

General Biographical Information

TIMOTHY V. LARSON

Professor of Civil Engineering
 University of Washington
 269 Wilcox Hall, Box 352700
 Seattle, Washington 98195-2700
 (206) 543-6815
 tlarson@u.washington.edu

Academic Background

Ph.D.	University of Washington	1976
M.S.Ch.E.	University of Washington	1972
B.S.Ch.E.	Lehigh University	1968

Professional History

Professor, Department of Civil & Environmental Engineering; Professor, Department of Environmental Health, University of Washington, Seattle, Washington, 2010-present

Associate Chair, Department of Civil Engineering, University of Washington, Seattle, Washington, 2009-2010.

Acting Chair, Department of Civil Engineering, University of Washington, Seattle, Washington, Summer and Autumn 2009.

Associate Chair, Department of Civil Engineering, University of Washington, Seattle, Washington, 2008-2009.

Acting Chair, Department of Civil Engineering, University of Washington, Seattle, Washington, 2007-2008.

Professor, Department of Civil Engineering, University of Washington, Seattle, Washington, 1991- present.

Visiting Professor, School of Occupational and Environmental Hygiene, University of British Columbia, Vancouver, British Columbia, 2004-2005 academic year

Associate Professor, Department of Civil Engineering, University of Washington, Seattle, Washington, 1986-1991.

Assistant Professor, Department of Civil Engineering, University of Washington, Seattle, Washington, 1983-1986.

Senior Research Associate, Department of Civil Engineering, University of Washington,

Seattle, Washington, 1980-1983.

Research Associate, Department of Atmospheric Sciences, University of Washington, Seattle, Washington, 1976-1980.

Commissioned Corps, U.S. Public Health Service, on assignment to the Office of Criteria and Standards, National Air Pollution Control Administration, USDHEW, Durham, North Carolina, 1968-1970.

Refereed Journal Publications (Web of Science H factor =38 as of 7/9/2014)

1. Harrison, H. and T.V. Larson (1974) The oxidation of SO₂ in the stratosphere, *J.G.R.*, Vol. 79, 3095-3097.
2. Larson, T.V., R.J. Charlson, E.A. Knudson, G.D. Christian, and H. Harrison (1975) The influence of a sulfur dioxide point source on the rain chemistry of a single storm in the Puget Sound region, *Water Air and Soil Pollution*, Vol. 4, 319-328.
3. Larson, T.V., and H. Harrison, (1977) Acidic sulfate aerosols: formation from heterogeneous oxidation by ozone in clouds, *Atmos. Environ.*, Vol. 11, 1133-1141.
4. Larson, T.V., D.S. Covert, R. Frank, and R.J. Charlson (1977) Ammonia in the human airways: neutralization of inspired acid sulfate aerosols, *Science* Vol. 197, 161-163.
5. Charlson, R.J., D.S. Covert, T.V. Larson, and A.P. Waggoner, (1978) Chemical properties of tropospheric sulfur aerosols, *Atmos. Environ.*, Vol. 12, 39-53.
6. Larson, T.V., N.R. Horike, and H. Harrison (1978) Oxidation of sulfur dioxide by oxygen and ozone in aqueous solution: a kinetic study with significance to atmospheric rate processes, *Atmos. Environ.*, Vol. 12, 1597-1611.
7. Larson, T.V., D.S. Covert, and R. Frank (1979) A method for continuous measurement of ammonia in respiratory airways, *J. Applied Physiol.* Vol. 46, 603-607.
8. Larson, T.V., R. Frank, D.S. Covert, D. Holub, and M.S. Morgan (1981) The chemical neutralization of inhaled sulfuric acid aerosol, *Am. J. Indus. Med.*, Vol. 1, 449-452.
9. Weiss, R.E., T.V. Larson, and A.P. Waggoner, (1982) In-situ, rapid response measurement of sulfuric acid/ammonium sulfate aerosols in rural Virginia, *Environ. Sci. Tech.*, Vol. 16, 525-532.
10. Larson, T.V., N.C. Ahlquist, R.E. Weiss, D.S. Covert, and A.P. Waggoner (1982) Chemical speciation of sulfuric acid/ammonium sulfate particles using temperature and humidity controlled nephelometry, *Atmos. Environ.*, Vol. 16, 1587-1590.
11. Harrison, H., T.V. Larson, and C.S. Monkton, (1982) Aqueous phase oxidation of sulfites by ozone in the presence of iron and manganese, *Atmos. Environ.*, Vol. 16, 1039-1042.
12. Larson, T.V., R. Frank, D.S. Covert, D. Holub, and M.S. Morgan (1982) Measurement of respiratory ammonia and the chemical neutralization of inhaled sulfuric acid aerosol in anesthetized dogs, *Am. Rev. Resp. Dis.*, Vol. 125, 502-506.
13. Larson, T.V. and G.S. Taylor, G.S. (1983) On the Evaporation of ammonium nitrate aerosol, *Atmos. Environ.*, 17, 2489-2495.

14. Waggoner, A.P., R.E. Weiss, and T.V. Larson (1983) In-situ, Rapid response measurement of sulfuric acid/ammonium sulfate aerosols in urban Houston: a comparison with rural Virginia, *Atmos. Environ.*, Vol. 17, 1723-1731.
15. Vong, R.J., T.V. Larson, D.S. Covert, and A.P. Waggoner (1985) Measurement and modeling of western Washington precipitation composition, *Water, Air, and Soil Poll.*, Vol. 26, 71-84.
16. Rood, M.J., T.V. Larson, D.S. Covert, and N. C. Ahlquist (1985) Measurement of laboratory and ambient aerosols with temperature and humidity controlled nephelometry, *Atmos. Environ.*, Vol. 19, 1181-1190.
17. Pade, G., D.S. Covert and T.V. Larson (1987) Design and calibration of a high volume fogwater collector, *Journal of Atmospheric and Oceanic Technology*, Vol. 4, 340-344.
18. Rood, M.J., D.S. Covert, and T.V. Larson (1987) Study of aerosol hygroscopicity, water activity and composition in Riverside, California, *Tellus: Series B*, Vol. 39B, 383-397.
19. Vong, R.J., T.V. Larson, W.H. Zoller, D.S. Covert, R.J. Charlson, I. Sweet, R. Peterson, T. Miller, J.F. O'Loughlin, and M.N. Stevensen (1987) Rainwater chemistry near an isolated SO₂ emission source, *Acid Rain: Sources and Atmospheric Processes*, R.W. Johnson, ed., ACS Symposium Series, American Chemical Society, Washington, D.C., 204-212, 1987.
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21. Rood, M.J., D.S. Covert, and T.V. Larson (1987) Temperature and humidity controlled nephelometry: improvements and calibration, *Aerosol Science and Technology*, Vol. 7, 57-65.
22. Koenig, J., D. Covert, T.V. Larson, N. Maykut, P. Jenkins, and W. Pierson (1988) Wood smoke: Health effects and legislation, *The Northwest Environmental Journal*, Vol. 4, 41-54.
23. Larson, T.V. (1988) The influence of chemical and physical forms of ambient air acids on airway doses *Environmental Health Perspectives*, Vol. 79, 1-6.

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26. Rood, M.J., M.A. Shaw, T.V. Larson, and D.S. Covert, (1989) On the Ubiquitous Nature of Ambient Metastable Aerosol, *Nature*, Vol. 337, 537-539.
27. Luecken, D.J., N.S. Laulainen, D.L. Payton, and T.V. Larson (1989) Pollutant Scavenging from Plumes: A case study from the ASARCO smelter closure study, *Atmospheric Environment*, Vol. 23, No. 5, 1063-1071.
28. Larson, T.V. and R.J. Vong (1990) A Theoretical Investigation of the Pressure and Temperature Dependence of Atmospheric Ozone Deposition to Trees, *Environmental Pollution*, Vol. 67,179-189.
29. Browning, K.G., J.Q. Koenig, H. Checkoway, T.V. Larson, and W.E. Pierson (1990) A questionnaire study of respiratory health in areas of high and low ambient wood smoke pollution, *Pediatric Asthma Allergy Immunol*, Vol. 4, 183-191.
30. Hegg, D.A. and T.V. Larson (1990) The effects of microphysical parameterization on model predictions of sulfate production in clouds, *Tellus*, Vol. 42B, 272-284.
31. Koenig, J.Q., D.S. Covert, T.V. Larson, and W.E. Pierson (1992) The effect of duration of exposure on sulfuric acid-induced pulmonary function changes in asthmatic adolescent subjects: A dose response study, *Toxicol. Indust. Health* Vol. 8, 285-296.
32. Hegg, D.A., P. Yuen, and T. Larson (1992) Modeling the Effects of Heterogeneous Cloud Chemistry on the Marine Particle Size Distribution, *Journal Geophysical Research*, Vol. 97, No. D12, 12927-12933.
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35. Balogh, M., T. Larson, and F. Mannering (1993) Analysis of Fine Particulate Matter near Urban Roadways, *Transportation Research Record*, Vol. 1416, 25-32.

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Allen R, Larson T, Liu L-S. Hourly personal exposure to ambient- and indoor-generated particles among sensitive populations in Seattle. AAAR abstract 2003:107.

Allen R, Larson T, Liu L-S. Estimated hourly personal exposures to ambient and non-ambient particulate matter among sensitive populations in Seattle, Washington. AWMA Abstract 2003.

Allen R, Larson T, Wallace L, Liu S. The use of light scattering data to estimate the contribution of indoor- and outdoor-generated particles to indoor and personal air. ISEA Abstract 2003:287-288.

