

Neil E. Klepeis, Ph.D.

Environmental and Behavioral Health Research & Development

Associate Adjunct Professor, San Diego State University (SDSU), School of Public Health,
SDSU Research Foundation (SDSURF), Center for Behavioral Epidemiology and Community Health (C-BEACH);
and *Principal and Senior Scientist*, Neil Klepeis and Associates

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Research Interests

(current emphasis in bold)

Just-in-Time Adaptive Behavioral-Health Interventions (JITAI's); **Real-Time Sensors and Socio-Environmental Monitoring**; Smart Homes; Mobile Health; Exposure Science; Human Activity Patterns; **Secondhand Tobacco Smoke**; **Secondhand Cannabis Smoke**; Indoor Air Quality; Particulate Matter; Behavioral Risks (Smoking; Physical Activity; Sedentary Behavior); Social Dynamics; Complexity Science; Mathematical Modeling; **Computational Science**; Data Analysis; **Physical Models of Human Behavior and Environmental Quality**; Serious Games

Biographical Goal Statement

Dr. Klepeis aims to leverage his training in physical science, computational science, and environmental engineering science to elucidate principles of behavior science and apply cutting-edge sensing technology for the advancement of human health and well-being. He has bachelor and master's level training in Physical and Theoretical Chemistry with a doctorate in Environmental Health Sciences, and post-doctorate experience and training in Environmental Engineering, Statistics, and Behavioral Health. As part of his research, he has developed scientific software for data analysis, human exposure and indoor air models, and behavior modeling and simulation. He is an expert in real-time monitoring techniques and mathematical modeling, and he has published 47 articles and chapters, including landmark secondhand smoke studies of residential, outdoor, in-vehicle, casino, and multi-unit housing settings. Since 2007, Dr. Klepeis has served as principal investigator and co-investigator on novel research that brings elements of engineering and computer modeling to real-time behavioral health interventions. Dr. Klepeis is well-positioned to synthesize the environmental science and behavioral health fields and, thereby, discover effective and innovative ways to eliminate exposures and health risks through behavior change. A main focus of *Dr. Klepeis' current research is developing and scientifically evaluating simulation models of human behavior & environmental properties for use with just-in-time adaptive interventions (JITAI's) in smart-building settings.*

Education and Training

Post-Doc, Department of Statistics, Stanford University, 2004-2006 (*Paul Switzer, Wayne Ott*); Modeling, Experimental Design and Implementation, Data Analysis; Project: "Quantifying human exposure to secondhand smoke".

Ph.D., Environmental Health Sciences, University of California at Berkeley, 2004 (*William W. Nazaroff*, advisor in Civil and Environmental Engineering); Dissertation: "*Using Computer Simulation to Explore Multi-Compartment Effects and Mitigation Strategies for Exposure to Residential Secondhand Tobacco Smoke.*"

M.S., Chemistry, Stanford University, 1992 (*Wesley D. Allen*, advisor in Quantum Chemistry).

B.A., Chemistry, Colgate University, Magna Cum Laude, 1989 (*Quang Shen*, advisor in Physical Chemistry).

Computational Experience

Since 1986, Dr. Klepeis has developed and applied many different mathematical models, simulation models, and data analysis algorithms associated with scientific research in the fields of Physical Chemistry, Quantum Chemistry, Human Exposure, Indoor Air Quality, Building Science, and Human Behavior. He is well-versed in many programming languages and software tools including FORTRAN, Pascal, BASIC, Perl, Python, C++, C, PHP, Javascript, NetLogo, and R. He has developed analytical libraries for manipulating and processing data, and he has developed Agent-Based Models for human behavior applications. *In his current research, he is developing a graph-based visual framework for the modeling and simulation of behavior and other physical phenomena within NetLogo, R, and other programming environments.*

Research Experience

- Associate Adjunct Professor; 2013-present, San Diego State University (SDSU), Graduate School of Public Health, SDSU Research Foundation (SDSURF), Center for Behavioral Epidemiology and Community Health (C-BEACH). Current Research Projects: *“Smart Homes for Smoking-Related Behavior Change”*; *“Can Smart Home Digital Assistants Manage Real-Time Interventions for Behavioral Risk Factors?”*; *“A High Tech Intervention for Attaining a Smoke-Free Home: Automated Coaching of Real-Time Behavior”*; *“Intervention for Reducing Sedentary Behavior and Increasing Physical Activity in Older Adults”*; *“Integrative Real-Time Enhancements for Multi-Behavior Interventions”*. Co-Investigators: Suzanne Hughes and Melbourne Hovell (C-BEACH; SDSU Research Foundation).
- Senior Research Scientist and Principal, 2011-present, *Neil Klepeis and Associates*. Environmental Health Research and Consulting. Outdoor Tobacco and Multi-Unit Housing Monitoring Studies: Los Angeles County Department of Public Health, Grant sub-award from Centers for Disease Control. Co-Investigators: Rufus Edwards (U. California at Irvine), Marc Weber (Los Angeles County Dept. Public Health). Projects: *“Real-Time Modeling and Simulation of Human Behavior and Environmental Properties”*; *“Adoption, Health Impact and Cost of Smoke-Free Multi-Unit Housing Policies”*; *“Outdoor Tobacco Smoke Monitoring”*.
- Assistant Adjunct Professor; 2007-2013, San Diego State University (SDSU), Graduate School of Public Health, SDSU Research Foundation (SDSURF), Center for Behavioral Epidemiology and Community Health (C-BEACH). Research Projects: *“Real-Time Feedback as a Catalyst for Smoke-Free Homes”* and *“Innovation for Smoke-Free Homes: Project Fresh Air”*; Grants awarded from Tobacco Related Disease Research Program of California (TRDRP) and U.S. National Institutes of Health (NIH) – R01 Grant; Co-Investigators: Suzanne Hughes and Melbourne Hovell (C-BEACH; SDSU Research Foundation).
- Senior Research Affiliate; 2006-2013; Education, Training, and Research Associates (ETR), Scotts Valley, CA, Department of Research; Project: *“Computer Simulation as a Tool in Reducing Secondhand Smoke Exposure”*; Grants Awarded From: Tobacco Related Disease Research Program (TRDRP) and National Institutes of Health (NIH), National Institute on Drug Abuse (NIDA); Co-investigators: Pamela Drake (ETR), Jonathan Winickoff (Harvard University), and Linda Alexander (University of KY).
- Visiting Scholar, 2013-2014; Stanford University, Stanford, CA, Department of Civil and Environmental Engineering.
- Consulting Assistant Professor; 2006-2013; Stanford University, Stanford, CA, Department of Civil and Environmental Engineering; Projects: *“Human Exposure Analysis for Pollutants from Secondhand Tobacco Smoke”*; *“Exposure to Secondhand Smoke: The Effects of Proximity”*; and *“Developing Methods for Measuring SHS in Multi-Unit Dwellings”*. Grants

Awarded from: Flight Attendant Medical Research Institute (FAMRI) and Tobacco Related Disease Research Program (TRDRP); Co-investigators: Lynn Hildemann, Wayne Ott, and James Repace. Mentor and Ph.D. committee member for: Dr. Phillip Dacunto.

Post-Doctoral Researcher; 2004-2006; Stanford University, Department of Statistics; Project: “*Quantifying Human Exposure to Secondhand Smoke*”; Grants Awarded from: California Department of Health Services Tobacco Control Section and Flight Attendant Medical Research Association (FAMRI); Paul Switzer, Principal Investigator; Wayne Ott, Co-investigator.

Graduate Researcher; 2003; Center for Exposure and Health Tracking, University of California at Berkeley, Center for Occupational and Environmental Health (COEH), School of Public Health.

Graduate Researcher; 1997-2002; Lawrence Berkeley National Laboratory, Indoor Environment Department, EPA University Partnership Project: “*Multi-Domain Framework for Integrating Models and Measurements of Multimedia Environmental Contaminants*”; Thomas McKone, Principal Investigator; Halûk Özkaynak, EPA Project Director.

