1947-2001), *Particulars* (newsletter of the American Association for Aerosol Research), Fall 2001, p. 7.
10. Nazaroff W.W., Weschler C.J., and Corsi R.L., Indoor air chemistry and physics, *Atmospheric Environment*, **37**, 5451-5453, 2003.

Reports and Theses:

1. Wesely M.L., Nazaroff W.W., and Everett R.G., On the use of silicon photocells in the MAP3S turbidity network, *Radiological and Environmental Research Division Annual Report*, Report ANL-77-65, Part IV, Argonne National Laboratory, Argonne, 1977, pp. 118-124.
2. Boegel M.L., Nazaroff W.W., and Ingersoll J.G., *Instructions for Operating the Passive Environment Radon Monitor (PERM)*, Report LBID-073, Lawrence Berkeley Laboratory, Berkeley, 1979.
3. Nazaroff W.W., *A Residential Radon Daughter Monitor Based on Alpha Spectroscopy*, M.Eng. Thesis, University of California, Berkeley, 1980.
4. Moed B.A., Nazaroff W.W., Nero A.V., Schwehr M.B., and Van Heuvelen A., *Identifying Areas with Potential for High Indoor Radon Levels: Analysis of the National Airborne Radiometric Reconnaissance Data for California and the Pacific Northwest*, Report LBL-16955, Lawrence Berkeley Laboratory, Berkeley, 1984.
5. Cass G.R., Druzik J.R., Grosjean D., Nazaroff W.W., Whitmore P.M., and Wittman C.L., *Protection of Works of Art from Photochemical Smog*, GCI Scientific Program Report, Getty Conservation Institute, Marina del Rey, CA, 1988.
6. Nazaroff W.W., *Mathematical Modeling and Control of Pollutant Dynamics in Indoor Air*, Ph.D. Thesis, California Institute of Technology, Pasadena, 1989.
7. Nazaroff W.W., Moed B.A., Sextro R.G., Revzan K.L., and Nero A.V., *Factors Influencing Soil as a Source of Indoor Radon: Framework for Assessing Radon Source Potential*, Report LBL-20645, Lawrence Berkeley Laboratory, 1989.
8. Wooley J., Hodgson A.T., and Nazaroff W.W., *Release of 1,2-Propanediol and 2-Aminoethanol to the Atmosphere during use of Liquid Laundry Detergents*, final report, The Procter & Gamble Company, Cincinnati, OH, 1990.
9. Nero A.V., Gadgil A.J., Nazaroff W.W., and Revzan K.L., *Indoor Radon and Decay Products: Concentrations, Causes, and Control Strategies*, Report LBL-27798, Lawrence Berkeley Laboratory, 1990.
10. Nazaroff W.W., Ligocki M.P., Salmon L.G., Cass G.R., Fall T., Jones M.C., Liu H.I.H., and Ma T., *Protection of Works of Art from Soiling due to Airborne Particulates*, GCI Scientific Program Report, Getty Conservation Institute, Marina Del Rey, California, 1992.

11. Miller S.L., Branoff S., Lim Y., Liu D., Van Loy M.D., and Nazaroff W.W., *Assessing Exposure to Air Toxicants from Environmental Tobacco Smoke*, Contract 94-344, California Air Resources Board, Sacramento, CA, 1998.
12. Rabaey J., Arens E., Federspiel C., Gadgil A., Messerschmitt D., Nazaroff W., Pister K., Oren S., Varaiya P., *Smart Energy Distribution and Consumption: Information Technology as an Enabling Force*, CITRIS white paper, Center for Information Technology Research in the Interest of Society, University of California, Berkeley, <http://www.citris.berkeley.edu/SmartEnergy/SmartEnergy.html>, 2001.
13. Nazaroff W.W., and Amadei B., *New Technologies and Cultural Heritage: A US - Italian Bilateral Workshop*, Final report to the National Science Foundation, Award No. 0119379, March 2002.
14. Heath G.A., Hoats A.S., and Nazaroff W.W., *Air Pollutant Exposure Associated with Distributed Electricity Generation*, Contract 01-344, California Air Resources Board, Sacramento, CA, 2003.
15. Blumberg K., and Nazaroff W.W., *Air Quality Monitoring: The Potential Impact of Nanotechnology*, Environmental Engineering Program, University of California, Berkeley CA, 2003.