- Allen R, Sheppard L, Larson T, Liu L-JS. Estimating the outdoor and indoor contribution to personal particulate matter exposures. AWMA Abstract 2003:128.
- Covert D, Elleman R, Schreuder A, Lumley T, Larson T, Kim E. Aerosol number-size distributions at an urban location: long-term data from Seattle, WA particulate matter center, central monitoring site. AAAR abstract 2003:90.
- Jansen K, Mar T, Sullivan J, Kaufman J, Trenga C, Larson T, Liu L-JS, Koenig J. The use of exhaled nitric oxide as a non-invasive measure of inflammation in older subjects with cardiorespiratory disease. AAAR abstract 2003:97.
- Kim E, Larson T, Liu L-J. Source contributions to indoor and outdoor fine particles in Seattle, WA. AAAR abstract 2003.
- Koenig J, Jansen K, Mar T, Kaufman J, Sullivan J, Liu L-JS, Larson T, Shapiro G. Exhaled nitric oxide is associated with outdoor, indoor, and personal PM_{2.5} in children with asthma in a panel study. Am J Respir Crit Care Med abstract 2003;167(7):A34.
- Larson T, Liu L-JS, Gould T, Simpson C, Claiborn C. Source apportionment of personal exposure to PM_{2.5} using the chemical mass balance model combined with PMF-derived source profiles. AAAR abstract 2003:100.
- Lewtas J, Maykut N, Kim E, Larson T. Source apportionment of PM_{2.5} in Seattle, WA Urban IMPROVE Site: comparison of three receptor models and source profiles. AAAR abstract 2003:100.
- Liu L-J, Larson T, Sheppard L. Estimating outdoor contributions to indoor and personal particulate air exposures. AAAR abstract 2003:111.
- Mar T, Koenig J, Larson T, Wilson W. Further analysis of the associations between air pollution source factors and mortality in a small area near the monitoring site in Phoenix, 1995-1997. AAAR abstract 2003:42.
- Mar T, Larson T, Koenig J. An association between stagnant air and mortality in Seattle, WA, 1968-1995. Am J Respir Crit Care Med abstract 2003;167(7):A332.
- Mar T, Larson T, Wilson W, Koenig J. The association between pollution and cardiovascular mortality in greater Phoenix, 1995 to 1997. AAAR abstract 2003:97.
- Mar T, Norris G, Larson T, Wilson W, Koenig J. Revised Analyses of Time Series Studies of Air Pollution and Health. Special Report. Air pollution and cardiovascular mortality in Phoenix. Health Effects Institute 2003;May:177-182.
- Simpson C, Katz B, Paulsen M, Dills R, Liu L-JS, Larson T, Kalman D. Levoglucosan measurements in atmospheric particulate in Seattle, WA. AAAR abstract 2003.
- Larson, T., Multivariate Receptor Models, presented at the Conference on Organic Speciation of Particulate Matter, April, 2004, Las Vegas, NV.
- Mar, T.F., Jansen, K, Larson, T., Sullivan, J., Kaufman, J., Liu, L-J-S, Sheppard, K, Koenig, J.Q Exhaled nitric oxide in children with asthma and short term PM exposure in an airshed impacted by woodsmoke. Presented at the Annual Meeting of the American Thoracic Society, Orlando, Fl, May, 2004
- K. Jansen, J.Q. Koenig, T.V. Larson, C. Fields, T.F. Mar, J. Stewart, D. Lenington, M.

Lippmann Levels of Exhaled Nitric Oxide in Subjects with Asthma/COPD are Associated with Levels of PM_{2.5} and Black Carbon in Seattle Presented at the Annual Meeting of the American Thoracic Society, Orlando, FL, May, 2004

R. Allen, K Jansen, J Koenig, TLarson, L-J S Liu, T Lumley, T Mar, K Shepherd, J Sullivan, and C Trenga, An Example of the Use of Ambient and Non-ambient PM exposure estimates: Associations between exposure and pulmonary health indicators among children with asthma. Presented at the ISEA Annual Meeting in Philadelphia, 2004.

Allen, R., Covert, D., Larson, T. and Liu, L.J.-S. Indoor-Outdoor Relationships of Accumulation Mode Particles at Five Residential Sites in Seattle submitted to the AAAR Annual Meeting in Atlanta, GA. October, 2004.

KL Jansen, RW Allen, JQ Koenig, TF Mar, TV Larson, M Lippmann “Association Between Exhaled NO and Daily Personal Exposure To Ambient PM_{2.5} in Adult Subjects with Respiratory Disease” Presented at the Annual Meeting of the American Thoracic Society, San Diego CA May, 2005

Eugene Kim , Philip K. Hopke , Timothy V. Larson, Joellen Lewtas “The Comparison between IMPROVE and STN Source Identification at Seattle” Presented at the Annual Conference of the American Association for Aerosol Research, Houston, TX Oct, 2005

Timothy V. Larson , Eugene Kim , Gary Norris “Source Apportionment of Seattle PM_{2.5} Using STN Organic Carbon Peaks” Presented at the Annual Conference of the American Association for Aerosol Research, Houston, TX Oct, 2005

Ryan Allen, et al Estimation Of Individual-Level Exposure To Ambient-Generated Particulate Matter In A Major Prospective Cohort Study Of Air Pollution And Atherosclerosis (Mesa Air) Presented at the Annual Conference of the International Society of Exposure Analysis, Tucson, Arizona November 2, 2005

Marty Cohen, Ryan Allen, Ed Avol, Patrick Kinney, Tim Larso⁴, Sally Liu, Paul Sampson, Lianne Sheppard, and Joel Kaufman “Study Design Of A Major Prospective Cohort Study Of Air Pollution And Atherosclerosis (Mesa Air)” Presented at the Annual Conference of the International Society of Exposure Analysis, Tucson, Arizona November 2, 2005

Timothy Larson, Jason Su, Anne-Marie Baribeau, Michael Buzzelli, Eleanor Setton and Michael Brauer “A Spatial Model of Urban Winter Woodsmoke Concentrations” Presented at the Annual Meeting of the Pacific Northwest Section of the Air and Waste Management Association, Semiahmoo, WA November, 2005

Carlos Silva, Tim Gould, Michael Buzzelli, Timothy Larson, Martin Cohen, Ryan Allen “Assessing Traffic-Related Pollution Exposure with Land-Use Regression & GIS: A Seattle Case Study” Presented at the Annual Meeting of the Pacific Northwest Section of the Air and Waste Management Association, Semiahmoo, WA November, 2005

Jason Su, Michael Buzzelli, Timothy Larson, Michael Brauer “Developing a spatial sampling protocol for stationary and mobile air pollution sampling” Presented at Air Quality 2006:

Piecing the Puzzle The Fourth Canadian Workshop on Air Quality February, 2006

Bruce Ainslie, et al. "The Border Air Quality Study" Presented at Air Quality 2006: Piecing the Puzzle The Fourth Canadian Workshop on Air Quality February, 2006

TF Mar JQ Koenig TV Larson T Lumley and DS Covert "Wintertime Emergency Department Visits For Asthma In Children: Associations With Airborne Concentrations Of Fine Particle Mass, Total Fine Particle Carbon And Ultrafine Number Count" Presented at the Annual Meeting of the American Thoracic Society, San Diego CA May, 2006

C Carlsten, JD Kaufman, CA Trenga, H Curtiss, A Peretz, M Aulet, JA Stewart, TV Larson, JH Sullivan "Blood Coagulation Markers in Healthy Subjects Exposed to Diesel Exhaust" Presented at the Annual Meeting of the American Thoracic Society, San Diego CA May, 2006

Karen Jansen, Ryan Allen, Jane Q Koenig, Therese Mar, Timothy V Larson, Morton Lippmann " Association between exhaled NO and daily personal exposure to ambient-generated PM_{2.5} in adult subjects with respiratory disease" Presented at the Annual Meeting of the American Thoracic Society, San Diego CA May, 2006

Wu, S.Y., Wu, C.F., Larson, T.V., Williamson, J., Westberg, H.H. and Liu, L.-J. S "Source Apportionment of Air Toxics and Particulate Matter in Seattle, WA" Presented at the Annual Meeting of the Air and Waste Management Association, New Orleans, LA Sept, 2006

Whitney L. Webber, Mark Davey, Timothy Larson*, and L.-J. Sally Liu, Douglas R. Lawson, Robert G. Ireson, Barbara Zielinska, Charles A. Lapin, Michael Easter, Thomas W. Hesterberg "Comparing Three Approaches of Estimating Bus Self-Pollution - A Pilot Study" Presented at the Annual Meeting of the Air and Waste Management Association, New Orleans, LA Sept, 2006

Buzzelli Michael, Su Jason, Ainslee Bruce, Steyn Douw, Brauer Michael, Larson Timothy "A GIS spatio-temporal model of ambient air pollution exposure" Presented at the Annual Conference of the International Society of Exposure Analysis, Paris, France September, 2006

Larson Timothy, Su Jason, Baribeau Anne-Marie, Buzzeli Michael, Setton Eleanor, Brauer Michael "A spatial model of urban winter woodsmoke concentrations" Presented at the Annual Conference of the International Society of Exposure Analysis, Paris, France September, 2006

Karr Catherine, Miller Kristin, Larson Timothy, Koenig Jane "PM_{2.5} exposure and risk of hospitalization for infant bronchiolitis" Presented at the Annual Conference of the International Society of Exposure Analysis, Paris, France September, 2006

Larson Timothy, Garcia Nicole, Covert David, Brauer Michael "Mobile monitoring of particulate black carbon concentrations in an urban area: A fast and easy basis for land-use regression" Presented at the Annual Conference of the International Society of Exposure Analysis, Paris, France September, 2006

Lianne Sheppard, Paul D. Sampson, Anne Ho, Tim Larson, Joel Kaufman “Air Pollution Concentration Sampling Design in MESA Air” Presented at the Annual Conference of the International Society of Exposure Analysis, Paris, France September, 2006

C Karr, KA Miller, T Larson, JQ Koenig, PM2.5 “Exposure and Risk of Hospitalization for Infant Bronchiolitis” Presented at the Annual Conference of the International Society of Exposure Analysis, Paris, France September, 2006

Ryan Allen, Therese Mar, Tim Larson, Tim Gould, Chris Simpson, Sally Liu, and Jane Koenig “Personal Exposure to Ambient and Nonambient PM and Respiratory Health Among Children with Asthma” Presented at the Annual Meeting of the Pacific Northwest Section of the Air and Waste Management Association, Victoria, BC November, 2006

TF Mar, JQ Koenig, AB Schreuder, T Lumley, DS Covert, TV Larson “Seasonal Associations Between Seattle Fine Particles and Emergency Department Visits for Asthma in Children” Presented at the Annual Meeting of the Pacific Northwest Section of the Air and Waste Management Association, Victoria, BC November, 2006

Lori Williams, Cornelia M. Ulrich, Tim Larson, Mark H. Wener, Brent Wood, John Potter, Anne McTiernan, Anneclaire J. De Roos “Immune Function and Residential Exposure to Traffic among Women in King and Snohomish Counties” Presented at the Annual Conference of the Washington State Chapter of The Urban & Regional Information Systems Association April, 2007

Jensen, S.S., Larson, T.V. (2007): Improvement of methods to estimate air pollution exposures - Danish and American experiences (*in Danish*). Danish Chemistry 88, Number 5/2007, p. 10-12.

