MATTHEW J. STRICKLAND

Rollins School of Public Health

Emory University

Department of Environmental Health (primary appointment)

Department of Epidemiology (joint appointment)

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# EDUCATION

Dec 2007 **Emory University**, Atlanta GA. Ph.D. in Epidemiology. Thesis: Ambient air pollution

 and cardiovascular malformations in Atlanta, Georgia.

Jun 2002 **Ohio State University,** Columbus OH. M.P.H. in Epidemiology. Thesis: Time-dependent recordkeeping fatigue among youth completing health diaries of unintentional injuries.

# May 2000 Case Western Reserve University, Cleveland OH. M.A. in Anthropology.

# May 2000 Case Western Reserve University, Cleveland OH. B.A. in Anthropology.

**FELLOWSHIPS AND TRAINING GRANTS**

Maternal and Child Health Applied Research Fellowship (NICHD T32), Emory University, Sep 2002 – Jun 2004.

Graduate School Fellowship, Ohio State University, Oct 2000 – Dec 2001. Scholarship (competitive across all Graduate School departments) that provides full tuition support and a stipend for graduate studies.

James Dysart Magee Award, Case Western Reserve University, Apr 1999 – May 2000. One-year scholarship (60%

tuition) to support select Junior class members enrolled in an accelerated BA/MA program in the social sciences and

liberal arts.

Presidential Scholarship, Case Western Reserve University, Aug 1996 – May 2000. Four-year merit-based scholarship

(75% tuition per year).

## PROFESSIONAL EXPERIENCE

Aug 1, 2014 Effective date of promotion, **Associate Professor with tenure, Department of Environmental Health, Emory University**, Atlanta GA. Jointly appointed in the Department of Epidemiology.

Jul 2008 - Present **Assistant Professor, Department of Environmental Health, Emory University**, Atlanta GA. Jointly appointed in the Department of Epidemiology.

Dec 2007 - Jul 2008 **Health Scientist, Centers for Disease Control and Prevention**, Atlanta GA. Position with the National Center on Birth Defects and Developmental Disabilities.

Jun 2004 - Dec 2007 **Health Scientist, Battelle Memorial Institute,** Atlanta GA. Working under a contract with the National Center on Birth Defects and Developmental Disabilities, U.S. Centers for Disease Control and Prevention.