Ph.D. Student; 1997-2004; University of California at Berkeley, School of Public Health, Environmental Health Sciences Division; William W. Nazaroff, advisor.

Graduate Researcher (Contracted); 1997-2001; Stanford University Award, Dept. of Statistics; Grant Awarded from: Tobacco Related Disease Research Program of California (TRDRP); Paul Switzer, Principal Investigator; Wayne Ott, Co-investigator.

Graduate Researcher; 1997-1998; Center for Occupational and Environmental Health, University of California at Berkeley; S. Katharine Hammond, Supervisor.

Senior Scientist; 1995-1997; Lockheed Martin, Las Vegas, NV; Technical and Research Support for EPA Activity Pattern and Exposure Modeling Projects, Steve Hern, EPA Project Director; William Engelmann, EPA Project Manager.

Project Manager; 1994-1995; Information Systems and Services, Inc., Las Vegas, NV; Technical and Research Support for EPA Activity Pattern and Exposure Modeling Projects, Niren Nagda, Project Director; Steve Hern, EPA Project Director; Joseph Behar, EPA Project Manager.

Researcher (Contracted); 1993-1994; Stanford University, Dept. of Statistics; Grant Awarded from: Tobacco Related Disease Research Program of California (TRDRP); Paul Switzer, Principal Investigator; Wayne Ott, Co-investigator.

Graduate Researcher; 1989-1991; Stanford University, Department of Chemistry.

Undergraduate Researcher, 1986-1989; Colgate University, Department of Chemistry.

Memberships, Distinctions, and Service

- Association for Contextual Behavior Science (ACBS), 2018- <https://contextualscience.org>
- Association for Behavior Analysis International (ABAI), 2017- <https://www.abainternational.org>
- International Society of Exposure Analysis, 1995-
- American Public Health Association, 2010-
- American Chemical Society, 1997.
- *Breathe, CA*, Public Health 2012 Award, for efforts to improve air quality
- Undergraduate: Haskell-Shiff Memorial Award (most promising in Physical Chemistry), Colgate University, 1986; Phi Beta Kappa, 1989.
- Reviewer for the US Environmental Protection Agency's *Exposure Factors Handbook*, 1995.
- Reviewer of US Surgeon General's Report *The Health Consequences of Involuntary Exposure to Tobacco Smoke*, 2004.
- NIH Reviewer

- Referee for professional journals, 1997-present: *Journal of Exposure Science and Environmental Epidemiology*; *Environmental Health Perspectives*; *Atmospheric Environment*; *Risk Analysis*; *The Science of the Total Environment*; *Nicotine and Tobacco Research*; *Tobacco Control*; *Journal of the Air and Waste Management Association*; *Indoor Air*; *Environment International*; and others.

Journal Articles

- Posis AI, Bellettiere J, Liles S, Alcaraz J, Berardi V, **Klepeis NE**, Hughes S, Wu T, Hovell M (2019) Indoor cannabis smoke and children's health, *Preventive Medicine Reports*, Ms. No.: PMEDR-18-216R1, In press.
- Hovell MF, Bellettiere J, Liles S, Nguyen B, Berardi V, Johnson C, Matt GE, Malone J, Boman-Davis MC, Quintana PJE, Obayashi S, Chatfield D, Robinson R, Blumberg EJ, Ongkeko WM, **Klepeis NE****, Hughes S** (2019) Randomised controlled trial of real-time feedback and brief coaching to reduce indoor smoking, *Tobacco Control*, DOI: 10.1136/tobaccocontrol-2018-054717. ****Senior author and study co-investigator.** <https://tobaccocontrol.bmj.com/content/early/2019/02/10/tobaccocontrol-2018-054717>
- Berardi V, Carretero-González R, **Klepeis NE**, Machiani SG, Jahangiri A, Bellettiere J, Hovell M. (2018) Computational model for behavior shaping as an adaptive health intervention strategy, *Translational Behavioral Medicine*, ibx049, <https://doi.org/10.1093/tbm/ibx049>
- Hughes SC, Bellettiere J, Nguyen B, Liles S, **Klepeis NE**, Quintana JE, Berardi V, Obayashi S, Bradley S, Hofstetter CR, Hovell MF, (2018) Randomized Trial to Reduce Air Particle Levels in Homes of Smokers and Children. *Am J Prev Med*. DOI: <https://doi.org/10.1016/j.amepre.2017.10.017> .
- Chan WR, Logue JM, Wu X, **Klepeis NE**, Fisk WJ, Noris F, Singer BC (2017). Quantifying Fine Particle Emission Events from Time-Resolved Measurements: Method Description and Application to 18 California Low-Income Apartments. *Indoor Air*. doi: 10.1111/ina.12425. URL: <http://onlinelibrary.wiley.com/doi/10.1111/ina.12425/full>
- Klepeis NE**, Bellettiere J, Hughes SC, Nguyen B, Berardi V, Liles S, et al. (2017) Fine particles in homes of predominantly low-income families with children and smokers: Key physical and behavioral determinants to inform indoor-air-quality interventions. *PLoS ONE* 12(5): e0177718. DOI: <https://doi.org/10.1371/journal.pone.0177718>
- Klepeis NE**, Dhaliwal N, Hayward G, Acevedo-Bolton V, Ott WR, Read N, Layton S, Jiang R, Cheng KC, Hildemann LM, Repace JL, Taylor S, Ong SL, Buchting FO, Lee JP, Moore RS (2016). Measuring Indoor Air Quality and Engaging California Indian Stakeholders at the Win-River Resort and Casino: Collaborative Smoke-Free Policy Development. *Int. J. Environ. Res. Public Health* **13**, no. 1: 143. doi: 10.3390/ijerph13010143. URL: <http://www.mdpi.com/1660-4601/13/1/143/htm>
- Dacunto P, **Klepeis NE**, Cheng KC, Acevedo-Bolton V, Jiang RT, Repace L, Ott WR, Hildemann LM (2015) Determining PM_{2.5} calibration curves for a low-cost particle monitor: Common indoor residential aerosols. *Environmental Science: Processes & Impacts*, **17**, 1959 – 1966. DOI: 10.1039/C5EM00365B URL: <http://pubs.rsc.org/is/content/articlelanding/2015/em/c5em00365b#!divAbstract>
- Berardi V, Carretero-Gonzalez R, **Klepeis NE**, Palacios A, Bellettiere J, Hughes S, Obayashi S, Hovell MF, (2015) Proper orthogonal decomposition methods for the analysis of real-time data: Exploring peak clustering in a secondhand smoke exposure intervention. *Journal of Computational Science*, **11**, 102-111. doi:10.1016/j.jocs.2015.10.006.
- Logue JM, Sherman MH, Lunden MM, **Klepeis NE**, Williams R, Croghan C, Singer BC (2015) Development and assessment of a physics-based simulation model to investigate