Conference Proceedings and Published Abstracts:

1. Hollowell C.D., Berk J.V., Lin C., Nazaroff W.W., and Traynor G.W., Impact of energy conservation in buildings on health, *Changing Energy Use Futures*, Vol. II, 638, 1979.
2. Hollowell C.D., Boegel M.L., Ingersoll J.G., and Nazaroff W.W., Radon-222 in energy efficient buildings, *American Nuclear Soc. Trans.*, **33**, 148, 1979.
3. Nero A.V., Berk J.V., Boegel M.L., Hollowell C.D., Ingersoll J.G., and Nazaroff W.W., Radon daughter exposures in energy efficient buildings, *Proceedings of Specialist Meeting on the Assessment of Radon and Daughter Exposure and Related Biological Effects*, Clemente G.F., et al., eds., RD Press, Salt Lake City, 1982, pp. 144-152.
4. Nazaroff W.W., Boegel M.L., and Nero A.V., Measuring radon source magnitude in residential buildings, *International Meeting on Radon and Radon Progeny Measurements - Proceedings*, U.S. EPA Report EPA 520/5-83/021, Washington, D.C., 1983, pp. 101-124.
5. Nazaroff W.W. and Nero A.V., Transport of radon from soil into residences, *INDOOR AIR: Radon, Passive Smoking, Particulates and Housing Epidemiology*, Vol. 2, Berglund B., et al., eds., Swedish Council for Building Research, Stockholm, 1984, pp. 15-20.
6. Baughman A.V., Nazaroff W.W., Gadgil A.J., and Sextro R.G., Mixing of a point source pollutant within an isolated room, paper 92-79.09, Air & Waste Management Association 85th Annual Meeting, Kansas City, Missouri, 21-26 June 1992.
7. Garbesi K., Sextro R.G. and Nazaroff W.W., A field study of the scale dependence of soil permeability to air, American Geophysical Union, Spring Meeting, Baltimore, May 1993, *EOS*, **74(16)**: 142, 1993.
8. Cano-Ruiz J.A., and Nazaroff W.W., Removal of reactive gases at indoor surfaces: Combining mass transport and surface kinetics, in *Indoor Air '93: Proceedings of the 6th International Conference on Indoor Air Quality and Climate*, Vol. 2, Saarela K., Kalliokoski P., and Seppänen O. (Eds.), Indoor Air '93, Helsinki, 555-560, 1993.
9. Garbesi K., Sextro R.G., Fisk W.J., and Nazaroff W.W., Toward resolving the model-measurement discrepancy of radon entry into houses: A study of the scale dependence of soil permeability to air, in *Indoor Air '93: Proceedings of the 6th International Conference on Indoor Air Quality and Climate*, Vol. 4, Kalliokoski P., Jantunen M., and Seppänen O. (Eds.), Indoor Air '93, Helsinki, 575-580, 1993.
10. Drescher A.C., Nazaroff W.W., and Gadgil A.J., Computed tomography and infrared absorption: Development of a new technique for the study of indoor air pollutant transport and dispersion, in *Indoor Air '93: Proceedings of the 6th International Conference on Indoor*

Air Quality and Climate, Vol. 5, Seppänen O., Railio J., and Säteri J. (Eds.), Indoor Air '93, Helsinki, 217-222, 1993.