**PEER-REVIEWED PUBLICATIONS (\* denotes a student for whom Dr. Strickland was a primary mentor)**

1. Darrow LA, Klein M, Flanders WD, Mulholland JA, Tolbert PE, **Strickland MJ**. Air pollution and acute respiratory infections among children 0-4 years: an 18-year time-series study. Under revision at Am J Epidemiol (in press)
2. **Strickland MJ**, Klein M, Flanders WD, Chang HH, Mulholland JA, Tolbert PE, Darrow LA. Modification of the effect of ambient air pollution on pediatric asthma emergency visits: susceptible subpopulations. Epidemiology (in press).
3. Johnson CY, Flanders WD, **Strickland MJ**, Honein MA, Howards PP. Potential sensitivity of bias analysis results to incorrect assumptions of nondifferential or differential exposure misclassification. Epidemiology (in press).
4. Winquist A, Kirrane E, Klein M, **Strickland MJ**, Darrow LA, Sarnat SE, Gass K, Mulholland JA, Russell AG, Tolbert PE. Joint effects of ambient air pollutants on pediatric asthma emergency department visits in Atlanta, 1998-2004. Epidemiology (in press).
5. Pearce JL, Waller LA, Chang HH, Klein M, Mulholland JA, Sarnat JS, Sarnat SE, **Strickland MJ**, Tolbert PE. Using self-organizing maps to develop ambient air quality classifications for use in multipollutant health studies: a time-series example. Environ Health 2014;13:56. PMC
6. \*Gingold DB, **Strickland MJ**, Hess JJ. Ciguatera fish poisoning and climate change: analysis of national poison center data in the United States 2001-2011. Environ Health Perspect 2014;122:580-6. PMC4050511
7. \*Gass K, Klein M, Chang HH, Flanders WD, **Strickland MJ**. Classification and regression trees for epidemiologic research. Environ Health 2014;13:17. PMC3977944
8. Russell A, Holmes H, Frieberg M, Ivey S, Hu Y, Balachandran S, Mulholland J, Tolbert P, Sarnat J, Sarnat S, **Strickland M**, Chang H, Liu Y. Use of Air Quality Modeling Results in Health Effects Research. In *Air Pollution Modeling and Its Application XXIII* (D. Steyn and R. Mathur eds.) 2014.
9. Sororian S, Holmes H, Friberg M, Ivey C, Hu Y, Mulholland J, Russell A, **Strickland M**, Chang H. Temporally and spatially resolved air pollution in Georgia using fused ambient monitoring data and chemical transport model results. In *Air Pollution Modeling and Its Application XXIII* (D. Steyn and R. Mathur eds.) 2014.
10. Mahle WT, \*Matthews E, Kanter KR, Kogon BE, Hamrick SE, **Strickland MJ**. Inflammatory response following neonatal cardiac surgery and its relationship to clinical outcomes. Ann Thorac Surg 2014;97:950-6.
11. Reich BJ, Chang HH, **Strickland MJ**. Spatial health effects analysis with uncertain residential locations. Stat Methods Med Res 2014;23:156-68.
12. **Strickland MJ**, \*Gass KM, Goldman GT, Mulholland JA. Effects of ambient air pollution measurement error on health effect estimates in time series studies: a simulation-based analysis. J Expo Sci Environ Epidemiol (in press).
13. Tinker SC, \*Gibbs C, **Strickland MJ**, Devine OJ, Crider KS, Werler MM, Anderka MT, Reefhuis J. Impact of time to maternal interview on interview responses in the National Birth Defects Prevention Study. Am J Epidemiol 2013; 177:1225-35.
14. Dadvand P, Parker J, Bell ML, Bonzini M, Brauer M, Darrow L, Gehring U, Glinianaia SV, Gouveia N, He E, Leem JH, van den Hooven EH, Jalaludin B, Jesdale BM, Lepeule J, Morello-Frosch R, Morgan GG, Pesatori AC, Peirik FH, Pless-Mulloli T, Rich DQ, Sathyanarayana S, Seo J, Slama R, **Strickland M**, Tamburic L, Wartenberg D, Nieuwenhuijsen M, Woodruff TJ. Maternal exposure to particulate air pollution and fetal growth: A multi-country evaluation of effect and heterogeneity. Environ Health Perspect 2013;121:367-73. PMC3621183
15. Oster ME, Dawson AL, Batenhorst CM, **Strickland MJ**, Kleinbaum DG, Mahle WT. Relationship between resource utilization and length of stay following Tetralogy of Fallot repair. Congenit Heart Dis 2013;8:535-40.
16. Goldman GT, Mulholland JA, Russell AG, Gass K, **Strickland MJ**, Tolbert PE. Characterization of ambient air pollution measurement error in a time-series health study using a geostatistical simulation approach. Atmos Environ 2012;57:101-8. PMC3628542
17. Flanders WD, Klein M, Darrow LA, **Strickland MJ**, Sarnat SE, Sarnat JA, Waller LA, Winquist A, Tolbert PE. A method for detection of residual confounding in spatial and other observational studies. Epidemiology 2011;22:832-6. PMC3233361
18. Goldman GT, Mulholland JA, Russell AG, **Strickland MJ**, Klein M, Waller LA, Tolbert PE. Impact of exposure measurement error in air pollution epidemiology: effect of error type in time-series studies. Environ Health 2011;10:61. PMC3146396
19. Oster ME, **Strickland MJ**, Mahle WT. Impact of prior hospital mortality versus surgical volume on congenital heart surgery mortality. J Thorac Cardiovasc Surg 2011;142:882-6.
20. **Strickland MJ**, Darrow LA, Mulholland JA, Klein M, Flanders WD, Winquist A, Tolbert PE. Implications of different approaches for characterizing ambient air pollutant concentrations within the urban airshed for time-series studies and health benefits analyses. Environ Health 2011;10:36. PMC3118125
21. \*Oster ME, **Strickland MJ**, Mahle WT. Racial and ethnic disparities in postoperative mortality following congenital heart surgery. J Pediatr 2011;159:222-6. PMID: 21414631
22. Alverson CJ, **Strickland MJ**, Gilboa SM, Correa A. Maternal smoking and congenital heart defects in the Baltimore-Washington Infant Study. Pediatrics 2011;127:e647-53.