- residential PM2.5 infiltration across the US housing stock. *Building and Environment*. doi:10.1016/j.buildenv.2015.06.032
- Bellettiere J, Hughes SC, Liles S, Boman-Davis M, **Klepeis NE**, Blumberg E, Mills J, Berardi V, Obayashi S, Allen T, Hovell MF (2014) Developing and Selecting Auditory Warnings for a Real-Time Behavioral Intervention. *American Journal of Public Health Research*. doi: 10.12691/ajphr-2-6-3.
URL: <http://pubs.sciepub.com/ajphr/2/6/3/index.html>
- Logue JM, **Klepeis NE**, Lobscheid AB, Singer BC (2014) Model-based exploration of natural gas stove and oven burner emissions in southern California residences: Pollutant levels, exposures, and the effects of proximity and range hood use. *Environmental Health Perspectives*, 122:43–50 DOI:10.1289/ehp.1306673.
URL: <http://ehp.niehs.nih.gov/1306673/>
- Klepeis NE**, Hughes SC, Edwards RD, Allen T, Johnson M, Chowdhury Z, Smith KR, Boman-Davis M, Bellettiere J, Hovell MF (2013). Promoting smoke-free homes: A novel behavioral intervention using real-time audio-visual feedback on airborne particle levels. *PloS ONE*. 8(8): e73251.
URL: <http://dx.plos.org/10.1371/journal.pone.0073251>
- Cheng KC, Acevedo-Bolton V, Jiang RT, **Klepeis NE**, Ott WR, Kitanidis PK, Hildemann LM. (2013). Stochastic modeling of short-term exposure close to an air pollution source in a naturally ventilated room: An autocorrelated random walk method. *Journal of Exposure Science and Environmental Epidemiology*. doi: 10.1038/jes.2013.63.
- Dacunto PJ, Cheng KC, Acevedo-Bolton V, Jiang RT, **Klepeis NE**, Repace J, Ott WR, Hildemann, L. (2013). Real-time particle monitor calibration factors and PM2.5 emission factors for multiple indoor sources. *Environmental Science Processes & Impacts*. 15:1511-1519.
- Dacunto PJ, Cheng KC, Acevedo-Bolton V, Jiang RT, **Klepeis NE**, Repace JL, Ott WR, Hildemann LM (2013). Identifying and quantifying secondhand smoke in source and receptor rooms using multiple measures: Logistic regression and mass balance approaches. *Indoor Air*. DOI: 10.1111/ina.12049
- Dacunto PJ, Cheng KC, Acevedo-Bolton V, Jiang RT, **Klepeis NE**, Repace JL, Ott WR, Hildemann LM (2013). Identifying and quantifying secondhand smoke in residential units with tobacco smoke odor complaints. *Atmospheric Environment*. 71:399–407.
- Acevedo-Bolton V, Ott WR, Cheng KC, Jiang RT, **Klepeis NE**, Hildemann L. (2013) Controlled experiments measuring personal exposure to PM2.5 in close proximity to cigarette smoking. *Indoor Air*, DOI: 10.1111/ina.12057.
- Ott WR, Acevedo-Bolton V, Cheng KC, Jiang RT, **Klepeis NE**, Hildemann L. (2013) Outdoor fine and ultrafine particle measurements at six bus stops with smoking on two California arterial highways. *Journal of the Air and Waste Management Association*. DOI: 10.1080/10962247.2013.832712.
- Klepeis NE**, Omoto J, Ong SL, Omoto HS, Dhaliwal N (2012). Small proportions of actively-smoking patrons and high PM2.5 levels in southern California tribal casinos: Support for smoking bans or designated smoking areas. *BMC Public Health*, 12:819, doi:10.1186/1471-2458-12-819.
URL: <http://www.biomedcentral.com/1471-2458/12/819>
- Apelberg BJ, Hepp LM, Avila-Tang E, Gundel L, Hammond SK, Hovell MF, Hyland A, **Klepeis NE**, Madsen CC, Navas-Acien A, Repace J, Samet JM, Breyse PN. (2012). Environmental monitoring of secondhand smoke exposure, *Tobacco Control*, doi:10.1136/tobaccocontrol-2011-050301
- Acevedo-Bolton V, Cheng KC, Jiang RT, Ott WR, **Klepeis NE**, Hildemann LM (2012). Measurement of the proximity effect for indoor air pollutant sources in two homes. *Journal of Environmental Monitoring*, 14(1):94-104.

- Jiang RT, Cheng KC, Acevedo-Bolton V, **Klepeis NE**, Ott WR, Hildemann LA (2011). Effect of relative humidity on response of an aerosol monitor: Gravimetric scaling factors for secondhand smoke. *Aerosol Science and Technology*, Submitted.
- Rosen LJ, Guttman N, Hovell MF, Noach MB, Winickoff JP, Tchernokovski S, Rosenblum JK, Rubenstein U, Seidmann V, Vardavas CI, **Klepeis NE**, and Zucker DM (2011). Development, design, and conceptual issues of project zero exposure: A program to protect young children from tobacco smoke exposure. *BMC Public Health*, 11:508, doi:10.1186/1471-2458-11-508.
- Jiang RT, Cheng KC, Acevedo-Bolton V, **Klepeis NE**, Ott WR, Hildemann LA (2011). Determination of response of the real-time Sidepak AM510 monitor to secondhand smoke, other common indoor aerosols, and outdoor aerosol. *Journal of Environmental Monitoring*, doi: 10.1039/c0em00732c.
- Cheng KC, Jiang RT, Acevedo-Bolton V, **Klepeis NE**, Ott WR, Hildemann LA (2011) Modeling exposure close to air pollution sources in naturally-ventilated residences: Association of turbulent diffusion coefficient with air change rate. *Environmental Science and Technology*, 45, 4016–4022, doi: /10.1021/es103080p.
- Repace JL, Cheng KC, Jiang RT, Acevedo-Bolton V, **Klepeis NE**, Ott WR, Hildemann LA (2011) Fine particle and secondhand smoke air pollution exposures and risks inside 66 US casinos, *Environment International*, 111:473–484, doi: 10.1016/j.envres.2011.02.007.
- Kaufman P, Zhang B, Bondy SJ, **Klepeis NE**, Ferrence R (2011) Not just ‘a few wisps’: real-time measurement of tobacco smoke at entrances to office buildings, *Tobacco Control*, doi:10.1136/tc.2010.041277.
- Cheng KC, Jiang RT, Acevedo-Bolton V, Ott WR, **Klepeis NE**, Hildemann LA (2010) Model-based reconstruction of the time response of electrochemical air pollutant monitors to rapidly varying concentrations. *Journal of Environmental Monitoring*. doi: 10.1039/b921806h.
- Jiang RT, Cheng KC, Acevedo-Bolton V, **Klepeis NE**, Repace JL, Ott WR, Hildemann LA (2010). Measurement of fine particle concentrations and smoking activity in a statewide survey of 36 California Indian casinos. *Journal of Exposure Science and Environmental Epidemiology*. doi: 10.1038/jes.2009.75.
- Klepeis NE**, Gabel EB, Ott WR, Switzer P (2009) Outdoor air pollution in close proximity to a continuous point source. *Atmospheric Environment*, 43(20): 3155-3167.
- Ferro AR, **Klepeis NE**, Ott WR, Nazaroff WW, Hildemann LM, Switzer P (2009). Effect of interior door position on room-to-room differences in residential pollutant concentrations after short-term releases. *Atmospheric Environment*, 43(3): 706-714.
- Ott WR, **Klepeis NE**, Switzer P (2008) Air change rates of motor vehicles and in-vehicle pollutant concentrations from secondhand smoke. *Journal of Exposure Science and Environmental Epidemiology*. 18:312–325.
- Klepeis NE**, Ott WR, and Switzer P (2007) Real-time measurement of outdoor tobacco smoke particles. *Journal of the Air and Waste Management Association*. 57:522-534.
- Klepeis NE** and Nazaroff WW (2006) Modeling residential exposure to secondhand tobacco smoke. *Atmospheric Environment* 40(23):4393-4407.
- Klepeis NE** and Nazaroff WW (2006) Mitigating residential exposure to secondhand tobacco smoke. *Atmospheric Environment* 40(23):4408-4422.
- Ott WR, **Klepeis NE**, Switzer P (2003) Analytical solutions to compartmental indoor air quality models with application to environmental tobacco smoke concentrations measured in a house. *Journal of the Air and Waste Management Association* 53:918-936.
- Klepeis NE**, Apte MG, Gundel LA, Sextro RG, Nazaroff WW (2003) Determining size-specific emission factors for environmental tobacco smoke particles. *Aerosol Science & Technology* 37(10): 780-790.
- Klepeis NE**, Nelson WC, Ott WR, Robinson J, Tsang AM, Switzer P, Behar JV, Hern S, and Engelmann W (2001). The National Human Activity Pattern Survey (NHAPS): A resource for

assessing exposure to environmental pollutants. *Journal of Exposure Analysis and Environmental Epidemiology* 11(3):231-252.

Klepeis NE, Ott WR, and Repace JL (1999) The effect of cigar smoking on indoor levels of carbon monoxide and particles. *Journal of Exposure Analysis and Environmental Epidemiology* 9(6): 622-635.