Books

None

Editing and Other Scholarly Papers

Assisted editing a book for the National Academy of Sciences entitled Airborne Particles

Sponsored Research

1977-80 Inhaled aerosols: Behavior clearance and effect, National Institute of Health, \$586,000 (Co-PI).

- 1980-83 Measurement of particulate nitrogen and sulfate compounds, Environmental Protection Agency, \$98,500
- 1981-84 Optical sensing of sulfate compounds, National Science Foundation, \$296,000 (CO-PI).
- 1984-86 Optical and chemical properties of nitrate aerosols, Environmental Protection Agency, \$70,000.
- 1985 Documentation of wet acidic deposition downwind of a large SO₂ source, Environmental Protection Agency, \$91,337.
- 1985 Documentation of wet acidic deposition downwind of a large SO₂ source (supplement), Environmental Protection Agency, \$20,000.
- 1984-85 Fogwater chemistry, Washington State Department of Ecology, \$10,013.
- 1985 Air quality downwind of an active landfill, Parametrix/Seattle, \$13,285.
- 1985 Air quality downwind of a closed landfill, Parametrix/Seattle, \$13,285.
- 1986 Smelter closure follow-up, Environmental Protection Agency, \$110,000.
- 1986-87 Mount Rainier fogwater chemistry, Environmental Protection Agency, \$25,000.
- 1987-88 Seattle urban soup study phase I, Environmental Protection Agency, \$70,000.
- 1987-89 Puget Sound pollution gradient study, Environmental Protection Agency, \$170,000 (Co-PI).
- 1988 Receptor modeling, U.S. Forest Service, \$3,300.
- 1988 Acid aerosol monitor, Graduate School Research Fund, \$6,800.
- 1988-89 Seattle air toxics mitigation study phase II, Environmental Protection Agency, \$25,000.
- 1988-89 Mobile monitoring of airborne particulate matter, Puget Sound Air Pollution Control Agency, \$20,000.
- 1990-91 Annual average wood smoke assessment, Puget Sound Air Pollution Control Agency, \$45,000.
- 1991-94 Theoretical studies of chemistry with explicitly microphysical models, Electric Power Research Institute, \$220,000 (Co-PI) (CE portion = \$90,000).

- 1991-92 Woodsmoke air RISC analysis, Environmental Protection Agency, \$26,400 (CO-PI) (CE portion = \$11,000).
- 1992-94 Local background of carbon monoxide in urban areas, Washington Department of Transportation, \$158,000.
- 1992-93 Forecasting of CO concentrations near intersections using camera surveillance and neural networks, TransNOW, \$9,000.
- 1993-94 Resuspension of airborne particles near paved urban roadways, TransNOW, \$68,000.
- 1993-94 Air quality studies, Puget Sound Air Pollution Control Agency, \$70,000.
- 1994-98 Health effects of particulate matter in Spokane, WA, Environmental Protection Agency/Washington Department of Ecology, \$587,025. (Co-PI).
- 1993-95 Spatial distribution of nitrogen dioxide, Washington Department of Ecology, \$127,000.
- 1995-98 Inner city asthma, Environmental Protection Agency/Puget Sound Air Pollution Control Agency, \$30,000.
- 1996-98 Parameterization of heterogeneous cloud chemistry, National Science Foundation, \$266,963. (Co-PI).
- 1997-98 Passive sampling of nitrogen dioxide, Washington Department of Ecology, \$54,857.
- 1999-00 Transport and Deposition of Large, Airborne Particles, \$30,000, U.S. Department of Energy (CRESP)
- 1999-04 Personal Exposures to PM of Outdoor Origin, Health Effects Institute, \$82,494 (subcontract from NYU)
- 1999-04 Northwest Center for Particulate Air Pollution and Health, \$8,300,000, U.S. EPA (Co-PI; Director of PM Exposure Core)
- 1999-03 Testing the Metals Hypothesis in Spokane: Daily Associations Between Respiratory and Cardiovascular Outcomes and Airborne Fine Particulate Matter Species , \$904,960, Mickey Leland National Urban Air Toxics Research Center (Co-PI)
- 2004-2005 Northwest Center for Particulate Air Pollution and Health, \$1,700,000, U.S. EPA (Co-PI; Director of PM Exposure Core)
- 2004-2005 Enhanced Exposure to Traffic and Woodsmoke and Incorporation of Meteorology Health Canada, \$35,000 Health Canada (funding at UBC as part of a larger study while on sabbatical leave in 04-05 academic year)

- 2005-2007 Border Air Quality Study, \$260,822, Health Canada (Co-PI for Exposure Assessment)
- 2004-2013 Prospective Study of Atherosclerosis, Clinical Cardiovascular Disease, and Long-Term Exposure to Ambient Particulate Matter and Other Air Pollutants in a Multi-Ethnic Cohort, \$30,000,000, U.S. EPA (Joel Kaufmann, P.I.; I am Co-PI of the Exposure Team)
- 2006-2010 Integrated epidemiologic and toxicologic cardiovascular studies to identify toxic components and sources of fine particulate matter. \$337,000 (This is CE's portion of a larger grant to the Health Effects Institute; Professor Sverre Vedal is PI. The grant is tentatively funded pending response to reviewer's comments; Professor Wang of CE is also part of this grant)
- 2008-2010 Evaluation of Methods for Air Toxics Source Apportionment Using Real-Time Continuous Monitoring Instruments \$449,000 Puget Sound Clean Air Agency (Co-PI)
- 2008-2010 Seasonal and Spatial Characterization of Tacoma and Seattle Area Air Toxics \$541,000 Puget Sound Clean Air Agency (Co-PI)
- 2008-2011 Spatial investigation of sources, composition, and long-term health effects of coarse particulate matter (PM_{10-2.5}) in the Multi-Ethnic Study of Atherosclerosis (MESA) cohort, \$1,200,000, U.S. EPA (PI)
- 2008-2013 DISCOVER Center: Cardiovascular Disease and Traffic-Related Air Pollution, \$12,100,000 (\$1,031,000 is Exposure Core portion) NIEHS (Co-PI and PI of Exposure Core)
- 2009-2012 Development Of A Hybrid Receptor Model For Characterizing Air Quality Impacts From Wildland Fire Particulate Matter Emissions, \$178,000, National Park Service (PI)
- 2010 – 2015 University of Washington Center for Clean Air Research (UW CCAR), \$8,000,000, U.S. EPA (co-PI on two projects and deputy director of Center).
- 2102 - 2013 Assessment of a New Screening Model for Use in Siting Near-Road NO₂ Monitors, \$ 29,740 USDOT (PI)
- 2013-2014 Testing of Cavity Attenuation Phase Shift Technology for Siting Near-Road NO₂ Monitors, \$30,773 USDOT (PI)
- 2014-2018 Measurement of Selected Air Pollutant Emissions from Ferry Boats, \$409,482 Washington State Ferry System (PI)

Project Reports (reports to sponsors)

A review of rain chemistry measurements in Western Washington, prepared for Puget Sound Power and Light Co., Sept. 1984 (with R.J.Vong).

Chemical hazards in gaseous emissions from municipal landfills, Dept. of Environmental Health Special Investigation 85-001, Sept., 1985 (with D.A. Kalman, S. Horstman and J.Ongerth).

Kent-Highlands landfill air quality analysis, prepared for Parametrix, Inc. for inclusion into Environmental Impact Statement, July 1985 (with M.M. Wineman).

Midway landfill air quality analysis, prepared for City of Seattle, June, 1985 (with M.M. Wineman).

The ASARCO Smelter closure rain chemistry study, prepared for Pacific Northwest Laboratories, December, 1986, 550 pp (with R.J.Vong, J.F. O'Loughlin, M.N. Stevenson, R.E. Petereson, D.S. Covert, P.J.†Sampson, L. Moseholm, D. Payton, E. Presbo, D. Conner, K. Scattarella, R.J.Charlson, and W. Zoller).

Background concentrations of sulfate in precipitation along the B.C. Coast, Report PAES-86-1, Atmospheric Environment Service of Canada, Vancouver, B.C., March 31, 1986 (with P.G. Sagert, M.G. Ruby, B. Fane, J.L.Frazer, R.J.Charlson, L.C. Duncan and R.J. Vong).

Puget Sound Receptor Modeling Feasibility Study, submitted to the Puget Sound Air Pollution Control Agency, December, 1987 (with D.Kalman).

Program Cloud: a numerical model of droplet physics and chemistry during cloud droplet formation, report submitted to the International Meteorological Institute at Stockholm University, October, 1987 (with G. Ayers).

Fall and Winter Cloud Chemistry on Mount Rainier, submitted to EPA June, 1987, (with T. Basabe and R. Edmonds).

Urban Air Toxics Mitigation Study: Phase I, submitted to the Puget Sound Air Pollution Control Agency, September, 1988 (with D. Kalman, S. Wang and G. Northstein).

A Survey of Airborne Particulate Matter in King, Pierce and Snohomish Counties During the Winter of 1988-89, submitted to the Puget Sound Air Pollution Control Agency, June, 1989 (with R. Bennett and S.Wang).

Urban Air Toxics Mitigation Study: Phase II, submitted to the Puget Sound Air Pollution Control Agency, June, 1990 (with D. Kalman, S. Wang, and G. Nothstein).

A Summary of the Chemistry, Emissions, and Non-Cancer Respiratory Effects of

Wood Smoke, U.S. Environmental Protection Agency Report No. EPA 453/R-93-008. 1993 (with J. Koenig).

Annual Average Source Contributions to PM_{2.5} at Three Residential Sites in the Puget Sound Region, submitted to the Puget Sound Air Pollution Control Agency, 1993 (with P. Yuen).

Larson, T. and Slater, D. Measurement of Fine Particle Levels via Mobile Nephelometry: A Comparison of 1988 vs 1994 Levels in Marysville, WA and Surrounding Communities, Report Prepared for PSAPCA June, 1994

Local Background Levels of Carbon Monoxide in Urban Areas, Final Technical Report, Research Project T9233, Task 37, Washington State Transportation Center (TRAC), July, 1994 (with L. Moseholm, C. Cain and D. Slater).

Forecasting Carbon Monoxide Concentrations Near A Sheltered Intersection Using Video Traffic Surveillance and Neural Networks, Final Report, TransNOW, 1995 (with L. Moseholm and J. Silva).