23. Parker J, Rich DQ, Glinianaia SV, Leem JH, Wartenberg D, Bell ML, Bonzini M, Brauer M, Darrow L, Gehring U, Gouveia N, Grillo P, Ha E, van den Hooven E, Jalaludin B, Jesdale BM, Lepeule J, Morello-Frosch R, Morgan GG, Slama R, Pierik F, Pesatori AC, Sathyanarayana S, Seo J, **Strickland M**, Tamburic L, Woodruff TJ. The International Collaboration on Air Pollution and Pregnancy Outcomes: initial results. Environ Health Perspect 2011;1023-8. PMC3222970
24. Darrow LA, Klein M, **Strickland MJ**, Mulholland JA, Tolbert PE. Ambient air pollution and birth weight in full-term infants in Atlanta, 1994-2004. Environ Health Perspect 2011;119:731-7. PMC3094429
25. Flanders WD, Klein M, Darrow LA, **Strickland MJ**, Sarnat SE, Sarnat JA, Waller LA, Winquist A, Tolbert PE. A method for detection of residual confounding in time-series or other observational studies. Epidemiology 2011;22:59-67. PMC3743227
26. Goldman GT, Mulholland JA, Russell AG, Srivastava A, **Strickland MJ**, Klein M, Waller LA, Tolbert PE, Edgerton ES. Ambient air pollutant measurement error: characterization and impacts in a time-series epidemiologic study in Atlanta. Environ Sci Technol 2010;44:7692-8. PMC2948846
27. Hamrick SE, **Strickland MJ**, Shapira SK, Autry A, Schendel DE. Use of special education services among children with and without congenital gastrointestinal anomalies. Am J Intellect Dev Disabil 2010;115:421-32.
28. **Strickland MJ**, Darrow LA, Klein M, Flanders WD, Sarnat JA, Waller LA, Sarnat SE, Mulholland JA, Tolbert PE. Short-term associations between ambient air pollutants and pediatric asthma emergency department visits. Am J Resp Crit Care Med 2010;182:307-16. PMC2921597
29. Csordas TC, Dole C, Tran A, **Strickland M**, Storck MG. Ways of asking, ways of telling: a methodological comparison of ethnographic and research diagnostic interviews. Cult Med Pyschiatry 2010;34:29-55. PMC2813527
30. Darrow LA, Klein M, Sarnat JA, Mulholland JA, **Strickland MJ**, Sarnat SE, Russell AG, Tolbert PE. The use of alternative pollutant metrics in time-series studies of ambient air pollution and respiratory emergency department visits. J Expo Sci Environ Epidemiol 2011;1:10-9. PMC3743225
31. \*Parker SE, Mai CT, **Strickland MJ**, Olney RS, Rickard R, Marengo L, Wang Y, Hashmi SS, Meyer RE. Multistate study of the epidemiology of clubfoot. Birth Defects Res A Clin Mol Teratol 2009;85:897-904.
32. Darrow LA, **Strickland MJ**, Klein M, Waller LA, Flanders WD, Correa A, Marcus M, Tolbert PE. Seasonality of birth in Atlanta and implications for temporal studies of preterm birth. Epidemiology 2009;20:699-706. PMC3743217
33. **Strickland MJ**, Klein M, Correa A, Reller MD, Mahle WT, Riehle-Colarusso TJ, Botto LD, Flanders WD, Mulholland JA, Siffel C, Marcus M, Tolbert PE. Ambient air pollution and cardiovascular malformations in Atlanta, Georgia, 1986–2003. Am J Epidemiol 2009;169:1004-14. PMC2727233
34. **Strickland MJ**, Klein M, Darrow LA, Flanders WD, Correa A, Marcus M, Tolbert PE. The issue of confounding in epidemiological studies of ambient air pollution and pregnancy outcomes. J Epidemiol Community Health 2009;63:500-4. PMC3743223
35. Gilboa SM, **Strickland MJ**, Olshan AF, Werler MM, Correa A. Use of antihistamine medications during pregnancy and isolated major malformations. Birth Defects Res A Clin Mol Teratol 2009;85:137-50. PMC3619228
36. **Strickland MJ**, Riehle-Colarusso TJ, Jacobs JP, Reller MD, Mahle WT, Botto LD, Tolbert PE, Jacobs ML, Lacour-Gayet FG, Tchervenkov CI, Mavroudis C, Correa A. The importance of nomenclature for congenital heart disease: implications for research and evaluation. Cardiol Young 2008;18 (Suppl 2):92-100. PMC3743224
37. Reller MD, **Strickland MJ**, Riehle-Colarusso TJ, Mahle WT, Correa A. Prevalence of congenital heart defects in metropolitan Atlanta, 1998-2005. J Pediatr 2008;153:807-13. PMC2613036
38. Slama R, Darrow L, Parker J, Woodruff TJ, **Strickland M**, Nieuwenhuijsen M, Glinianaia S, Hoggatt KJ, Kannan S, Hurley F, Kalinka J, Sram R, Brauer M, Wilhelm M, Heinrich J, Ritz B. Meeting report: atmospheric pollution and human reproduction. Environ Health Perspect 2008;116:791-8. PMC2430236
39. Riehle-Colarusso TJ, **Strickland MJ**, Reller MD, Mahle WT, Botto LD, Siffel C, Atkinson M, Correa A. Improving the quality of surveillance data on congenital heart defects in the Metropolitan Atlanta Congenital Defects Program. Birth Defects Res A Clin Mol Teratol 2007;79:743-53.
40. **Strickland MJ**, Siffel C, Gardner BR, Berzen AK, Correa A. Quantifying geocode location error using GIS methods. Environ Health 2007;6:10. PMC1852798
41. Gardner BR, **Strickland MJ**, Correa A. Application of the automated spatial surveillance program to birth defects surveillance data. Birth Defects Res A Clin Mol Teratol 2007;79:559-64.
42. Correa A, Cragan JD, Kucik JE, Alverson CJ, Gilboa SM, Balakrishnan R, **Strickland MJ**, Duke CW, O’Leary LA, Riehle-Colarusso TJ, Siffel C, Gambrell D, Thompson D, Atkinson M, Chitra J. Reporting birth defects surveillance data 1968-2003. Birth Defects Res A Clin Mol Teratol 2007;79:65-186.
43. **Strickland MJ**, Crawford JM, Shen L, Wilkins III, JR. Time-dependent recordkeeping fatigue among youth completing health diaries of unintentional injuries. J Safety Res 2006;37:487-92.
44. Siffel C, **Strickland MJ**, Gardner BR, Kirby RS, Correa A. Role of geographic information systems in birth defects surveillance and research. Birth Defects Res A Clin Mol Teratol 2006;76:825-33.