Klepeis NE (1999) Validity of the uniform mixing assumption: Determining human exposure to environmental tobacco smoke. *Environmental Health Perspectives* 107(Supp2): 357-363.

Klepeis NE (1999) An introduction to the indirect exposure assessment approach: Modeling human exposure using microenvironmental measurements and the recent national human activity pattern survey. *Environmental Health Perspectives* 107(Supp2): 365-374.

Klepeis NE, Ott WR, and Switzer P (1996) A multiple-smoker model for predicting indoor air quality in public lounges. *Environmental Science and Technology*, 30(9): 2813-2820.

Klepeis NE, East ALL, Csaszar AG, Allen WD, Lee TJ, and Schwenke DW (1993) The [FHCl]-molecular anion - structural aspects, global surface, and vibrational eigenspectrum. *Journal of Chemical Physics* 99(5):3865-3897.

Book Chapters

Klepeis NE "Modeling Human Exposure to Air Pollution," In: *Human Exposure Analysis*, edited by Wayne R. Ott, Lance A. Wallace, and Anne Steinemann, CRC Press, 2006.

Nazaroff WW and **Klepeis NE** "Environmental Tobacco Smoke Particles," In: *Indoor Environment: Airborne Particles and Settled Dust*, edited by Lidia Morawska and Tunga Salthammer, Wiley-VCH, Weinheim, October 2003.

Repace JL, Ott WR, and **Klepeis NE** "Indoor Air Pollution from Cigar Smoke," In: *Cigars: Health Effects and Trends*, Smoking and Tobacco Control Monograph No. 9, edited by Donald R. Shopland, National Cancer Institute, National Institutes of Health, February 1998.

Theses

Doctoral Dissertation: "Using Computer Simulation to Explore Multi-Compartment Effects and Mitigation Strategies for Residential Exposure to Secondhand Tobacco Smoke," University of California at Berkeley, 2004.

Masters Thesis: "The Potential Energy Surface and Vibrational Eigenspectrum of the FHCl-Molecular Anion," Stanford University, 1992.

Undergraduate Thesis, with High Honors: "Using Computers to Aid in the Elucidation of Molecular Structure and Conformation Through the Phenomenon of Electron Diffraction," Colgate University, 1989.

Technical and Programmatic Reports

Singer BC, Lobscheid AB, **Klepeis NE**. (Lawrence Berkeley National Laboratory). "Simulation-Based Estimates of Indoor Exposures to Pollutants from Natural Gas Cooking Burners," *California Energy Commission*. Publication number: TBA, Draft Technical Report, July 2011.

Klepeis NE "Multi-Day Measurement of Airborne Particle Concentrations in a High-Rise Luxury Condominium Building in Downtown San Jose California," December 13, 2010.

Taylor S, Read N, and **Klepeis NE**. Adoption of a Smoke-Free Policy in a Tribal Government Gaming Establishment: Final Evaluation Report. California: Shasta County Public Health Tobacco Education Program, 2010.

Klepeis NE, Ott WR, Switzer P "Real-Time Monitoring of Outdoor Environmental Tobacco Smoke Concentrations: A Pilot Study," Technical Report, Department of Statistics, Stanford

University, Stanford, CA, Contract No. 3317SC, University of California at San Francisco, Prepared for the State of California, Tobacco Control Section, Sacramento, CA, March 2004.

Klepeis NE, Switzer P, and Ott WR "Estimating Potential Exposure to Environmental Tobacco Smoke Particles Using 24-Hour Recall Diaries from Three Human Activity Pattern Surveys Conducted on California Populations," Tobacco-Related Disease Research Program of the State of California (University of California), Grant No. 6RT-0118, Department of Statistics, Stanford University, Stanford, CA, 2001.

Klepeis NE, Ott WR, Switzer P "Determining Parameters of a Two-Compartment Indoor Air Quality Model From Experimental Data: Computer Optimization Using a Grid Search Method," Tobacco-Related Disease Research Program of the State of California (University of California), Grant No. 6RT-0118, Department of Statistics, Stanford University, Stanford, CA, 2001.

Tsang AM and **Klepeis NE** "Three Telephone Surveys of Human Activity Patterns in California: The 1992-94 National Human Activity Pattern Survey; the 1987-88 California Activity Pattern Survey of Adults and Youth; and the 1989-90 California Activity Pattern Survey of Children," Draft Technical Report, US EPA, Washington D. C., 1998.

Klepeis NE, Tsang AM, and Behar JV "Analysis of the National Human Activity Pattern Survey (NHAPS) Responses from a Standpoint of Exposure Assessment." Technical Report, EPA/600/R-96/074, US EPA, Washington D. C., 1996.

Tsang AM and **Klepeis NE** "A Detailed Analysis of the National Human Activity Pattern Survey (NHAPS) Respondents." Technical Report, EPA/600/R-96/148, US EPA, Washington D. C., 1996.

Klepeis NE "User's and Programmer's Manual for the Total Human Exposure Model (THEM), Version 1.0.," Technical Report, Stanford University, 1994.

Conference Presentations and Proceedings

Bellettiere J, Berardi V, Liles S, Posis A, Hughes S, **Klepeis NE**, Nguyen B, Chavez P, Hovell M (2019). Measuring indoor cannabis and tobacco smoking along with other particle-generating behaviors using inexpensive air particle monitors. *North American Cannabis Summit*. Los Angeles, CA. January 28, 2019.

Dacunto P, **Klepeis NE**, Cheng K, Acevedo-Bolton V, Rieng R, Repace J, Ott W, Hildemann L (2018) Quantifying the Error of a Low-Cost Particle Monitor: Common Indoor Residential Aerosols. INDOOR AIR 2018. The 15th Conference of the International Society of Indoor Air Quality & Climate (ISIAQ), Philadelphia, PA, USA July 22 to 27, 2018.

Bellettiere J, Hughes S, **Klepeis NE**, Liles S, Nguyen B, Boman-Davis M. (2018). Project Fresh Air: Real-time feedback to encourage smoke-free homes. 44th Annual Convention of the Association for Behavioral Analysis International, San Diego, CA. May 26, 2018.

Posis A., **Klepeis NE**., Bellettiere J., Liles S., Berardi V., Nguyen B., Hughes S., Hovell M. (2017). The additive association of indoor cigarette and marijuana smoking on potential exposure to fine particles. San Diego State University Student Research Symposium. San Diego, CA. March 3, 2017.

Moore R , **Klepeis NE**, Dhaliwal N, Buchting F, Lee J. "Measuring Particulates in Tribally-Owned Casinos: Feedback for Smoke-Free Policy Improvement," *Tobacco Control, Research, and Education: Joining Forces to Address New Challenges*, Tobacco Related Disease Research Program (TRDRP) of California, Sacramento, CA, October 27–29, 2015.

Matt GE, Quintana PJE, Hoh E, Chowdhury Z, Theweny TS, Nguyen AV, Zakarian JM, Watanabe K, Buchting FO, **Klepeis NE**, Dhaliwal N, Hovell MF. "Toward Smoke-Free Casinos: The Win-River Experience". Presented at *Tobacco Control, Research, and Education: Joining*

Forces to Address New Challenges (TRDRP conference), Sacramento, CA; October 27 - 29, 2015.