Spatial Distribution of Nitrogen Oxides in the Seattle Area, Final Technical Report, Washington State Department of Ecology, May, 1995 (with G. Norris and S. Brush)

Resuspension of Airborne Particles Near Paved Urban Roadways, Final Technical Report, TransNOW, January, 1997 (with J. Silva).

Seattle Urban Visibility Data Analysis Plan, Final Technical Report, Puget Sound Air Pollution Control Agency, December, 1997.

Sea-Tac Airport Spatial Nitrogen Dioxide Study, Final Report, Washington State Department of Ecology, 1999.

Other Research-Related Activities

Invited Lectures and Seminars

Included in presentation list below.

Presentations Given at Conferences

Larson, T.V., H. Harrison, and N. Horike, Oxidation of sulfur dioxide by oxygen and ozone in clouds, presented before the Division of Environmental Chemistry of the American Chemical Society by T.V. Larson, New Orleans, LA, March, 1977.

Larson, T.V., R. Frank D.S. Covert, D. Holub, and M. Morgan, Measurement of respiratory ammonia and the chemical neutralization of inhaled sulfuric acid aerosol in anesthetized dogs, presented before the Environmental Division of the American Thoracic Society by T.V. Larson, Las Vegas, NV, May 1979.

Larson, T.V., Secondary aerosol: production mechanisms of sulfate compounds in the atmosphere, presented at a conference on secondary aerosols sponsored by the New York Academy of Sciences by T.V. Larson, New York, Jan., 1980.

Waggoner, A.P., T.V. Larson, and R.E. Weiss, Measurements of ambient tropospheric particle hygroscopicity as a function of particle sulfate to ammonium molar ratio, presented at a specialty conference on hygroscopic aerosols sponsored by the Institute for Atmospheric Optics and Remote Sensing by T.V. Larson, Vail, CO, April, 1982.

Taylor, G.S. and T.V. Larson, Theoretical and experimental investigation of evaporation of ammonium nitrate aerosol, presented before the Environmental Chemistry Division of the American Chemical Society by T.V. Larson, Eugene, OR, June, 1982.

Waggoner, A.P., T.V. Larson, R.E. Weiss, D.S. Covert, and N.C. Ahlquist, Measurement of particle sulfate to ammonium ion ratio by real time optical methods, presented before the Environmental Chemistry Division of the American Chemical Society by T.V. Larson, Eugene, OR, June, 1982.

Vong, R.J., T.V. Larson, and R.J. Charlson, Precipitation chemistry in the Pacific Northwest, presented at the 21st annual PNWIS-APCA conference by R.J. Vong, Portland, OR, Nov., 1984.

Waggoner, A.P., R.E. Weiss, and T.V. Larson, In-situ measurement of particle sulfate concentration, ammonia molar fraction and contribution of scattering by liquid water using a modified integrating nephelometer, presented at the First International Aerosol Conference by A.P. Waggoner, Minneapolis, Minn., Sept. 1984.

Rood, M.J., D.S. Covert, and T.V. Larson, Measurement of Metastable Atmospheric Aerosols, presented GAF International Meeting by M.J. Rood, Berchtesgaden, FRG, Nov., 1985.

Pade, G. and T.V. Larson, Design, calibration and operation of a two stage fogwater collector, presented as a poster paper at the American Association for Aerosol Research Meeting by G. Pade in Albuquerque, New, Mexico, Nov., 1985.

Larson, T.V., M.R. Rood, D.S. Covert, and A.P. Waggoner, Measurement of metastable atmospheric aerosols, presented at the American Association for Aerosol Research National Conference by T.V. Larson, Albuquerque, New Mexico, Nov., 1985.

Larson, T.V., R.J. Vong, W.H. Zoller, R.J. Charlson, A.J. Alkesweeny, and N.S.†Laulainen, The influence of a large sulfur dioxide point source on mesoscale rainwater chemistry, presented at the National Acid Deposition Assessment Program meeting by T.V. Larson, Boulder, CO, Sept., 1985.

Larson, T.V., R.J. Vong, L. Moseholm, D. Covert, J. O'Loughlin, M.N. Stevensen, R. Peterson, R.J. Charlson, and W.H. Zoller, Changes in mesoscale rainwater acidity due to closure of a copper smelter, presented at the AGU Fall Meeting by T.V.†Larson, San†Francisco, CA, December, 1986.

Peterson, R.E., W.H. Zoller, R.J. Vong, and T.V. Larson, The trace metal composition of rainwater: Signature of a copper smelter, presented at the AGU Fall Meeting by R.E.†Peterson, San Francisco, CA, Dec., 1986.

Wilder, J., T.V. Larson, D.S. Kalman, and D.S. Covert, Combined source emission fingerprints for trace elements plus PAH's, presented at the 23rd annual PNWIS-APCA meeting by T.V. Larson, Eugene, OR, Nov., 1986.

Covert, D.S., R.J. Vong, and T.V. Larson, Receptor modeling of arsenic in the Ruston/Vashon area, presented at the 23rd annual PNWIS-APCA meeting by T.V.†Larson, Eugene, OR, Nov., 1986.

Sagert, P.S., M.J. Ruby, R.J. Charlson, T.V. Larson, R.J. Vong, and L.C. Duncan, Background concentration of sulfate in precipitation along the British Columbia Coast, presented at the 23rd annual PNWIS-APCA meeting by T.V. Larson, Eugene, OR, Nov., 1986.

O'Loughlin, J.F., H.Y. Ko, T.V. Larson, M.N. Stevensen, and R.J. Vong, Precipitation chemistry of selected winter storm events near Stevens Pass, Washington, presented at the 23rd annual PNWIS-APCA meeting by J.F. O'Loughlin, Eugene, OR, Nov., 1986.

Vong, R.J., Zoller, W.H., Peterson, R.E., Covert D.S. and T.V. Larson, Statistical analysis of rainwater data: The ASARCO smelter closure study, presented at the 23rd annual PNWIS-APCA meeting by T.V. Larson, Eugene, OR, Nov., 1986.

Rood, M.J., T.V. Larson, and D.S. Covert, The aerosol thermidograph poster paper presented at the APCA International Specialty Conference on Visibility Protection Research and Policy Aspects by M.J. Rood, Jackson Hole, WY, Sept. 1986.

Vong, R.J., T.V. Larson, W.H. Zoller, D.S. Covert, R.J. Charlson, I.R. Sweet, R.E.†Peterson, J.F. O'Loughlin, and M.N. Stevenson, Rainwater source-receptor

relationships near an isolated sulfur dioxide emission source, presented at the American Chemical Society meeting by R.J.†Vong, New York City, April, 1986.

Larson, T.V., Measurements of Fog Water Chemistry and Modeling of its Respiratory Fate, presented at a special seminar at the Department of Environmental Health Sciences at Johns Hopkins University by T.V. Larson, December 16, 1987.

Basabe, T., T.V. Larson, and R. Edmonds, Fogwater Chemistry and Ozone Measurements in the Washington Cascades, presented at the Pacific Northwest International Section of the Air Pollution Control Association Annual Meeting by T.†Basabe, Seattle, WA, Nov. 8-10, 1987.

Peterson, R.E., T.V. Larson, and R.J. Vong, The Influence of a Copper Smelter on Soluble and Insoluble Metals in Rainwater, presented at the Pacific Northwest International Section of the Air Pollution Control Association Annual Meeting by R.E.†Peterson, Seattle, WA, Nov. 8-10, 1987.

Rood, M.J., D.S. Covert, and T.V. Larson, Comparison of ambient aerosol deliquescence humidity measurements and their thermodynamic prediction, presented at the American Association for Aerosol Research National Meeting by M.J.†Rood, Seattle, WA, Sept. 1987.

Larson, T.V., Role of the clean air science advisory committee/peer review, presented at the APCA International Specialty Conference on Regulatory Approaches for Control of Air Pollutants by T.V. Larson, Atlanta, GA, Feb., 1987.

Larson, T.V., Chemical Fingerprinting of Airborne Particles, presented at Johns Hopkins Environmental Health Sciences Center by T.V. Larson, Dec., 1988.

Kalman, D. T.V. Larson, S.Z. Wang, and G. Nothstein, Contribution of Wood Combustion to PAH Levels in Ambient Air, presented at the PNWIS/APCA Meeting by D. Kalman, Whistler, B.C., Nov 9-11, 1988.

Larson, T.V., S.Z. Wang, D. Kalman, and Nothstein, The use of PAH concentrations to apportion airborne particle mass, presented at the PNWIS/APCA Meeting by T.V.†Larson, Whistler, B.C., Nov 9-11, 1988.

Larson, T.V., Exposure to Wood Smoke: Studies in the Seattle Area, presented at Symposium on the Health Concerns of Wood Smoke sponsored by the Klamath County Dept. of Health Services by T.V. Larson, Klamath Falls, OR, Oct., 1988.

Larson, T.V., Acid Rain and the ASARCO Copper Smelter, presented at the Summer 1988 UW Institute for High School Chemistry Teachers by T.V. Larson, August, 1988.

Larson, T.V., Atmospheric Exposure to Wood Smoke, presented at the Health Effects

of Wood Smoke Regional Conference by T.V. Larson, Seattle, WA, Jan. 20, 1988.

Larson, T.V., S. Hanley, T.L. Anderson, and J. Q. Koenig, An examination of the factors influencing the mitigating effects of oral ammonia on acid exposure in asthmatic adolescents, presented at the Acidic Aerosols Symposium at the ACS National Meeting by T.V. Larson, Miami, Sept. 1989.

Larson, T.V., Studies of Wintertime Smoke in Residential Neighborhoods, presented to the Dept. of Environmental Health by T.R. Larson, March 8, 1989.

Larson, T.V., Atmospheric Considerations of Odor Control, presented at the 11th Annual Washington Water/Wastewater Operations Workshop by T.V. Larson, Everett, WA, March 21-24, 1989.

Larson, T.V., Winter time smoke in residential neighborhoods, presented at the International Speciality Conference on Combustion and the Environment (Indoor and Outdoor Air Impacts) sponsored by the Air and Waste Management Association by T.V.†Larson, Seattle, WA, March 8-10, 1989.

Larson, T.V., Indoor and outdoor particulate fingerprints, presented at the International Speciality Conference on Combustion and the Environment (Indoor and Outdoor Air Impacts), sponsored by the Air and Waste Management Associate by T.V. Larson, Seattle, WA, March 8-10, 1989.

