

Neil E. Klepeis, Ph.D.
Environmental and Behavioral Health Scientist

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Research Interests

Adaptive Behavioral Interventions; Real-Time Environmental Monitoring; Exposure Science; Secondhand Tobacco Smoke Exposure; Modeling of Human Behavior and Environmental Quality for Health; Agent-Based Modeling; Data Analysis; Indoor Air Quality Modeling; Human Exposure Modeling; Human Activity Patterns; Particulate Matter

Biographical Goal Statement

Dr. Klepeis 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 a variety of scientific software for data analysis, human exposure and indoor air modeling, and behavior simulation. He is an expert in real-time air monitoring techniques and modeling of human exposure, and he has published landmark studies on secondhand smoke exposure in residential, outdoor, in-vehicle, casino, and multi-unit housing settings. Recently, Dr. Klepeis has served as principal investigator and co-investigator on innovative research that brings elements of human exposure, indoor air science, and computer modeling to tobacco-related behavioral interventions. Dr. Klepeis is well-positioned to fulfill his research goal, which is to synthesize the environmental science and behavioral health fields, finding effective ways to educate lay persons, health providers, educators, community advocates, and policy makers on approaches to reducing or eliminating environmental exposures and health risks. Dr. Klepeis' current research focus is to develop and scientifically evaluate simulation models of human behavior and environmental properties for use in interventions, education, and training.

Education

- 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).

Research Positions

- Associate Adjunct Professor; 2007-present; San Diego State University (SDSU), Graduate School of Public Health, SDSU Research Foundation, 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 Scientist and Principal, 2012-present, *Neil Klepeis and Associates*. Environmental Health Research and Consulting. 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).
- Senior Research Affiliate; 2006-2012; 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, 2013-14; 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.

Independent Consultant; 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.

Research Consultant; 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

- **Breathe, CA, Public Health 2012 Award**, for efforts to improve air quality
- American Public Health Association, 2010.
- International Society of Exposure Analysis, 1995.
- American Chemical Society, 1997.
- 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*

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.

Journal Articles and Book Chapters

- 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
- 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.
URL: <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 PM_{2.5} 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 PM_{2.5} 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 PM_{2.5} 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 PM_{2.5} 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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 [FHC] - molecular anion - structural aspects, global surface, and vibrational eigenspectrum. *Journal of Chemical Physics* 99(5):3865-3897.

Technical and Programmatic Reports

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- 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.
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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.

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 F₂Cl⁻ 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.

Scientific Software

“GESS”, Generalized Enviro-Social Simulation, NetLogo Model. Agent-Based Modeling (ABM) framework for real-time simulation of interacting environmental and behavioral phenomena, 2016 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.