- Klepeis NE**, Moore R, Dhaliwal N, Buchting F, Lee J. "Promoting Smoke-Free Air In Casinos: Results of Intensive Fine Particle Monitoring at Four California Tribal Casinos," *25th Annual Meeting of the International Society of Exposure Science, Exposures in an Evolving Environment*, Henderson, NV, October 18 – October 22, 2015.
- Ott W, **Klepeis NE**, Acevedo-Bolton V, Cheng KC, Jiang R, Dhaliwal N, Hildeman LM "Decreases in Indoor Fine and Ultrafine Particle Concentrations in a Large Tribal Casino After a Smoking Ban," *25th Annual Meeting of the International Society of Exposure Science, Exposures in an Evolving Environment*, Henderson, NV, October 18 – October 22, 2015.
- Logue JM, **Klepeis NE**, Singer BC, Lunden M, "Transformation of Ambient PM_{2.5} in the Residential Housing Stock," *25th Annual Meeting of the International Society of Exposure Science, Exposures in an Evolving Environment*, Henderson, NV, October 18 – October 22, 2015.
- Quintana P, Matt GE, Hoh E, Zakarian J, Destailats H, Dhaliwal N, Chowdhury Z, Watanabe K, Sleiman M, Gundel L, Russell ML, Theweny T, Arceo J, Muniz M, Flores V, **Klepeis NE**, "Thirdhand Tobacco Smoke Pollutants in a Casino Measured Before and After Smoke-Free Status", *25th Annual Meeting of the International Society of Exposure Science, Exposures in an Evolving Environment*, Henderson, NV, October 18 – October 22, 2015.
- Chowdhury Z, Nguyen A, Quintana P, Matt GE, Hoh E, Dhaliwal N, **Klepeis NE**, Zakarian J, Nguyen KT, Longitudinal Fine and Ultrafine Air Pollution Measurements in a Large Casino Taken Before and After a Smoking Ban," *25th Annual Meeting of the International Society of Exposure Science, Exposures in an Evolving Environment*, Henderson, NV, October 18 – October 22, 2015.
- Berardi V., M.Hovell, R. Carretero, S. Hughes, J. Belletiere, **N. Klepeis**, S. Obayashi, J.Jones, S. Liles, M. Boman-Davis, B. Nguyen. *Big Data in Practice: A Health-Based Intervention*. Big Data Science at SDSU Lightning Talks and Forums, San Diego State University, San Diego, CA, March 7, 2015.
- Hovell M., S. Hughes, V.Berardi, J. Belletiere, **N. Klepeis**, S. Obayashi, J.Jones, S. Liles, M. Boman-Davis. *Real Time Measures & Interventions: Setting the Stage for Engineering Human Behavior*. Big Data Science at SDSU Lightning Talks and Forums, San Diego State University, San Diego, CA, March 7, 2015.
- Moore RS, **Klepeis NE**, Dhaliwal N, Buchting FO, Lee JP, "Working with California Tribes to Measure Particulates in Casinos," *Society for Research on Nicotine and Tobacco*, Seattle, WA, February 5-8, 2014.
- Klepeis NE**, Hughes S, Edwards R, Allen T, Johnson M, Chowdhury Z, Smith K, Boman M, Belletiere J, Hovell M. "Using Real-Time Monitor Feedback to Reduce Particle Levels in Smoking Homes", *34th Annual Meeting & Scientific Sessions of the Society of Behavioral Medicine*, Hilton Union Square, San Francisco, CA, March 20-23, 2013.
- Dacunto PJ, Acevedo-Bolton V, Cheng KC, Jiang RT, **Klepeis NE**, Repace J, Ott WR, Hildemann LM. "Identifying Secondhand Smoke in Indoor Settings: A Logistic Regression Model," *22nd Annual Meeting of the International Society of Exposure Science, Lessons Learned: Contributions of Exposure Science to Environmental and Occupational Health*, Seattle, WA, October 28 – November 1, 2012.
- Klepeis NE**. "Tobacco Smoke Transfer in Multi-Unit Housing: Mechanisms and Measurements", *Breathe, California Conference 2012, Session 4: Tobacco Issues. New findings on the effects of tobacco smoking and new strategies in smoking cessation efforts*, Long Beach, CA (Renaissance Hotel), April 27, 2012.
- Klepeis NE**, "Tobacco Smoke Monitoring in Multi-Unit Housing", *Symposium on Tobacco Smoke in Multi-Unit Housing*, Children's Hospital, 4650 Sunset Boulevard, Los Angeles, CA,

Speakers: Jonathan Samet, Jonathan Winickoff, Neil Klepeis, Linda Aragon, Michael Ong, Sponsored by Los Angeles County Department of Public Health, November 16, 2011.

Klepeis NE. "Outdoor Tobacco Smoke Exposure in Different Microenvironments." Americans for Nonsmokers' Rights Foundation, *Clearing the Air Institute*, Stanford Sierra Camp, South Lake Tahoe, September 25 - 28, 2011.

Klepeis NE, Acevedo-Bolton V, Jiang RT, Cheng KC, Ott WR, Repace JL, Hildeman LM, "Worker And Patron PM_{2.5} Exposures in a California Casino With Smoking," Platform Presentation at the *12th International Conference on Indoor Air Quality & Climate* (Indoor Air 2011) , Austin, TX, June 5-10, 2011.

Lobscheid AB, **Klepeis NE,** Singer BC. "Modeling Population Exposures to Pollutants Emitted from Natural Gas Cooking Burners," Platform Presentation at the *12th International Conference on Indoor Air Quality & Climate* (Indoor Air 2011), Austin, TX, June 5-10, 2011.

Cheng KC, Acevedo-Bolton V, Jiang RT, **Klepeis NE,** Ott WR, Hildemann LM. "Association of Turbulent Diffusion Coefficient with Air Change Rate in Naturally Ventilated Residences" Presented at the *12th international conference on Indoor Air Quality and Climate*, Austin, TX, June 5-10, 2011.

Dacunto PJ, Jiang RT, Acevedo-Bolton V, Cheng KC, **Klepeis NE,** Repace JL, Ott WR, Hildemann LM, "Calibration Factors for Measuring PM_{2.5} Concentrations from Multiple Indoor Sources with a Real-Time Particle Monitor," Platform Presentation at the *12th International Conference on Indoor Air Quality & Climate* (Indoor Air 2011), Austin, TX, June 5-10, 2011.

Ott WR, Acevedo-Bolton V, Wallace LA, Cheng KC, Jiang RT, **Klepeis NE,** Dacunto PJ, Repace JL, Hildeman LM. "Simultaneous Measurement of Ultrafine Particles (UFP) and Fine Particle Mass Concentration (PM-2.5) Indoors in Two Large Gaming Casinos with Smoking," Platform Presentation at the *12th International Conference on Indoor Air Quality & Climate* (Indoor Air 2011), Austin, TX, June 5-10, 2011.

Repace JL, Jiang RT, Acevedo-Bolton V, Cheng K-C, **Klepeis NE,** Ott WR, and Hildemann LM. "PM_{2.5} and Secondhand Smoke in 94 casinos." Platform Presentation at the *12th International Society for Indoor Air Quality and Climate* (Indoor Air 2011), Austin, TX, June 5-10, 2011.

Acevedo-Bolton V, Ott WR, Cheng KC, Jiang RT, **Klepeis NE,** Hildeman LM. "Indoor Exposure to PM_{2.5} in Close Proximity to a Smoker," Platform Presentation at the *12th International Conference on Indoor Air Quality & Climate* (Indoor Air 2011), Austin, TX, June 5-10, 2011.

Ott WR, Acevedo-Bolton V, Cheng KC, Jiang RT, **Klepeis NE,** Hildemann LM. "Outdoor Fine and Ultrafine Particle Exposures Measured on the Sidewalks of Arterial Highways Compared with Exposures Caused by a Nearby Smoker," Platform Presentation at the International Society of Exposure Science (ISES) 2011 Annual Meeting, Symposium: *Recent Advances in the Science of Measuring Exposure to Secondhand Smoke*, Baltimore, MD, October 23-27, 2011.

Hildemann LM, Acevedo-Bolton V, Jiang RT, Cheng K-C, **Klepeis NE,** Repace JL, and Ott WR. "Measuring Human Exposure to Pollutants from Secondhand Smoke", Poster Presentation at the *9th Scientific Symposium of Flight Attendant Medical Research Institute (FAMRI)*, Miami FL, May 3-5, 2010.

Jiang RT, Cheng KC, Acevedo-Bolton V, **Klepeis NE,** Repace JL, Ott WR, Hildemann LM. "Measurement of fine particles and smoking activity in a statewide survey of 36 California Indian Casinos," Presented at *Joint Conference of International Society of Exposure Science & International Society for Environmental Epidemiology (ISES-ISEE)*, Seoul, Korea, 2010.