Hegg, D.A. and T.V. Larson, A Modeling Study of Some Effects of Cloud Microphysics on Cloud Chemistry, presented at the symposium on the Role of Clouds in Atmospheric Chemistry and Global Climate, American Meteorological Society by D.A. Hegg, †Jan 29-Feb 3, 1989.

Maykut, N. and T.V. Larson, Seattle Environmental Priorities Project: Outdoor Air Quality, presented at the PNWIS/AWMA Annual Meeting by N. Maykut, Kalispell, Montana, Nov., 1991.

Hanley, Q.S., O. Bernsterin, J.Q. Koenig, D.S. Covert, and T.V. Larson, Theoretical Study of Externally Mixed Acid Sulfate Aerosol Production upon Inhalation of Polydisperse Sulfuric Acid Aerosol presented at the American Association for Aerosol Research 1991 Annual Meeting by Q.S. Hanley, Traverse City, MI, October, 1991.

Hanley, Q.S., J.Q. Koenig, T.V. Larson, G. van Belle, V. Rebolledo, D. Covert, and W.E. Pierson, The Relationship between Pulmonary Function and Sulfuric Acid Exposure presented at the American Association for Aerosol Research 1991 Annual Meeting by Q.S. Hanley, Traverse City, MI, October, 1991.

Larson, T. Biological Factors that Modulate Acid Sulfate Aerosols, presented at the EPRI Workshop on Acid Sulfate Aerosols: Reconciling Laboratory Studies and Ambient Exposures by T. Larson, Burlington, Vermont, August, 1991.

Larson, T., Regional Impact of Woodstoves Upon Seattle Air Quality, presented at the PNWIS/AWMA Transboundary Air Quality/Growth Management Symposium by T.†Larson, Bellingham, WA, February, 1991.

Larson, T., Sources of Particulate Matter in a Residential Area, presented at the National Weather Service Workshop on Pacific Northwest Weather by T. Larson, Seattle, WA, January, 1991.

Griffin, L. and T. Larson, Sulfur Dioxide Removal in Flue Gas from a Steam Boiler Using a Wet-Dry Scrubber and Fabric Filter presented at the PNWIS Annual Meeting by L. Griffin, Bellevue, WA, November, 1992.

Anuszewski, J., T.V. Larson, and J. Koenig, Simultaneous Indoor and Outdoor Light Scattering Measurements at Nine Homes Using a Portable Nephelometer presented at the PNWIS Annual Meeting by J. Anuszewski, Bellevue, WA, November, 1992.

Yuen, P. and T. Larson, Receptor Modeling of Annual Average PM_{2.5} at a Residential Site in Seattle, WA presented at the PNWIS Annual Meeting by T. Larson, Bellevue, WA, November, 1992.

Moseholm, L. and T. Larson, The Quail Roost Aerosol Composition Data Set Analyzed by Neural Networks, presented at the PNWIS Annual Meeting by L.†Moseholm, Bellevue, WA, November, 1992.

Frosig, A. and T. Larson, (poster paper) Design and testing of an Airway Mass Deposit Meter, presented at the American Association for Aerosol Research Annual Meeting by A. Frosig, San Francisco, CA, October 12-16, 1992.

Moseholm, L. and T. Larson, (poster paper) The Quail Roost Aerosol Composition Data Set Analyzed by Neural Networks, presented at the American Association for Aerosol Research Annual Meeting by L. Moseholm, San Francisco, CA, October 12-16, 1992.

Anuszewski, J. and T. Larson, Simultaneous Indoor and Outdoor Light Scattering Measurements at Two Homes Using a Portable Nephelometer, presented at the American Association for Aerosol Research Annual Meeting by J. Anuszewski and T.†Larson, San Francisco, CA, October 12-16, 1992.

Hanley, Q., T. Larson, and J. Koenig, Neutralization of Acidic Aerosols and the Design of Clinical Experiments, presented at the American Association for Aerosol Research Annual Meeting by Q. Hanley, San Francisco, CA, October 12-16, 1992.

Wang, S. and T. Larson, Ambient Error Weighted Partial Least Squares Regression- A New Approach to Receptor Models, presented at Session 4A of the 5th International Conference on Chemometrics in Analytical Chemistry by S. Wang, Montreal, Quebec, Canada, July 14-17, 1992.

Slater, D. and T. Larson, Changes in Nighttime Fine Particle Concentrations in a Residential Community Associated with Wood Burning Control Strategies, presented at the PNWIS Annual Meeting by T. Larson, Eugene, OR, 1994.

Moseholm, L., T. Larson, and J. Anuszewski, Time Series Model of Indoor Residential Fine Particle Levels, presented at the PNWIS Annual Meeting by T. Larson, Eugene, OR, 1994.

Larson, T., C. Cain, L. Moseholm, and D. Slater, Local Background Levels of Carbon Monoxide in Urban Areas, presented at the PNWIS Annual Meeting by T. Larson, Eugene, OR, 1994.

Norris, G. and T. Larson, Spatial Distribution of NO₂ and NO_x in Puget Sound, WA on Two Summer Days, presented at the PNWIS Annual Meeting by G. Norris, Eugene, OR, 1994.

Larson, T., Sources of Particulate Air Pollution in Puget Sound & Spokane, presented at the UW Conference entitled: Particulate Air Pollution: Evaluating the Costs by T. Larson, Seattle, WA., January, 1994.

Koenig, J., T.V. Larson, J. Schwartz, and B. Hefflin, A Comparison of PM₁₀ from Combustion or Natural Sources, presented at Conference entitled : Particulate Air Pollution: Associations with, and Mechanisms for, Human Mortality and Morbidity by J. Koenig, UCI, Irvine, CA, January, 1994.

Koenig, J.Q., L. Sheppard, G. Norris, T.V. Larson, R. Edgar and C. Claiborn, Associations between asthma and particulate matter in Spokane, WA, presented at the Annual PNWIS Meeting by J.Q. Koenig, Spokane, Nov, 1995.

Norris, G.A., S. Erdal, and T. Larson, Atmospheric Observation of Nitrogen Dioxide and Nox in Seattle, Washington, presented at the Annual PNWIS Meeting by S. Erdal, Spokane, Nov, 1995.

Sullivan, W., J. Koenig, T. Larson, G. Norris, H. Westberg, and C. Claiborn, Size and Chemical Characterization of Airborne Particulate Matter in Spokane, WA, presented at the PNWIS Annual Meeting by W. Sullivan, Seattle, WA, December, 1996.

Larson, T, Ground Level Mobile Monitoring as a Tool For Air Monitoring Network Design presented at the PNWIS Annual Meeting by T. Larson, Seattle, WA, December, 1996.

Booth, D. J. Koenig, T. Larson, C. Betchley and T. McRorie, A Panel Study of Children Exposed to Woodsmoke, presented at the PNWIS Annual Meeting by D. Booth, Seattle, WA, December, 1996.

Haller, L., W. Sullivan, C.S. Claiborn, H. Westberg, J. Koenig, T. Larson, L. Sheppard, G.†Norris and R. Edgar, Size and Chemical Characterization of Particulate Matter in Spokane, Paper 6D-1, presented at the 15th Annual Conference of the American Association for Aerosol Research by C.S. Caliborn, Orlando, FL., October 14-18, 1996.

Claiborn, C. and T.V. Larson, Effects of Relative Humidity on Particle Resuspension Rates, presented at the 5th International Conference on Atmospheric Sciences and Applications to Air Quality by T.V. Larson, University of Washington, Seattle, Washington USA, June 18-20, 1996

Norris, G., J. Koenig, C. Claiborn, T. Larson, L. Sheppard and R. Edgar, Chemical and Physical Composition of Particulate Matter and Health Effects in an Arid Western U.S. City, presented at the International Symposium on Health Effects of Particulate Matter in Ambient Air by G. Norris, Prague, Czech, April 23-25, 1997.

Claiborn, C., W. Sullivan, D. Finn, H. Westberg, T. Larson, J. Koenig, and G. Norris, Chemical Characterization of Fine and Coarse Particulate Matter in Spokane, WA, presented at the International Symposium on Health Effects of Particulate Matter in Ambient Air by C.†Claiborn, Prague, Czech, April 23-25, 1997.

Claiborn, C., W. Sullivan, D. Finn, H. Westberg, G. Norris, T. Larson, and J. Koenig, Results from the Spokane Health Effects Study: Chemical and size characterization of atmospheric particulate matter in Spokane, WA, presented at the Annual Meeting of the American Association for Atmospheric Research by C. Claiborn, Denver, CO, June, 1997.

Larson, T., J. Koenig, G. Norris, C. Claiborn, W. Sullivan, T. Strand, and D. Finn, Smoke, Dust and Haze Revisited, presented at the 37th Annual PNWIS Meeting by T. Larson, Vancouver, B.C., Dec, 1997.

YoungPong, N., J. Koenig, T. Larson, G. Norris, and L. Sheppard, Does air pollution exacerbate asthma in the central area of Seattle?, presented at the 37th Annual PNWIS Meeting by N. YoungPong, Vancouver, B.C., Dec, 1997.

Larson, T. ,A.P. Waggoner, and N. Maykut, A Program for Analysis of Urban Visibility Measurements, presented at the 37th Annual PNWIS Meeting by T.Larson, Vancouver, B.C., Dec, 1997.

Sheppard, L., D. Levy, G. Norris, T. Larson, and J. Koenig, Effect of ambient air pollution on Non-Elderly Asthma Hospital Admissions in Seattle, Washington, 1987-1994, presented at the 37th Annual PNWIS Meeting by L. Sheppard, Vancouver, B.C., Dec, 1997.

Norris, G., C. Bruckner, D. Urry, N. YoungPong, T. Larson, and J. Mitchell, Diesel Bus exhaust exposure to a bicyclist, presented at the 37th Annual PNWIS Meeting, Vancouver, B.C. by D. Urry, Dec, 1997.

Koenig, J., C. Claiborn, G. Norris, T. Larson, D. Finn, T. Strand, Fine Particle Compositional Variability and Emergency Room Visits for Asthma, resented at the Annual Meeting of the American Association for Atmospheric Research, Cincinnati, Ohio, June, 1998.

Norris, G., J. Koenig, L. Sheppard, T. Larson, D. Levy, and C. Claiborn, Air stagnation and increased exacerbation of asthma, presented at the American Thoracic Society Annual Meeting by G. Norris, Chicago, Illinois, 1998 (Abstract in press)

Larson, T. "Woodsmoke: Formation, Composition, Spatial Distribution and Airborne Concentrations" Presented at the 1998 Annual Meeting of the Society of Toxicology, Seattle, WA, February, 1998.