11. Sasse A.G.B.M., Gadgil A.J., and Nazaroff W.W., New developments in predicting convective air flow in enclosures: Benchmark solutions, in *Indoor Air '93: Proceedings of the 6th International Conference on Indoor Air Quality and Climate, Vol. 5*, Seppänen O., Railio J., and Säteri J. (Eds.), Indoor Air '93, Helsinki, 359-364, 1993.
12. Miller-Leiden S., Wadhwa A., and Nazaroff W.W., Effects of interchamber mixing, ventilation and filtration on lung dose from environmental tobacco smoke particles, in *Indoor Air '93: Proceedings of the 6th International Conference on Indoor Air Quality and Climate, Vol. 6*, Seppänen O., Ilmarinen R., Jaakkola J.J.K., Kukkonen E., Säteri J., and Vuorelma H. (Eds.), Indoor Air '93, Helsinki, 509-514, 1993.
13. Garbesi K., Sextro R.G., and Nazaroff W.W., Soil physics study to explain large model-measurement discrepancies of radon entry into houses, American Geophysical Union, Fall Meeting, San Francisco, December 1993, *EOS* **74(43)**: 261-262, 1993.
14. Wampler D.A., Litvak A., Miller-Leiden S., Gadgil A.J., and Nazaroff W.W., Effectiveness of smokeless ashtrays, paper 94-TA25A.01, Air & Waste Management Association 87th Annual Meeting, Cincinnati, Ohio, 19-24 June 1994.
15. Lobascio C., Derby M.W., Nazaroff W.W., Nicas M., and Macher J.M., Effectiveness of portable HEPA-filter units in controlling airborne tuberculosis transmission, Fourth International Aerosol Conference, Los Angeles, California, August 28-September 2, 1994; also presented as Efficacy of portable filter air cleaners as tested by nonviable and viable aerosols, TB Control in the Workplace: Science, Implementation, and Prevention Policy, 1994 Annual Conference of The Society for Occupational and Environmental Health, Rockville, Maryland, 1-3 December 1994; abstract published in *Infection Control and Hospital Epidemiology*, **15**, 771, 1994.
16. Lin T.F., and Nazaroff W.W., Transport of vinyl chloride within activated carbon: Predicting isotherms and breakthrough curves from a single kinetic sorption experiment, Proceedings of the 7th IUAPPA Regional Conference on Air Pollution and Waste Issues, Taipei, 2-4 November 1994, Vol. I, pp. 363-370.
17. Van Loy M.D., Nazaroff W.W., Lee V.C., Gundel L.A., Sextro R.G., and Daisey J.M., Investigation of the fate of nicotine in a stainless-steel chamber, paper 96-WA61.04, Air & Waste Management Association 89th Annual Meeting, Nashville, TN, 24-28 June 1996.
18. Nazaroff W.W., Harley R.A., and Morrison G.C., Preventing accidental deaths caused by carbon monoxide emissions from motor vehicles, in *Indoor Air '96: Proceedings of the 7th International Conference on Indoor Air Quality and Climate, Vol. 2*, Yoshizawa Y., Kimura K., Ikeda K., Tanabe S., and Iwata T. (Eds.), Organizing Committee of the 7th International Conference of Indoor Air Quality and Climate, Tokyo, Japan, pp. 357-362, 1996.
19. Miller-Leiden S., and Nazaroff W.W., Manipulating building factors to reduce ETS exposure from household smoking, in *Indoor Air '96: Proceedings of the 7th International Conference on Indoor Air Quality and Climate, Vol. 4*, Yoshizawa Y., Kimura K., Ikeda K., Tanabe S., and Iwata T. (Eds.), Organizing Committee of the 7th International Conference of Indoor Air Quality and Climate, Tokyo, Japan, pp. 45-50, 1996.
20. Van Loy M.D., Nazaroff W.W., and Daisey J.M., Sorptive interactions of gas-phase environmental tobacco smoke components with carpet, paper 97-MP3.05, Air & Waste Management Association 90th Annual Meeting, Toronto, Canada, 8-13 June 1997.
21. Thatcher T.L., Nazaroff W.W. and Sextro R.G., Determining transfer factors for outdoor aerosol plumes entering buildings, in *Indoor Air 99 — Proceedings of the 8th International Conference on Indoor Air Quality and Climate*, BRE, Garston, Watford, UK, Vol. 5, pp. 331-332, 1999.