Ott WR, Acevedo-Bolton V, Cheng KC, Jiang RT, **Klepeis NE,** Hildemann LM. "Experiments Measuring the Exposure to Fine Particles in Everyday Locations in Close Proximity to Sources," No. 15, SQ3.T3.250, Poster Presentation at the AAAR 2010 Specialty

Conference, *Air Pollution and Health: Bridging the Gap from Sources to Health Outcomes*, San Diego, CA, March 22-26, 2010

- Klepeis NE**, “Using Air Monitoring Devices as a Catalyst for Smoke-Free Homes in Pregnancy”, Platform Presentation at the *West Virginia Perinatal Summit*, Charleston, WV, November 11, 2010.
- Klepeis NE**, Drake P, Alexander L, Baker C “Using computer simulation to reduce secondhand smoke exposure in children of low-income families,” Platform Presentation at the *138th Annual Meeting of the American Public Health Association (APHA)*, Denver, CO, November 10, 2010.
- Hildemann LM, Acevedo-Bolton V, Jiang RT, Cheng KC, **Klepeis NE**, Repace JL, Ott WR. “Measuring Human Exposure to Pollutants from Secondhand Smoke,” Presented Poster at the *8th Scientific Symposium of the Flight Attendant Medical Research Institute (FAMRI)*, Boston, MA, May 11-13, 2009.
- Acevedo-Bolton V, Ott WR, Cheng KC, Jiang RT, **Klepeis NE**, and Hildemann LM, “Personal Exposure to Fine Particles from Secondhand Smoke”, Presented at the *American Association of Aerosol Research Conference*, Minneapolis, MN, 2009.
- Jiang RT, Acevedo-Bolton V, Cheng KC, **Klepeis NE**, Ott WR, Hildemann LM. “Calibration Methodology for Real-Time PM Monitor: Effects of Combustion Sources and Relative Humidity,” Presented at *American Association of Aerosol Research Conference*, Minneapolis, MN, USA, 2009.
- Jiang R, Acevedo-Bolton V, Cheng KC, Ott W, **Klepeis NE**, and Hildemann L, “Monitoring of Indoor Fine Particulate Pollution from Secondhand Smoke in California Indian Casinos”, Presented at the *American Association for Aerosol Research Annual Conference*, Minneapolis, MN, 2009.
- Acevedo-Bolton V, Cheng K, Jiang J, Ott W, **Klepeis NE**, and Hildemann LM, “The Effects of Proximity on Exposure: Examining the Uniform Mixing Assumption for a Point Source”, poster #2009-A-351-ISES presented at the *International Society of Exposure Science Annual Meeting*, Minneapolis, MN, 2009.
- Acevedo-Bolton V, **Klepeis NE**, Jiang R, Cheng K, Ott WR, and Hildemann LM, “Employee and Patron Exposure to Pollutants in a Northern Californai Casino”, poster #2009-A-493-ISES, presented at the *International Society of Exposure Science Annual Meeting*, Minneapolis, MN 2009.
- Jiang RT, Cheng KC, Acevedo-Bolton V, **Klepeis NE**, Ott WR, Hildemann LM. “Personal Exposure to Fine Particulate Matter Pollution from Secondhand Smoke in California Casinos,” Presented at the *International Society of Exposure Science (ISES) Conference*, Minneapolis, MN, USA, 2009.
- Jiang RT, Acevedo-Bolton V, Cheng KC, Ott WR, **Klepeis NE**, Hildemann LM. “Evaluation and Calibration of Continuous Real-Time Particle Monitors for Fine Particle Exposure Analysis,” Presented at *Joint Conference of International Society of Environmental Epidemiology & International Society of Exposure Analysis (ISEE-ISEA)*. Pasadena, CA, October, 2008.
- Klepeis NE**, Drake P, Siller C “Using Computer Simulation to Communicate Exposure Levels and Risks: A Pilot Intervention Study for Secondhand Smoke in Automobiles”, Presentation at the *18th International Society of Exposure Analysis (ISEA) Annual Conference*, Pasadena, CA, October, 2008.
- Klepeis NE**, Acevedo-Bolton V, Jiang R, Cheng KC, Ott WR, Hildemann L “Measuring and Modeling the Residential Proximity Effect: Investigating Localized Dispersion of Indoor Air Pollutants”, Presentation at the *18th International Society of Exposure Analysis (ISEA) Annual Conference*, Pasadena, CA, October, 2008.
- Hildemann LM, **Klepeis NE**, Ott WR, Repace JL. Poster on “Exposure Measurements Can Reduce Tobacco Smoke Exposure Around the World,” *7th Annual Flight Attendant Medical Research Institute (FAMRI) Scientific Symposium*, Boston, MA, May 2008.

- Klepeis NE**, Ott WR, Wallace LA, Repace JL, Switzer P. Poster Presentation: "Interrelating and Evaluating Real-Time Airborne Particle Monitors", Joint Meeting of the *International Society of Exposure Analysis (ISEA) and the International Society of Environmental Epidemiology (ISEE)*; Paris, France; September 2006.
- Switzer P, **Klepeis NE**, Ott WR. Oral Presentation and First Prize in Poster Contest: "Quantifying Human Exposure to Secondhand Tobacco Smoke," *5th Annual Flight Attendant Medical Research Institute (FAMRI) Scientific Symposium*, Cambridge, MA, May 2006.
- Ott WR, **Klepeis NE**, Switzer P. "Measuring and Modeling Exposure to Secondhand Smoke In Vehicles," Presentation at the *15th International Society of Exposure Analysis (ISEA) Annual Conference*, Tuscon, AZ, October 30 – November 3, 2005.
- Switzer P, Ott WR, **Klepeis, NE**. Poster Presentation: "Quantifying Human Exposure to Secondhand Tobacco Smoke," *4th Annual Flight Attendant Medical Research Institute (FAMRI) Scientific Symposium*, Miami, FL, May 2005.
- Klepeis NE**, Ott WR, and Switzer P "Human Exposure to Outdoor Secondhand Tobacco Smoke," Poster presentation at the *14th International Society of Exposure Analysis (ISEA) Annual Conference*, Philadelphia, PA, October 17-21, 2004.
- Ott WR, **Klepeis NE**, Rozenberg D, and Switzer P "Continuous Measurements of Indoor-Outdoor Particular Polycyclic Aromatic Hydrocarbon (PPAH) Concentrations in Seven Homes with Application to Indoor Mass-Balance Model Parameters and Prediction Error," Platform presentation at the *14th International Society of Exposure Analysis (ISEA) Annual Conference*, Philadelphia, PA, October 17-21, 2004.
- Klepeis NE**, Switzer P, Ott WR "Development of Averaging Time Models for Particulate Air Pollutants," Poster Presentation at *ISEA/ISEE Joint Conference*, Vancouver, BC, August 11-15 2002.
- Klepeis NE** and Nazaroff WW "Characterizing Size-Specific Environmental Tobacco Smoke Particle Emissions," Poster Presentation at the *9th Annual Conference on Indoor Air Quality and Climate*, Indoor Air 2002, Monterey, CA, June 30-July 5, 2002.
- Klepeis NE** and W. W. Nazaroff. "Determining Size-Resolved Particle Emission Profiles for Sources of Environmental Tobacco Smoke," Poster Presentation at the *PM-2000: Particulate Matter and Health, The Scientific Basis for Regulatory Decision-Making Specialty Conference and Exhibition*. Charleston, SC, January 24, 2000.
- Klepeis NE** and W. W. Nazaroff. "Simulating Indoor Concentrations of Size-Resolved Particles: Emission Factors and Deposition Rates for ETS," *10th Annual Conference of the International Society of Exposure Analysis*. October 24, 2000.
- Repace JL, Ott WR, and **Klepeis NE**. "Mathematical Models for Predicting Indoor Environmental Tobacco Smoke (ETS) Concentrations: A Review." *10th Annual Conference of the International Society of Exposure Analysis*. October 24, 2000.
- Ott WR, Switzer P, and **Klepeis NE** "Determining Particle Emission Source Strengths for Common Residential Indoor Sources Using Real-Time Measurements and Piecewise Continuous Solutions to the Mass Balance Equation." *10th Annual Conference of the International Society of Exposure Analysis*. October 24, 2000.
- Ott WR, Switzer P, and **Klepeis NE** "Relationship Between Observed Fireplace Plume Activity in Residential Neighborhoods and Indoor-Outdoor Real-Time Particulate Aromatic Hydrocarbon (PPAH) Concentrations." *10th Annual Conference of the International Society of Exposure Analysis*. October 24, 2000.
- Ott WR, Wallace LA, **Klepeis NE**, Switzer P, Mage D, and Liou P "Research Directions in Predicting Personal Exposure Distributions to Particles (PM-10) Using a Random Component Superposition (RCS) Model." *10th Annual Conference of the International Society of Exposure Analysis*. October, 24, 2000.
- Klepeis NE**, Apte MG, Gundel LA, Nazaroff WW, and Sextro RG "Characterizing ETS Emissions From Cigars: Chamber Measurements of Nicotine, Particle Mass, and Particle Size."