Claiborn, C.S., D. Finn, B. Rumberg, T.V. Larson, and J.Q. Koenig Chemical Characterization of Fine Particulate Air Pollution in Spokane, Washington, Presented at Session 3AS at the PM2000 meeting in Charleston, SC. January, 2000, pp 94-97

Claiborn, C., Finn, D., Larson, T., Liu, S.J., Gundel, L, Indoor & Outdoor Particulate Carbon Measurements for the NW PM/Health Effects Center Presented at the 40th Annual PNWIS Meeting, Victoria, B.C., November, 2000

Kim, E., Larson, T. Claiborn, C. and Sheppard, L. Source Apportionment of PM_{2.5} in Spokane, Wa. by Positive Matrix Factorization Presented at the 40th Annual PNWIS Meeting, Victoria, B.C., November, 2000

Larson, T., Allen, R., and Liu, L.J. Indoor and Outdoor Contributions to Indoor Light Scattering Coefficient at Ten Residences in Seattle, WA Presented at the 40th Annual PNWIS Meeting, Victoria, B.C., November, 2000

Lumley, T., Liu, L.J., and Larson, T. Spatial distribution of PM in Seattle, WA. Presented at the International Society of Exposure Analysis ISEA 2000 Conference, Monterey Peninsula, California October 24-27, 2000

Larson, T., Allen, R., and Liu, L.J. Indoor and Outdoor Contributions to Indoor Light Scattering Coefficient at Ten Residences in Seattle, WA Presented at the International Society of Exposure Analysis ISEA 2000 Conference, Monterey Peninsula,

California October 24-27, 2000

Sheppard, L., Liu, L.J., Larson, T., Ishikawa, N. Application of the Random Component Superposition Model to PM_{2.5} Exposures in Seattle, Washington, Presented at the International Society of Exposure Analysis ISEA 2000 Conference, Monterey Peninsula, California October 24-27, 2000

Liu, L.J., Slaughter, C.; Larson, T. Evaluation of Two Types of Light Scattering Devices and Impactors for Measuring PM_{2.5} in Indoor, Outdoor, and Personal Environments Presented at the Annual Meeting of the American Association for Aerosol Research, Portland, Oregon, October, 2001.

Liu, L.-J., Kalman, D., Kaufman, J., Koenig, J., Larson, T., Sheppard, L., Lumley, T. Exposure Assessment of Particulate Matter and Co-Pollutants For Compromised and Healthy Elderly Adults in Seattle, WA (1999-2000 Presented at the Annual Meeting of the American Association for Aerosol Research, Portland, Oregon, October, 2001

Pang, Y., Claiborn, C., Gundel, L and Larson, T. Development and Evaluation of A Novel Denuder Inlet Sampler Presented at the Annual Meeting of the American Association for Aerosol Research, Portland, Oregon, October, 2001.

Claiborn, C., Pang, Y., Gundel, L., Larson, T. and Liu, S.J. Comparison of Indoor, Outdoor and Personal Fine Particulate Organic and Elemental Carbon Measurements in Seattle, Presented at the Annual Meeting of the American Association for Aerosol Research, Portland, Oregon, October, 2001.

Larson, T., Allen, R. and Liu, S.J. Indoor and Outdoor Contributions to Indoor Light Scattering Coefficient at 54 Residences in Seattle, Wa. Presented at the Annual Meeting of the American Association for Aerosol Research, Portland, Oregon, October, 2001.

Maykut, N., Lewtas, J. and Larson, T. Source Identification Comparison between Chemical Mass Balance and Positive Matrix Factorization using Seattle IMPROVE Data Presented at the Annual Meeting of the American Association for Aerosol Research, Portland, Oregon, October, 2001.

ISEA Vancouver:

The fine particulate organic carbon measurement artifact and its implications for exposure assessment Candis Claiborn, Yanbo Pang, Dennis Finn, Lara Gundel, Tim Larson, and Sally Liu presented at the Annual Meeting of the International Society for Exposure Assessment, Vancouver, B.C., August, 2002

Spatial and Temporal Variation in Fine Particulate Concentrations in Seattle Thomas Lumley, Jon Schildcrout, L-J Sally Liu, Tim Larson presented at the Annual Meeting of the International Society for Exposure Assessment, Vancouver, B.C., August, 2002

The use of light scattering data to estimate the contribution of indoor- and outdoor-generated particles to indoor air Ryan Allen, Tim Larson, Lance Wallace, L.-J. Sally Liu presented at the Annual Meeting of the International Society for Exposure Assessment, Vancouver, B.C., August, 2002

Indoor-Outdoor-Personal relationships of selected fine particle trace elements in Seattle, WA Tim Larson; L.-J. Sally Liu, Ryan Allen; Joellen Lewtas, Lance Wallace presented at the Annual Meeting of the International Society for Exposure Assessment, Vancouver, B.C., August, 2002

Attribution of particle exposure and risk to combustion source emissions based on personal PAH exposure and urinary metabolites Joellen Lewtas, Steven Myers, Naydene Maykut, Chris Simpson, David Kalman, Sally Liu, and Tim Larson presented at the Annual Meeting of the International Society for Exposure Assessment, Vancouver, B.C., August, 2002

Exposure Assessment of Forest Fire Smoke using urinary biomarker analysis and real-time air samples in susceptible adults Christopher Simpson, Timothy Gould, Nicky Josephs, Candis Claiborn, Tim Larson, Dave Kalman, and L.-J. Sally Liu presented at the Annual Meeting of the International Society for Exposure Assessment, Vancouver, B.C., August, 2002

Further Analysis of the Associations Between Air Pollution Source Factors and Mortality in a Small Area Near the Monitoring Site in Phoenix, 1995-1997 Mar, Koenig, Larson, Wilson 4th Colloquium AAAR OR02-05

Aerosol Number-Size distributions at an Urban location: Long term data from Seattle, WA. Covert, Elleman, Schreduder, Lumley, Larson, Kim 4th Colloquium AAAR P10-11

The use of exhaled nitric oxide as a non-invasive measure of inflammation of older subjects with cardiorespiratory disease Jansen, Mar, Sullivan, Kaufman, Trenga, Larson, Liu, Koenig 4th Colloquium AAAR p12-03

Source Apportionment of PM_{2.5} in Seattle, WA Urban Improve Site: Comparison of Three Receptor Models and Source Profiles Lewtas, Maykut, Kim, Larson 4th Colloquium AAAR p13-10

Source Apportionment of Personal Exposure to PM_{2.5} Using the Chemical Mass Balance Model Combined with PMF Derived Source Profiles Larson, Liu, Gould, Simpson, Claiborn 4th Colloquium AAAR P13-11

Estimating Outdoor Contributions to Indoor and Personal Particulate Air Exposures Liu, Larson, Sheppard 4th Colloquium AAAR OR15-02, P15-31

Hourly Personal Exposure to Indoor and Outdoor Generated Particles Among Sensitive Populations in Seattle Allen, Larson, Liu 4th Colloquium AAAR p15-12

Professional Licenses

None

Professional Society Membership

Air and Waste Management Association
 American Association for Aerosol Research
 International Society of Exposure Analysis

Professional Society and Other Service

Chair of the session entitled “Acidic Deposition: Sources, Effects, Controls” at the National AIChE Meeting, Environmental Division, Washington, D.C., Nov. 1983.

Chair of the session entitled “Environmental Effects of Smelter Closure” at the 23rd annual PNWIS-APCA Meeting, Eugene, Oregon, Nov. 1988.

Chair of the session entitled "Health effects of woodsmoke" (session 136) at the 84th Annual Meeting of the Air and Waste Management Association, Vancouver, B.C., June, 1991.

Chair of the session entitled "Scientific Studies" at the 27st annual PNWIS-APCA Meeting, Bellingham, WA, Nov. 1992.

Chair of the session entitled "Air Quality Modeling" at the 27st annual PNWIS-APCA Meeting, Bellingham, WA, Nov. 1992.

Chair of the session entitled “PM10 Revisited: Health, Sampling & Exposure Issues” Session 65 at the 85th Annual Meeting of the Air and Waste Management Association, Kansas City, MO., June, 1992.

Chair of the session entitled “PM10 Measurements and Assessments” Session 13 at the AWMA Specialty Conference on PM10 Standards and Non-Traditional Particulate Source Controls, Phoenix, AZ., Jan, 1992.

Chair of the session entitled "Health Effects" at the 30th annual PNWIS-APCA Meeting, Spokane, WA, Nov, 1995.

Chair of the session entitled "Air Monitoring" at the 31st annual PNWIS-APCA Meeting, Seattle, WA, Dec, 1996.

Member of the Board of Directors of the Pacific Northwest International Section of the AWMA

Member of Technical Advisory Committee on Environmental Priorities for the City of Seattle

Member of Advisory Committee to Puget Sound Water Quality Authority for Atmospheric deposition studies.

Member of EPA's Advisory Council on Clean Air Compliance Analysis

Member of EPA's Indoor Air Quality/Total Human Exposure Committee

Member of EPA's review panel for the Federal Reference Methods for the new Fine Particle Standard

Advisor to EPA's Scientific and Technological Achievement Awards Program

Member of EPA's Indoor Air Quality and Total Human Exposure Science Advisory Committee

Consultant to EPA's Clean Air Science Advisory Committee

Member EPA Integrated Air Cancer Project Advisory Committee

Member of Science Review Panel of the National Hazardous Substances Data Bank of the National Library of Medicine

Member of Advisory Committee to California Air Resources Board for review of UCI chronic exposure study

Contributor to the National Academy of Science's Exposure Assessment Panel on Acid Aerosols.

Member of EPA's Health and Ecological Effects Subcommittee of the Science Advisory Board

Member of EPA's Air Quality Modeling Subcommittee of the Science Advisory Board

Clean Air Science Advisory Committee, EPA

External Science Advisory Committee, University of Rochester PM Research Center

Reviews Made in 2009-2010

Journal or Other	Number
<i>Atmospheric Environment</i>	2
<i>Environmental Science & Technology</i>	1
<i>Journal of Exposure Analysis and Environmental Epidemiology</i>	2
<i>Science of the Total Environment</i>	1

Awards and Honors

Air & Waste Management Association, Pacific Northwest Division, Special Recognition Award for "Advancing the State of Wood Smoke Monitoring", 1995.