**TEACHING**

2014 Teacher of the Year Award, Department of Environmental Health, Emory University.

2012 - Present Instructor, Environmental and Occupational Epidemiology (EH 530), Emory University.

2008 - 2011 Instructor, Advanced Environmental Epidemiology (EHS 747/EPI 747), Emory University.

2005 - Present Instructor, Survival Analysis, statistics.com.

2010 - Present Instructor, Advanced Survival Analysis, statistics.com.

2007 Instructor, Survival Analysis, Erasmus Summer Program, Rotterdam, The Netherlands.

2013 - Present Guest lecture, Genome, Exposome, and Health (EH 590 / HLTH 385), Emory University

2012 - Present Guest lecture, Advanced Environmental Epidemiology (EHS 747), Emory University.

2008 - Present Guest lecture, Perspectives in Environmental Health (EH 500), Emory University.

2008 - 2010 Guest lecture, Environmental and Occupational Epidemiology (EH 530), Emory University.

2008 - 2009 Guest lecture, Environmental Health Journal Club (EH 590R), Emory University.

2009 Guest lecture, Environment and Health (EAS 4803), Georgia Institute of Technology.

2006 - 2008 Guest lecture, Epidemiologic Intelligence Service Summer Program, Centers for Disease Control and Prevention, Atlanta GA.

**MENTORING: DOCTORAL STUDENTS (COMMITTEE CHAIR)**

1. Heather Strosnider, Emory University, PhD in Environmental Health (expected graduation May, 2016).
2. Katherine Gass, Emory University, PhD in Epidemiology (May, 2014). Dissertation: Identifying air pollution mixtures and investigating their association with pediatric asthma in a time-series framework.

**MENTORING: DOCTORAL STUDENTS (COMMITTEE MEMBER)**

1. Audrey Flak, Emory University, PhD in Epidemiology (expected graduation May, 2015).
2. Candice Johnson, Emory University, PhD in Epidemiology (May, 2012). Dissertation: Exposure misclassification and selection bias in a case-control study of pre-pregnancy body mass index and neural tube defects.
3. Shannon McClintock, Emory University, PhD in Biostatistics (May, 2012). Dissertation: Model-based methods for public health surveillance subject to imperfect observation.
4. Gretchen Goldman, Georgia Institute of Technology, PhD in Environmental Engineering (June, 2011). Dissertation: Characterization and impact of ambient air pollutant measurements in time-series epidemiologic studies.