Proceeding of the 8th International Conference on Indoor Air Quality and Climate -- Indoor Air '99, 1999.

Klepeis NE, Ott WR, Switzer P, Zelenka M, Huber A, and Nelson W “Air Pollutant Time Series Analysis: Outdoor Sources of Carbon Monoxide and Polycyclic Aromatic Hydrocarbons.” Joint Meeting of the *Society for Risk Analysis and the International Society of Exposure Analysis*. New Orleans, August 12, 1996.

Klepeis NE, Ott WR, Switzer P, Zelenka M, Huber A, and Nelson W “Optimization of a Real-Time Indoor-Outdoor Air Quality Model of Carbon Monoxide and Polycyclic Aromatic Hydrocarbons.” Joint Meeting of the *Society for Risk Analysis and the International Society of Exposure Analysis*. New Orleans, August 12, 1996.

Klepeis NE, Ott WR, and Switzer P “Total Human Exposure Model (THEM) for Respirable Suspended Particles (RSP).” Paper Presented at the 87th Annual Meeting of the Air and Waste Management Association, Cincinnati, OH, June 19, 1994.

Ott WR., Wilson N, **Klepeis NE** and Switzer P “Real-time Monitoring of Polycyclic Aromatic Hydrocarbons and Respirable Suspended Particles from Environmental Tobacco Smoke in a Home.” Paper Presented at the *Air and Waste Management Symposium on Measurement of Toxic and Related Air Pollutants*, Durham, NC, May 2-6, 1994.

Teaching and Speaking

Speaker: Webinar presentation to California Tobacco Control Program (CTCP), “*Building culturally appropriate relationships and collaboratively gathering scientific data to promote healthier indoor environments on tribal lands*” with Narinder Dhaliwal, Gary Hayward, Cody Martinez, California’s Clean-Air Project (CCAP); Education, Training, and Research, Inc. (ETR), March 27, 2017, 10:30 AM to 11:30 AM.

Speaker: Risk Assessment of Tobacco Products: A Public Work Shop, U.S. Food and Drug Administration (FDA), Center for Tobacco Products (CTP); The Marriott Inn and Conference Center, University of Maryland University College (UMUC) 3501 University Blvd. East, Hyattsville, Maryland 20783. Gave slide presentation and participated in panel discussion in “Session 2 Exposure”. Talk title: “*Methods for Assessing Individual and Population Exposure to Secondhand Tobacco Smoke*”. Wednesday, November 15, 2016. <http://www.fda.gov/TobaccoProducts/NewsEvents/ucm515442.htm>

Speaker: 31st Annual California Indian Conference, San Diego State University. Participated in Panel Session on Secondhand smoke entitled: “*Building culturally appropriate relationships and collaboratively gathering scientific data to promote healthier indoor environments on tribal land*”. Other panelists were Narinder Dhaliwal (ETR Associates), Gary Hayward (Win-River Casino), and Cody Martinez (Sycuan Casino). October 21, 2016. <https://sites.google.com/a/mail.sdsu.edu/cic/home>

Television Interview: Piece entitled “Smoke From Licensed Hookah And Smoking Lounges Not Regulated” by Paul Krueger and Jay Yoo (NBC 7-Investigates, San Diego). Dr. Klepeis gave recorded interview that included analysis of secondhand smoke concentrations measured in a restaurant coming from a next-door cigar lounge. Broadcast video contained footage of charts and scientific discussion. February 12, 2016 <http://www.nbcsandiego.com/news/local/Smoke-From-Licensed-Hookah-And-Smoking-Lounges-Not-Regulated--368573271.html>

Public Forum Speaker: *San Mateo County Board of Supervisors Meeting*; Redwood City, CA, Hall of Justice; Gave slide presentation to board of supervisors showing physical basis for secondhand smoke transfer between housing units and measurements of smoke levels in a condominium in support of moving forward with an ordinance that would ban smoking in

apartments and condos in unincorporated areas. Item 6. Result of meeting: Council asked for ordinance draft by next summer. Tuesday, March 25, 2014.

http://www.mercurynews.com/peninsula/ci_25420359/smoking-inside-apartments-soon-may-become-illegal-san

<https://www.youtube.com/user/sanmateocountygov>

Television Interview: *Broadcast of Breathe, CA community television CreaTV (San Jose, CA, Channel 15) interview segment on tobacco smoke exposure.* Host: James Robinolt (filling in for Terry Trumball), August 31, 2012 (broadcast date).

<http://www.creatvsj.org/Schedule.aspx>

Podcast: *Online Interview with Breathe, CA on Understanding the Effects of Secondhand Smoke in Multi-Unit Housing.* Host: Jim Kerns, June 6, 2012,

<http://breathecalifornia.podbean.com/2012/06/13/dr-neil-klepeis-understanding-the-effects-of-secondhand-smoke-in-multi-unit-housing-units/>

Invited Speaker: *Santa Clara Tobacco-Free Coalition Meeting;* Host: Santa Clara County Department of Public Health, San Jose, CA, Sobrato Center for Nonprofits, May 21, 2012: Gave slide presentation and question-and-answer session on secondhand tobacco smoke exposures in casinos, the outdoors, and multi-unit housing.

Invited Speaker: *Santa Clara County Smoke-Free Multi-Unit Housing Workgroup Meeting;* Host: Francis Capili, San Jose, CA, April 4, 2012: Gave slide presentation on secondhand tobacco smoke transfer in multi-unit housing (MUH) to tobacco exposure stakeholders and individuals suffering from in-home exposure.

Invited Speaker: *San Mateo County Tobacco Education Coalition Meeting;* Host: Derek Smith, San Mateo, CA, March 7, 2012: Gave educational slide presentation on secondhand tobacco smoke transfer in multi-unit housing (MUH).

Press Event Speaker: *Televised Smoke-Free Housing Press Event.* Presented visuals and data on measurements and mechanisms of smoke inter-unit transfer in buildings. Persons suffering from smoke intrusion offered testimony. Children's Hospital Los Angeles, 4650 Sunset Boulevard, Los Angeles, CA, Speakers: Dr. Jonathan Fielding, Dr. Jonathan Samet, Dr. Jonathan Winickoff, Dr. Neil Klepeis, Sponsored by Los Angeles County Department of Public Health, November 16, 2011.

Supervision of SDSU MPH Student: *San Diego State University, Graduate School of Public Health,* September 2011-present, Mentoring and supervising student research in monitoring secondhand tobacco smoke in outdoor locations and in Multi-Unit Housing.

Supervision and Teaching of Stanford Graduate Students: *Stanford University,* July 2008 – present, Mentoring and practical education of Ph.D. and post-doctoral students in computer programming, manuscript preparation, data analysis, exposure assessment, experimental procedures, and experimental design.