Air & Waste Management Association, Pacific Northwest Division, "Lab Coat" Award for Outstanding Experimental Research in the field of air pollution, 1999.

EPA Region X, for outstanding work related in the field of air toxics, December, 2003

Teaching (courses taught at the University of Washington)

Course	Quarter	No. of Students	Course Title	Instructor's Avg of Items 1-4
CEWA560	87/88		Topics in Environmental Health	
CEWA466	87/88		Air Quality Modeling	3.7
CEWA350	87/88		Environmental Engineering - Water and Air Quality	
CEWA485	87/88		Sampling Techniques for Water Quality	
CIVE342	87/88		Fluid Mechanics	3.23
CEWA563	87/88		Air Resources Management	
CEWA560	88/89		Topics in Environmental Health	
CEWA466	W89	9	Air Quality Modeling	3.71
CEWA467	88/89		Air Pollution Source Testing and Equipment Evaluation	
CEWA350	88/89		Environmental Engineering - Water and Air Quality	
CIVE342	Sp89	29	Fluid Mechanics	3.0
CEWA563	A89	10	Air Resources Management	4.1
CEWA466	W90	25	Air Quality Modeling	3.5
CEWA467	Sp90		Air Pollution Source Testing and Equipment Evaluation	
CEWA566	Sp90		Control of Gaseous Air Pollutants	
CEWA563	A90		Air Resources Management	
CEWA466	W91	20	Air Quality Modeling	3.78
CEWA467	Sp91		Air Pollution Source Testing and Equipment Evaluation	
CEWA567	Sp91		Control of Particulate Air Pollutants	
CEWA563	A91		Air Resources Management	
CEWA466	W92	20	Air Quality Modeling	4.25
CEWA467	Sp92		Air Pollution Source Testing and Equipment Evaluation	
CEWA562	W92		Hazardous Air Pollution	
CEWA563	A93		Air Resources Management	
CIVE480	W93	20	Air Quality Modelling	3.83
CIVE493	Sp94	20	Air Pollution Source Testing and Equipment Evaluation	4.02
CEWA563	A95	8	Air Resources Management	4.80
CEWA520	W96		Seminar	
CIVE480	W96	8	Air Quality Modelling	4.60
CIVE493	Sp96	12	Air Pollution Source Testing and Equipment Evaluation	4.40
CEWA567	Sp96		Control of Particulate Air Pollutants	

Course	Quarter	No. of Students	Course Title	Instructor's Avg of Items 1-4
CEWA563	A96		Air Resources Management	
CIVE480	W97	10	Air Quality Modelling	4.30
ENGR210	W97	105	Engineering Statics	3.10
CIVE493	Sp97		Air Pollution Source Testing and Equipment Evaluation	
CEWA567	Sp97	6	Control of Particulate Air Pollutants	4.00
CEWA563	A98		Air Quality Management	
CIVE342	A97	66	Fluid Mechanics	3.07
CIVE480	W98	7	Air Quality Modeling	4.23
CIVE493	Sp98		Air Pollution Source Testing and Equipment Evaluation	
CIVE342	A98	62	Fluid Mechanics	3.30
CEWA563	A98	8	Air Quality Management	4.83
CIVE480	W99	6	Air Quality Modeling	
CIVE493	Sp99	21	Air Pollution Source Testing and Equipment Evaluation	3.94
CIVE342	A99	62	Fluid Mechanics	3.44
CEWA563	W00	6	Air Quality Management	3.70
CIVE480	W00	9	Air Quality Modeling	3.80
CIVE493	S00	9	Air Pollution Source Testing and Equipment Evaluation	4.14
CIVE342	A00	74	Fluid Mechanics	3.82
CIVE480	W01	5	Air Quality Modeling	4.64
CIVE493	S01	12	Air Pollution Source Testing and Equipment Evaluation	4.42
CEE557	A01	5	Air Quality Management	4.61
CEE480	W02	11	Air Quality Modeling	4.31
CEE493	S02	9	Air Pollution Source Testing and Equipment Evaluation	4.70
CEE480	A02	9	Air Quality Modeling	4.6
CEE342	W03	92	Fluid Mechanics	3.4
CEE557	S03	10	Air Quality Management	4.1
CEE557	A03	6	Air Quality Management	4.6
CEE342	W04	74	Fluid Mechanics	3.7
CEE480	S04	15	Air Quality Modeling	4.13
CEE493	S04	19	Air Pollution Source Testing and Equipment Evaluation	4.56
CEE557	A05	3	Air Quality Management	4.0
CEE480	W06	7	Air Quality Modeling	4.0
CEE493	W06	5	Air Pollution Source Testing and Equipment Evaluation	4.2
CEE342	A06	59	Fluid Mechanics	3.3

CEE557	W07	7	Air Quality Management	3.7
CEE480	S07	13	Air Quality Modeling	4.3
	A07-S08		Acting Chair	
CEE480	A08	13	Air Quality Modeling	4.3
CEE342	W09	59	Fluid Mechanics	3.5
CEE493	S09	6	Air Pollution Source Testing and Equipment Evaluation	4.3
	A09	-	Acting Chair	
CEE480	W10	33	Air Quality Modeling	4.1
CEE599	W10	18	Renewable Energy*	4.8
	S10		bought out due to medical issues	
CEE557	A10	7	Air Quality Management	4.0
CEE599	W11	15	Renewable Energy	4.5
CEE360	S11	125	Sustainability in CE**	3.5
CEE480	S11	22	Air Quality Modeling	3.5
CEE557	A11	7	Air Quality Management	3.9
CEE588	W12	15	Renewable Energy*	4.4
CEE480	W12	19	Air Quality Modeling	4.0
CEE490	S12	13	Air Pollution Control	3.8
CEE588	A12	18	Renewable Energy*	4.2
CEE480	W13	22	Air Quality Modeling	4.3
CEE557	S13	5	Air Quality Management	4.7
CEE490	S13	38	Air Pollution Control	4.3
CEE588	A13	20	Renewable Energy*	4.2
CEE480	W14	12	Air Quality Modeling	4.0
CEE557	S14	5	Air Quality Management	4.7
CEE490	S14	21	Air Pollution Control	4.1
CEE498	S14	11	Energy & Transportation*	4.8
CEE588	A14	20	Renewable Energy*	4.6
CEE480	W15	14	Air Quality Modeling	4.9
CEE557	S15	7	Air Quality Management	4.2
CEE490	S15	28	Air Pollution Control	4.1

*co-taught with Joe Mahoney

**co-taught with Steve Muench and Joe Mahoney

Short Courses, Workshops, and Other Educational Programs

Assessment of Exposures to Fine Atmospheric Particulate: Challenges and Progress, May 2001 Sponsored by the Department of Environmental Health Continuing Education Program

One day workshop on Receptor Modeling for Air Quality Management September, 2002,
Victoria, B.C., Sponsored by B.C. Ministry of Water, Land and Air Protection

Chaired Doctoral Degrees

1. Mark Rood, Ph.D., 1985, "On the Metastability of Atmospheric Aerosols."
2. Shi-Zoom Wang, PhD., 1991, "Generation and Interpretation of Airborne Particle Source Apportionment Models with Application to Both a Simple and a Moderately Complex Urban Airshed"
3. Po-Fat Yuen, PhD, 1995, "Modeling Heterogeneous Chemistry in Clouds"
4. Booth, Derrick, W. Sr., PhD, 1998, "An Evaluation of Industrial Ventilation Troubleshooting Methods"
5. Norris, Gary, PhD, 1998, "Air Pollution and Exacerbation of Asthma in an Arid, Western U.S. City"
6. Bond, Tami, PhD, 1999, "Radiative Effects of Light-Absorbing Aerosols Emitted from Fossil-Fuel Combustion" (Special Individual PhD from the Graduate School)
7. Kim, Eugene, PhD, 2000 "Measurement and Modeling of Large Particles in the Atmosphere"
8. Slater, Dan, PhD, 2007 "Impacts of Cloud Processing on Aerosol Properties"
9. Wilton, Darren PhD, 2011 "Modelling Nitrogen Oxides in Los Angeles Using a Hybrid Dispersion/Land Use Regression Model".
10. Alexander, Donee PhD, 2012 "Integrated Evaluation of Smoke Exposure, Health Impacts and User Satisfaction of an Improved Cookstove Intervention"
11. Ballinger, Marcel PhD, 2013 "Evaluation of Emissions from R&D Facilities Using Stack Measurements?"
12. Sturtz, Tim PhD, 2013 "Constrained Positive Matrix Factorization: Elemental Ratios, Spatial Distinction and Chemical Transport Model Source Contributions"

Chaired Master Degrees

1. Gail Taylor, M.S., 1981 "Theoretical and Experimental Investigation of an Ammonium Nitrate Selective Diffusion Stripper."
2. Cecilia Williams, M.S., 1983, "Receptor Modelling of Airborne Lead in Southwest New Mexico."
3. David Schutt, M.S.E., 1984, "Nitric Acid and Ammonia in the Ambient Air and in the Plume from a Coal-Fired Power Plant."