**MENTORING: EMORY UNIVERSITY MASTERS STUDENTS - \*\* denotes RSPH Best Thesis Shepard Award Finalist**

1. \*\*Breanna Alman, MPH in Environmental Health (May, 2014). Thesis: Effect of wildfire smoke on asthma emergency department visits and acute hospitalizations in Colorado.
2. Veronica Burkel, MSPH in Environmental Epidemiology (May, 2014). Thesis: Meta-analysis of parental occupational exposure to pesticides or agricultural work and congenital heart disease.
3. John Kaufman, MPH in Global Environmental Health (May, 2014). Thesis: Prevalence and risk factors for elevated blood lead in children in mining and non-mining communities, Zamfara, Nigeria, 2012.
4. Caitlin Marsh, MPH in Epidemiology (May, 2014). Thesis: Emergency department utilization for infantile acute bronchiolitis and subsequent risk of childhood asthma.
5. Meng Xu, MPH in Environmental Health (May, 2014). Thesis: Identifying and quantifying the impact of blood lead levels on academic performance of third grade children in Evansville, Indiana.
6. Christina Souther, MPH in Global Environmental Health (May, 2013). Thesis: Characterization of hazardous substance emergency events during which responders become victims.
7. \*\*Daniel Gingold, MPH in Epidemiology (May, 2013). Thesis: Ciguatera fish poisoning and climate change: analysis of cross-sectional national poison center data in the United States 2001-2011.
8. Jessica Kolling, MPH in Environmental Health (May, 2013). Thesis: Mapping vulnerability: an exploration of social vulnerability indices for use in public health practice.
9. Xueying Zhang, MPH in Epidemiology (May, 2013). Thesis: Applied satellite remote sensing in time-series study of associations between PM2.5 and pediatric asthma/wheeze emergency department visits in metropolitan Atlanta.
10. Gaelle Gourmelon, MPH in Global Environmental Health (May, 2012). Thesis: Health benefits of parks among older adults in Atlanta.
11. Jamie White, MPH in Epidemiology (May, 2012). Thesis: Residential proximity to toxic release inventory sites and risk of preterm delivery and low birth weight.
12. \*\*Matthew Oster, MPH in Epidemiology (May, 2011). Thesis: Racial and ethnic disparities in post-operative mortality following congenital heart surgery.
13. Cassandra Gibbs, MPH in Epidemiology (May, 2011). Thesis: The impact of time to maternal interview on the odds of a negative response in the National Birth Defects Prevention Study.
14. Nafisa Ishaku, MPH in Environmental Health (May, 2011). Thesis: Effect of PM2.5 and PM10 on birth outcomes in Hillsborough County, Florida.
15. Alison Kernohan, MPH in Global Environmental Health (May, 2011). Thesis: Estimating the economic burden of diarrheal disease in the United States among the privately insured in-patient population.
16. Kristen Adams, MSPH in Environmental Epidemiology (August, 2010). Thesis: Asthma-related emergency department visits before and after implementation of the Georgia Smokefree Air Act.
17. Michael Bryan, MPH in Global Environmental Health (May, 2010). Thesis: The effect of the price of gasoline on motor vehicle fatalities in the United States, 1995-2007.
18. Benjamin Monroe, MPH in Global Environmental Health (May, 2010). Thesis: Geographical distribution of human tanapox: an ecological niche modeling approach.
19. Samantha Parker, MPSH in Environmental Epidemiology (May, 2009). Thesis: Multi-state epidemiology of clubfoot.

**CURRENT RESEARCH SUPPORT**

**K01ES019877 (Strickland)**

**09/10/10-04/30/15**

**NIEHS**

**Title: Relationships between air pollutants and asthma exacerbations in a birth cohort.**

**Goal: Investigate whether children born premature or low birth weight have increased susceptibility to ambient air pollutant concentrations.**

**Role: PI**

**Direct costs: $591,376**

**RD83479901 (Tolbert)**

**01/01/11-12/31/15**

**US EPA**

**Title: Southeastern Center for Air Pollution and Epidemiology (SCAPE)**

**Goal: E**stablish a multi-disciplinary center devoted to understanding health effects of urban air mixtures.

**Role: PI of Georgia Birth Cohorts Study (one of four projects in the center)**

**Direct costs: $6,488,075 for the center; $1,140,405 for Georgia Birth Cohorts Study**

**R01ES019897 (Vieira)**

**07/25/11-04/30/16**

**NIEHS**

Subcontract from University of California-Irvine

**Title: Spatial and temporal modeling of PM2.5 and infant morbidity**

**Goal: Study relationships between PM2.5, bronchiolitis, and otitis media using population-based longitudinal birth cohort from Massachusetts.**

**Role: Co-I (Subcontract PI)**

**Direct costs: $263,033 (subaward)**

NNX11AI53G (Liu)

01/01/2011 - 12/31/2015

NASA

Title: Improving satellite aerosol remote sensing data for air pollution health research

Goal: This is the application proposal for NASA's Air Quality Applied Sciences Team. The objective of the team is to focus on applied research topics and demonstrations required to advance the air quality management community’s use and application of Earth science observations and models in decision making.