22. Sippola M.R., Nazaroff W.W. and Thatcher T.L., Particle deposition from turbulent duct flow, in *Indoor Air 99 — Proceedings of the 8th International Conference on Indoor Air Quality and Climate*, BRE, Garston, Watford, UK, Vol. 2, pp. 24-29, 1999.
23. Liu D.L. and Nazaroff W.W., Modeling particle penetration through cracks in building envelopes, in *Indoor Air 99 — Proceedings of the 8th International Conference on Indoor Air Quality and Climate*, BRE, Garston, Watford, UK, Vol. 4, pp. 1055-1059, 1999.
24. Morrison G.C. and Nazaroff W.W., Emissions of odorous oxidized compounds from carpet after ozone exposure, in *Indoor Air 99 — Proceedings of the 8th International Conference on Indoor Air Quality and Climate*, BRE, Garston, Watford, UK, Vol. 4, pp. 664-669, 1999.
25. Sohn M.D., Lai A.C.K., Smith B.V., Sextro R.G., Feustel H.E. and Nazaroff W.W., Modeling aerosol behavior in multizone indoor environments, in *Indoor Air 99 — Proceedings of the 8th International Conference on Indoor Air Quality and Climate*, BRE, Garston, Watford, UK, Vol. 4, pp. 785-790, 1999.
26. Lai A.C.K., Thatcher T.L. and Nazaroff W.W., Inhalation transfer factors for assessing human health risks from air pollutant sources, in *Indoor Air 99 — Proceedings of the 8th International Conference on Indoor Air Quality and Climate*, BRE, Garston, Watford, UK, Vol. 5, pp. 193-198, 1999.
27. Klepeis N.E., Apte M.G., Gundel L.A., Nazaroff W.W., and Sextro R.G., Characterizing ETS emissions from cigars: Chamber measurements of nicotine, particle mass, and particle size, in *Indoor Air 99 — Proceedings of the 8th International Conference on Indoor Air Quality and Climate*, BRE, Garston, Watford, UK, Vol. 2, pp. 903-908, 1999.
28. Nazaroff W.W., Effectiveness of air cleaning technologies, in *Proceedings of Healthy Buildings 2000*, O. Seppänen and J. Säteri, eds., SIY Indoor Air Information Oy, Helsinki, Finland, Vol. 2, pp. 49-54, 2000.
29. Sippola M.R. and Nazaroff W.W., Modeling particle deposition in ventilation ducts, in *Indoor Air 2002: Proceedings of the 9th International Conference on Indoor Air Quality and Climate*, H. Levin, ed., Indoor Air 2002, Santa Cruz, California, Vol. 1, pp. 515-520, 2002.
30. Siegel J.A. and Nazaroff W.W., Modeling particle deposition on HVAC heat exchangers, in *Indoor Air 2002: Proceedings of the 9th International Conference on Indoor Air Quality and Climate*, H. Levin, ed., Indoor Air 2002, Santa Cruz, California, Vol. 1, pp. 521-526, 2002.
31. Liu D-L. and Nazaroff W.W., Particle penetration through windows, in *Indoor Air 2002: Proceedings of the 9th International Conference on Indoor Air Quality and Climate*, H. Levin, ed., Indoor Air 2002, Santa Cruz, California, Vol. 1, pp. 862-867, 2002.
32. Singer B.C., Hodgson A.T. and Nazaroff W.W., Effect of sorption on exposures to organic gases from environmental tobacco smoke, in *Indoor Air 2002: Proceedings of the 9th International Conference on Indoor Air Quality and Climate*, H. Levin, ed., Indoor Air 2002, Santa Cruz, California, Vol. 2, pp. 138-143, 2002.
33. Klepeis N.E. and Nazaroff W.W., Characterizing size-specific ETS particle emissions, in *Indoor Air 2002: Proceedings of the 9th International Conference on Indoor Air Quality and Climate*, H. Levin, ed., Indoor Air 2002, Santa Cruz, California, Vol. 2, pp. 162-167, 2002.
34. Nazaroff W.W. and Singer B.R., Inhalation of hazardous air pollutants from environmental tobacco smoke in US residences, in *Indoor Air 2002: Proceedings of the 9th International Conference on Indoor Air Quality and Climate*, H. Levin, ed., Indoor Air 2002, Santa Cruz, California, Vol. 2, pp. 477-482, 2002.
35. Webb A.M., Singer B.C. and Nazaroff W.W., Effect of gaseous ammonia on nicotine sorption, in *Indoor Air 2002: Proceedings of the 9th International Conference on Indoor Air Quality and Climate*, H. Levin, ed., Indoor Air 2002, Santa Cruz, California, Vol. 3, pp. 512-517, 2002.