Public Forum Speaker: *Santa Monica City Council Meeting;* Santa Monica, CA City Hall; Gave slide presentation to mayor and city council showing measured secondhand smoke levels in several Multi-Unit Buildings in support of moving forward on secondhand smoke policies in housing. Item 8A. Result of meeting: Council voted to move forward, Tuesday, June 28, 2011. See: http://santamonica.granicus.com/MediaPlayer.php?view_id=2&clip_id=2296
Note: In video, Dr. Klepeis' comments start at time = 2:48:48

Press Event Speaker: *Television and Radio Broadcast Press Conference;* San Jose, CA City Hall, Hosted by Breathe California, shared platform with Santa Clara County Supervisor Ken Yeager, gave comments and presented data in support of raising awareness of issue of secondhand smoke transfer in Multi-Unit Housing, February 22, 2011. See: <http://sanfrancisco.cbslocal.com/2011/02/23/group-seeks-to-expand-south-bay-smoking-bans/>

- Public Forum Speaker: *San Jose City Council Meeting*, San Jose, CA, Delivered public comments on proposal for moving forward with ordinances on outdoor smoking and smoking in Multi-Unit Housing. December 7, 2010.
- Invited Lecturer: *Environmental Engineering Symposium*, Stanford University, “The Making of an Intervention for Residential Secondhand Smoke Exposure: From Environmental Engineering to Community Health and Preventive Health Care”, November 30, 2010.
- Invited Lecturer: *West Virginia Perinatal Summit*, Charleston, WV, CAMC Memorial Hospital, West Virginia Perinatal Partnership, March of Dimes, “Using Air Monitoring Devices as a Catalyst for Smoke-Free Homes in Pregnancy”, November 11, 2010.
- Press Event Speaker: *Televised Press Conference*; Live Demonstration of Pollution from Smoking in Cars, Little Rock, Arkansas; In support of Arkansas state efforts to raise awareness of existing law protecting children from secondhand smoke in automobiles; May 6, 2010.
- Speaker: *Menlo Park City Council Meeting*, Menlo Park, CA, Item on establishment of ordinances restricting smoking in outdoor places and multi-unit housing. Presented data and analysis of outdoor and multi-unit housing exposure to secondhand smoke, October 27, 2009.
- Public Forum Speaker: *County Board of Supervisors Meeting*, Kern County, Bakersfield, California, Item on establishment of ordinance restricting outdoor smoking in public places, Presented data and analysis of outdoor exposure to secondhand smoke, June, 2009.
- Invited Lecturer: *Environmental Engineering Symposium*, Stanford University, “Applying Environmental Engineering Approaches in Behavior Change Research to Influence Personal and Public Policy: The Case of Secondhand Tobacco Smoke”, January 16, 2009.
- Invited Plenary Speaker: “Measuring and Communicating Secondhand Smoke Exposure in Key Environments: Cars, Multi-Unit Housing, Single-Family Homes, Casinos, and the Outdoors,” December 2 – 4, 2008, *Smoke-Free California Conference*, Sponsored by the California Tobacco Control Program (CTCP), California Department of Public Health.
- Press Event Speaker: *Televised Press Conference*; Public Real-Time Demonstration of Pollution from Smoking in Cars, Salt Lake City, UT, May 30, 2008; In support of Utah state efforts to educate citizens about the dangers of smoking in cars with children present.
- Invited Speaker: Lecture to PROJECT RIDE on dangers of smoking in automobiles, Oakland, CA, January 26, 2008, hosted by Stella Jun.
- Press Event Speaker: *Televised Press Conference*; Public Real-Time Demonstration of Pollution from Smoking in Cars, Hollywood, California; In support of new California law banning smoking in automobiles with minors present; January 3, 2008.
- Training and Lecture: *California Tobacco Control Specialists*, Sacramento, CA, September 19, 2007; Presented data on outdoor tobacco air monitoring, car monitoring, and the role of air pollution messaging in tobacco control efforts.
- Public Forum Speaker; Santa Monica City Council Meeting; In Support of an Ordinance to Ban Outdoor Smoking in all Dining Areas and Service Areas Within 20 feet of all Entrances and Windows to Buildings Open to the Public, at Farmers' Markets, and on the Third Street Promenade. Motion Passed with a vote of 5-to-1; July 25, 2006.
- Invited Conference Speaker: California Department of Health Services, Tobacco Control Section, Conference: Smoke-Free California: Where We Live, Work, and Play, “*Monitoring Airborne Levels of Outdoor and In-Vehicle Secondhand Tobacco Smoke*,” May 16, 2006.
- Invited Conference Speaker; Ontario Tobacco Research Unit, University of Toronto in Collaboration with the Centre for Addiction and Mental Health; Workshop on Biological and Atmospheric Measurement of Tobacco Use and Exposure in Transdisciplinary Research; Dr. Roberta Ferrence, host; “*Comparing Methods for the Real-Time Measurement of Secondhand Tobacco Smoke Particles*,” May 19-20, 2005.
- Invited Speaker; *Air Quality Group Seminar*, Department of Civil and Environmental Engineering, Stanford University; Lynn Hildemann, host; “*Measuring Proximate Exposure to Sources of Air Pollution in Outdoor Microenvironments*”; February 8, 2005.

- Invited Speaker; *Environmental Energy Technologies Division Seminar*, Lawrence Berkeley National Laboratory, Berkeley, CA; Brett Singer, host; “*Using Mathematical Models in Public Health: The Case of Residential Exposure to Secondhand Tobacco Smoke*”; November 11, 2004.
- Invited Lecturer; *Environmental Health Seminar ENVH 580*; L.-J. Sally Liu, Instructor; University of Washington, Department of Environmental Health; “*The Science of Exposure: Theory and Experiment*”; June 2004.
- Invited Lecturer; “Exposure Assessment”; James Leckie, Instructor; Stanford University, Department of Civil and Environmental Engineering; Fall 2002.
- Graduate Student Instructor; “Introduction to Environmental Health Sciences”; Kirk Smith, Instructor; University of California at Berkeley, School of Public Health; Fall 2000.
- Invited Lecturer; “Exposure Assessment”; James Leckie, Instructor; Stanford University, Department of Civil and Environmental Engineering; Fall 1997.
- Instructor; “Introduction to the BASIC Computer Language”; Las Vegas Community College; Fall 1996.
- Graduate Student Instructor; “Physical Chemistry” ; Wesley D. Allen, Instructor, Stanford University, Department of Chemistry, Fall 1990.
- Graduate Student Instructor; “Introduction to Chemistry”; Stanford University, Department of Chemistry; Fall 1989.

Scientific Software

- “EeeX– Environmental Exposure Explorer”, web-based application and modeling framework written using R, Python, and Javascript for processing and analyzing real-time data from environmental and behavioral sensors to provide feedback on generalized exposure metrics (e.g., using ambient air quality monitors, wearable activity and location sensors, and smart-home sensors), Feb 2019 to present.
- “SOPHYE”, Framework for real-time simulation of interacting environmental and behavioral socio-physical phenomena, 2013 to present.
- “LBL LNG”, an exposure and indoor air quality simulation model written in R for determining the impact on residential pollution and human exposures associated with liquid natural gas (LNG) usage in California, 2010 to present.
- “Port Buddy”, a Perl script server for reading, processing, and transmitting real-time data streams from any environmental monitor via a generic computer serial port connection (e.g., RS232, USB, Bluetooth, Zigbee, etc.); 2009 to present.
- “Process.Monitors”, a sophisticated R script for processing large quantities of real-time data contained in any number of individual files with arbitrary formats; 2008 to present.
- “Sidepak Buddy”, a Perl script for presenting real-time airborne particle levels from a Sidepak aerosol monitor on a computer screen. Used by Dr. Klepeis in live televised demonstrations of secondhand smoke concentrations inside vehicles in Hollywood (California), Salt Lake City (Utah), and Little Rock (Arkansas); 2007 to present.
- “heR (Human Exposure Research)”, a sophisticated R software package for human exposure research containing routines for exposure simulation, time-activity analysis, indoor air quality, and a variety of statistical and plotting functions; 2002 to present.
- “THEM (Total Human Exposure Model)”, a BASIC program for simulating total human exposure to airborne particles for populations; 1994.