Role: Co-I

Direct costs: $566,435

4912-RFA11-1/12-6 (Russell)

01/01/13-12/31/15

Health Effects Institute

Subcontract from Georgia Institute of Technology

Impacts of Emission Changes on Air Quality and Acute Health Effects in the Southeast, 1993-2012

Goal: To assess impacts of the air quality changes resulting from regulatory programs on health outcomes

Role: Co-I

Direct costs: $53,705 (subaward)

**PAST RESEARCH SUPPORT**

R9979-G1/RD-83386601 (Tolbert)

11/01/2009-09/30/2012

US EPA

Subcontract from Georgia Institute of Technology

Title: Improving particulate matter source apportionment for health studies

Goal: Develop new strategies for source apportionment of particulate matter for use in health studies.

Role: Co-I

Direct costs: $345,456 (subaward)

**R03ES018963 (Darrow)**

**04/15/10-04/14/12**

**NIEHS**

**Title: Ambient air pollution and respiratory outcomes in children ages 0-4**

**Goal: Assess relationship of air pollution with emergency department visits for respiratory outcomes in young children.**

Role: Co-I

Direct costs: $100,000

**Thrasher Research Fund (Hamrick)**

**05/01/10-04/30/13**

**Thrasher Research Fund**

Title: Role of inflammatory response in brain injury following neonatal cardiac surgery

**Goal: Assess the relationship between markers of inflammation and white matter brain injury in term neonates undergoing congenital heart surgery.**

**Role: Co-I**

**Direct costs: $273,281**

Pilot funds (Oster)

Children’s Healthcare of Atlanta (CHOA)

07/01/2011-06/30/2012

Title: Reducing racial and ethnic disparities following congenital heart surgery

Goal: Use the EPIC electronic medical records database at CHOA to obtain information on inflammatory markers and

blood pressure and examine whether observed disparities in outcomes are explained by these factors.

Role: Co-I

Direct costs: $40,000

**JR5000189, JR5000308 (Strickland)**

**05/01/10-09/28/11**

**TKC Global, Inc.**

**Title: Health impact assessment of ambient air pollutants**

**Goal: Support implementation of health impact assessments for CDC’S Environmental Public Health Tracking Network for the short-term effects of PM2.5 and ozone on asthma and myocardial infarction.**

**Role: PI**

**Direct costs: $229,289**

**09IPA911458 (Strickland)**

**3/01/09-2/28/10**

**CDC**

**Strickland IPA Agreement**

**Goal: Investigate 1) associations between congenital anomalies and risk of pediatric cancer and 2) support general activities for the Birth Defects Surveillance Team.**

**Role: PI**

**Direct costs: $22,680**

**RD833626 (Russell)**

**1/01/08-12/31/10**

**US EPA**

Subcontract from Georgia Institute of Technology

**Development and assessment of environmental indicators: application to mobile source impacts on emissions, air quality, and health outcomes.**

**Goal: Develop indicators of ambient air pollution from mobile sources and evaluate whether these indicators predict emergency department visits for cardiorespiratory health outcomes.**

**Role: Co-I**

**Direct costs: $84,530 (subaward)**

EP-P277231/C13172 (Tolbert)

7/01/98-12/31/12

EPRI

Particulate Pollution and Cardiorespiratory Conditions

Goal: Assess association of speciated ambient pollution data with 1) arrhythmic events in patients with automatic defibrillators and 2) emergency department visits for cardiorespiratory conditions

Role: Co-I

Direct costs: $1,183,070

R01ES012967 (Tolbert)

1/01/05-06/30/10

NIEHS

Air Pollution and Birth Defects in Atlanta, 1968-2002

Goal: Assess relationship of air pollution with incidence of selected birth defects.

Role: Initially supported as a doctoral student; final years supported as a Co-I

Direct costs: $1,563,982

**PROFESSIONAL AND SERVICE ACTIVITIES**

Board Member, Board of Scientific Counselors, National Center for Environmental Health / Agency for Toxic Substances

and Disease Registry, Centers for Disease Control and Prevention (appointment term 2014-2017)