4. Gerald Pade, M.S., 1985, "Design and Calibration of a High Volume Fogwater Collector."
5. Wayne Grotheer, M.S.C.E. Non-Thesis, 1985, "Particulate Impacts form Residential Wood Combustion in the Methow Valley."
6. Jae Ko, M.S.C.E., 1986, "Precipitation Chemistry of Selected Storm Events in the Western Washington Cascades."
7. Lars Moseholm, M.S.C.E., 1986, "Analysis of Variance Components for pH, Excess Sulfate, and Nitrate in Western Washington Rainwater."
8. Shu-Hwei Fang, M.S., 1986, "Measurements and Modeling of a Mixed Electrolytic Solutions Including Sodium, Ammonium, Nitrate and Sulfate Ions."
9. Debra Payton, M.S., 1988, "Modeling of Rainwater Composition Downwind of a Copper Smelter."
10. Kim Scattarella, M.S.E., 1988, "Measurement and Modelling of Lead in Rainwater Near a Copper Smelter."
11. Wen-Ling Chang, M.S.E., 1989, "Characterization of Cloud and Fog Water Chemistry in the Mountains of Western Washington."
12. Robin Bennett, M.S., 1990, "A Survey of Airborne Particulate Matter in King, Kitsap, Pierce and Snohomish Counties during the Winter of 1988-1989."
13. Svea Bjorkstam, M.S., 1990, "Estimating Toxic Air Emissions from a Municipal Solid Waste Landfill."
14. Anita Lindell, M.S.E., 1990, "Acidity in Particles from Residential Wood Burning."
15. Wen Wei, M.S., Non-Thesis, 1990, "Developing Interactive Air Quality Model with Modern Programming Techniques."
16. Dan Slater, M.S.E., 1991, "Air Pollution and Emergency Room Visits for Asthma"
17. Julie Hall, M.S.E., 1991 "Fugitive Emissions from a Municipal Landfill with Active and Passive Gas Collection"
18. Melissa McAfee, M.S., 1991, "Development of a Liquid Sorbent Passive Sampler for Organic Vapors"
19. Mark Visconty, MSE, 1993, "Predicting Particulate Pollution Levels Using Neural Networks"

20. Leif Griffin, MSE, 1993, "Control of Sulfur Dioxide in Flue Gas Using a Wet Dry Scrubber and Fabric Filter"
21. Dave Slater, MSE, 1993, "Design, Construction and Testing of a Relatively Low Cost, Vacuum-Based Carbon Monoxide Air Sampler"
22. Jacek Anuszewski, MSE, 1993, "Simultaneous Indoor and Outdoor Particle Light-Scattering Measurements at Nine Homes Using a Portable Nephelometer"
23. Jeffrey T. Silva, MSCE, 1994, "The Effects of Diesel Transit Buses on Fine Particulate Matter Concentrations Near an Urban Roadway"
24. Shawn A. Osler, MSE, 1994, "Measurement of Waste Combustion By-Products Via GC/FTIR" (Co-Chair)
25. Gary A. Norris, MSE, 1994, "Spatial Concentration Distribution of Nitrogen Dioxide Using Passive and Active Sampling Techniques"
26. Dennis C. Lee, MSCE, 1994, "Considerations for the Use of the Urban Airshed Model in Predicting CO Concentrations in North Seattle"
27. Derrick W. Booth, MS, 1994, "Indoor Air Quality: A Case Study"
28. Cyra Cain, MS, 1994, "Simplified Modeling Technique Using Wind Speed to Predict Urban Carbon Monoxide Concentrations".
29. Christine Morris, MSE, 1994, "Seattle Visibility Photographic Data Analysis Methods"
30. Dirk Apgar, MSE, 1994, "A System for the Study of Humidity Effects on Light Scattering by Aerosols"
31. James Chae, MSCE, 1995, "A Trip-Based Method for Estimating Mobile Emission in Seattle, Washington"
32. William Dunn, MSE, 1995, "A system for Hazardous Waste Management at the Boeing Everett Facility" (non-thesis paper)
33. Young-Pong, Natalie, MSE, 1997, "Does Air Pollution Aggravate Childhood Asthma in Seattle?"
34. Eugene Kim, MSE, 1998, "Size-Resolved Particle Deposition Measurements: Method Development and Wind Tunnel Studies"
35. Hudson, Jade, MSE, 1999, "A Compliance Strategy Applied to the Risk Management and Process Safety Management Programs for Aerospace Metal Treatment"

Facilities” (non-thesis paper).

36. Urry, William Douglas, MSE, 1999, “Sea-Tac Airport Spatial Nitrogen Dioxide Study”
37. Wheldon, Nathan MSE, 1999, “A Sensitivity Analysis of the Fugitive Dust Model as Applied to Hazardous Waste Clean-up Activities”
38. Tsai, Ming-Yi, MSE, 1999, “Two dimensional calibration of an FTIR open path inversion algorithm”
39. Huitsing, Gary, MSE, 2000, "Collection Efficiency of a Wet Electrostatic Precipitator at Two Applied Voltages"
40. Allen, Ryan, MS, 2000, "Measurement of Indoor and Outdoor Light Scattering Coefficient in Seattle, WA”
41. Teller, Verna, MS, 2001
42. Ballinger, Marcel, MSE, 2002 “Evaluating Radionuclide Air Emission Stack Sampling Systems"
43. Stewart, Jim, MSCE, 2002
44. Lennington, David, MSE, 2003
45. Nick McEwen, MSE, 2005 “Characterization of Particle Size Distribution of Diluted Diesel Exhaust”
46. Miren Garde-Aranzandi, MSE , 2007 “Methods to Predict the Spatial Distribution of Long-term Average Concentrations of Particular Matter, Sulfur Dioxide, and Nitrogen Dioxide Emitted by Industrial Sources and its Application to the BAQS Study”
47. Ji Hyun Park MSE 2010 “Characterizing the spatial distribution of light scattering coefficient, light absorption coefficient and particle-bound PAHs during the summer and winter in Tacoma, WA”

Other Student Supervision (service on graduate degree committees)

Ph.D. Committees

K. Noone, D. Jaffe (Chem.), J. Johnson (At. Sci.), T. Basabe (Forestry), M. Barth (At. Sci.), V. Novick, J. Wilder, F-L. Cheng, F. Labib, T. Quinn (Chem.), M. Schaff (Memo.25), C. Twohy (At. Sci.), M. Razzaghi, K. Perry (At. Sci.), F. Vagliasindi, A. Bielefeldt, R. Crampton (Env. H.), D. Levy (Epidemiology), B. Chenervet (ME), C-W. Li, R. Sliger (ME), S. Cooper (Forestry), Rob Elleman (At. Sci), Lori Williams (Epidemiology), Katherine Karr (Pediatrics), Chang Fu Wu (Environmental Health), Ming Yi Tsai (Environmental Health), Ryan Allen (Environmental Health), Jorge Jimenez (CEE WSU), Jennifer Shaltanis (CEE-WSU), G. Sandlin (urban planning), Rob Crampton (Env. Health), , Reddy Yatavelli (Atmospheric Sciences), Theran Riedel (Chemistry), Jenna Armstrong (Env Health), Jeralee Anderson (CEE).

M.S. Committees

J. Williamson, A. Williamson, G. Nothstein, K. Fellows, D. Moore, K. Fleneken, N. Ekpoom, E. Larson, J. Williamson, B. Horton, M. Balough, R. Pegnam, M. Sagabe, J. Hohmann, D. Malin (Env. H.), G. Dorf, B. Stevens (Env. H.), P. Hamlin (Env. H.), S. Crawford (Env. H.), T. Washington, C. Dunning, F. Austin, L. Haller (CE, WSU), W. Sullivan (CE, WSU), H. Craig, E. Albright, S. Barham, S. Peterson, A. Hwangbo, B. Katz, C. Fields, Jonathan Lesesne (Env. Health), S. Wong (Env Health), J. Schulte (Env Health), L. Banks (Env Health)

Departmental Service

Graduate Program Coordinator, Department of Civil Engineering 1989 - 1991.
 Department of Environmental Health ERC Advisory Committee
 Undergraduate Education Committee (Dept of Civil Engineering)
 Environmental Chemistry Day Committee for IES
 Strategic Planning Committee (Dept of Civil Engineering)
 Department Promotion and Tenure Committee
 Director of Environmental Program, 2006- present

College Service

Representative on Advisory Board of the U.W. Program on the Environment, 1998-
 Member of the College Promotion and Tenure Council, 2000-2002
 Chair, College Promotion and Tenure Council

University Service

ERC Advisory Committee, Dept. of Env. Health, 1995-98
 Review Committee for Urban Design & Planning PhD Program, 1998
 Review Panel, Royalty Research Fund, 1998-2000
 Review Committee for Biostatistics PhD Program, 2003

Student Service

Community Service

see professional society and other service

National Service

see professional society and other service

All Other Service

see professional society and other service

Consulting Experience

Wilsey and Ham, Inc. for assessment of environmental impact of shopping malls and industrial park traffic on ambient carbon monoxide levels (1976-1977).

Electric Power Research Institute for review of aerosol toxicology program (1979-1980).

URS, Inc. and The Washington Water Power Co. for estimating rain chemistry downwind of proposed Creston Generating Station (1981-1982).

Occidental Chemical Co. for evaluation of visual emissions problem from an oil-fired boiler (1983).

Electric Power Research Institute for report on establishment of research program on the health effects of air pollutant mixtures (1984).

H.D.R., Inc. for analysis of where to locate the exhaust stacks from an odor control system to be added to the Redondo sewage treatment plant (1985).

R.W. Beck for input to proposal for studying Western U.S. rainwater chemistry (1985).

Johns Hopkins University, School of Public Health on generation of artificial fogs (1985).

Parametrix, Inc. for air quality impact analysis of increased haul truck traffic at Cedar Hills landfill (1986).

HDR-CWC, Inc. for air pollution aspects of odor control at the Lakota, Lynnwood and Edmonds sewage treatment plants (1986).

Engineering Plus for design of push/pull head on their high volume surface sampler,

(1987).

Review of Air Quality and Health Effects Risk Assessment of the Proposed Waste-to-Energy Facility for the Seattle Solid Waste Utility (1988).

Asbestos in outdoor air for W.R. Grace (1988).

Teaching dispersion modeling at the International Environmental Engineering Institute during summer (1988).

Woodsmoke impacts of North Ridge Development for Citizens Class Action Suit (1989).

USFS for Participation in Visibility workshop and review of Air Quality Related Values Screening Procedures Document (May 1990).

Puget Sound Air Pollution Control Agency for the siting of air pollution monitoring stations (1990).

Georgia Pacific Corporation for assessment of the rain chemistry in Tacoma (1990).

Regional Citizen's Advisory Council of Valdez, Alaska for review of the Alyeska air quality impacts study (May, 1991).

Seattle University for planning and teaching a part of CEE 343 (Air Pollution Engineering) for a 1 week period (April, 1992).

The EPA for review of the fine particle reference sampling procedure (1995-6)

The EPA for review of exposure assessment methodology (1995).

The EPA for review of the fate and transport modeling of combustor emissions (1995).

Centralia Health Effects Study Advisory Board (1996).

The Bullitt Foundation for advice on the health effects of fine particles (1996).

The Puget Sound Air Pollution Control Agency for advise on visual air quality data analysis and reduction (1996).

The Danish EPA for Artic Air Pollution Review (1998)

EPA Region X for review of Fort Hall Source Apportionment Study (1999)

Air Quality Impact Assessment for Ostrom's Mushroom Farm, Olympia, WA (2001)

Review of air quality impact study at Los Angeles International Airport for L.A. World Airways, 2003

EPA for analysis of IMPROVE and STN data, 2005

EPA for review of PMF receptor model, 2006