

Principal Investigator	Grant Number	Project Officer	Project Title	EHEA Question	Finding	Publication
<b>ENVIRONMENTAL HEALTH ECONOMIC ANALYSES</b>						
Sara Adar	<a href="#">R01ES028694</a>	Abee Boyles	The Impact of Airborne Particles and Ozone on Cognition, Mobility, and Health Care Spending at Older Ages: Evidence from a Nationally-Representative Longitudinal Cohort	What is the impact of air pollution on health care costs for older adults?	No economic findings yet.	No economic related publications yet.
Sharon Croissant and Cornelis Elferink	<a href="#">U19ES020676</a>	Symma Finn	Community Health Assessment of Risks associated with the Macondo Spill	What is the economic impact of the Macondo Oil Spill on the Gulf seafood industry and safe consumption of fish?	No economic findings yet.	No economic related publications yet.
Oliver Deschenes	<a href="#">R21ES019375</a>	Caroline Dilworth	Using Medication Purchases to Measure the Health Consequences of Air Pollution	How does air pollution/ozone impact medication purchases (as a cost of climate change)?	Researchers were unable to answer these questions for two reasons. First because of the difficulty in getting reliable predictions on future ozone levels associated with global climate models. Second, problems with the research design (absence of a valid instrumental variable for ambient ozone concentrations) preclude this sort of analysis. This is not a problem we anticipated at the time we prepared the grant proposal.	NBER Working Paper “ <a href="#">Defensive Investments and the Demand for Air Quality: Evidence from the NOx Budget Program and Ozone Reductions</a> ” (No. 18267 available at <a href="http://www.nber.org/papers/w18267">http://www.nber.org/papers/w18267</a> )

<p><b>Rebecca Fry</b></p>	<p><a href="#">T32ES007018</a></p>	<p>Carol Shreffler</p>	<p>Biostatistics for Research in Environmental Health</p>	<p>Can extending regulated community water service to households with private wells decrease health care costs associated with acute gastrointestinal illness?</p>	<p>The researchers estimate that extending community water service to just 10 percent of the population currently using private wells in North Carolina could prevent 2,920 annual emergency department visits for acute GI illness.</p>	<p>DeFelice NB, Johnston JE, Gibson JM. (2016). Reducing emergency department visits for acute gastrointestinal illnesses in North Carolina by Extending Community Water Service. Environmental Health Perspectives, 124, (10). <a href="https://ehp.niehs.nih.gov/doi/10.1289/EHP160">https://ehp.niehs.nih.gov/doi/10.1289/EHP160</a></p>
<p><b>Frank Gilliland, Rob McConnell, and Edward Avol</b></p>	<p><a href="#">P01ES009581</a>, <a href="#">P30ES007048</a>, <a href="#">R01ES014447</a>, <a href="#">R01ES014708</a>, <a href="#">R01ES016535</a></p>	<p>Claudia Thompson, Kim Gray</p>	<p>NA</p>	<p>What is the impact of near-roadway air pollution on mortality and costs associated with hospitalizations?</p>	<p>The researchers developed an economic framework that can be used to estimate the benefits of regulations to improve air quality. CHD attributable to NRAP has a large economic impact that is expected to increase by 2035, largely due to an aging population. PM2.5-attributable costs may underestimate total value of air pollution-attributable CHD.</p>	<p>Brandt S, Dickinson B, Ghosh R, Lurmann F, Perez L, Penfold B, Wilson J, Künzli N, McConnell R. (2017). Costs of coronary heart disease and mortality associated with near-roadway air pollution. Science of the Total Environment. 601-602. <a href="https://doi.org/10.1016/j.scitotenv.2017.05.073">https://doi.org/10.1016/j.scitotenv.2017.05.073</a>.</p>
<p><b>Philippe Grandjean</b></p>	<p><a href="#">R01ES009797</a></p>	<p>Annette Kirshner</p>	<p>Mercury Associated Neuro-behavioral Deficit in Children</p>	<p>Can we improve the method used to calculate the burden of disease associated with environmental chemical exposures?</p>	<p>Including toxicological and epidemiological information and data on exposure distributions results in more representative economic analyses of the adverse effects associated with environmental chemicals.</p>	<p>Grandjean P, and Bellanger M. (2017). Calculation of the disease burden associated with environmental chemical exposures: application of toxicological information in health economic estimation. Environmental Health, 16, (123). <a href="https://doi.org/10.1186/s12940-017-0340-3">https://doi.org/10.1186/s12940-017-0340-3</a></p>

<b>Darby Jack</b>	<a href="#">R01ES024489</a>	Claudia Thompson	Understanding Adoption of Clean Cookstoves	What are women in Ghana willing to pay for high efficiency cookstoves? Does the use of high efficiency cookstoves free up time that can be used for other (income producing) activities?	No economic findings yet.	No economic related publications yet.
<b>Mandeep Jassal</b>	<a href="#">K23ES023814</a>	Kimberly Gray	Contingency Management to Reduce Secondhand Smoke Exposure in Asthmatic Children	Can we reduce children's exposure to second hand smoke by offering the adult smokers in the household financial incentives to quit smoking?	No economic findings yet.	No economic related publications yet.
<b>James W. Krieger</b>	<a href="#">R01ES014583</a>	Caroline Dilworth	HomeBASE (Home-Based Asthma Support and Education for Adults)	Can we develop a cost-effective, home-based, asthma intervention that increases asthma symptom-free days and quality of life and reduces urgent health service use?	The HomeBASE delivered an intervention that included an average of 4-5 home visits during a 1-year period to assess asthma control, self-management, and home environment and to support asthma self-care strategies. The approach used for home visits is practical and inexpensive, suggesting that, if additional studies confirm our findings, adoption by organizations serving similar populations would be feasible and beneficial. The cost per participant was approximately \$1300 (2013 US dollars), substantially less than 1 year's supply of an inhaled corticosteroid.	Krieger, James; Song, Lin; Philby, Miriam. (2015). <a href="#">Community health worker home visits for adults with uncontrolled asthma: the HomeBASE Trial randomized clinical trial.</a> JAMA internal medicine 175(1):109-17. doi: 10.1001/jamainternmed.2014.6353. PMID: 25419871

John Morris	<a href="#">U19ES020683</a>	Symma Finn	Health Impact of Deepwater Horizon Spill in Eastern Gulf Coast Communities	What is the economic impact of the Deepwater Horizon Oil Spill on adults working in the fishing, harvesting, seafood processing, or service/ tourism industries in the Gulf Coast.	The loss of income associated with the Deepwater Horizon Oil Spill has a long-term impact on behavioral health.	Buckingham-Howes, S., Holmes, K., Glenn Morris, J. et al. J Behav Health Serv Res (2018). <a href="https://doi.org/10.1007/s11414-018-9602-2">https://doi.org/10.1007/s11414-018-9602-2</a>
Matthew J. Neidell	<a href="#">R21ES019670</a>	Caroline Dilworth	The Impact of Environmental Conditions on the Productivity of Agricultural Worker	How is agricultural worker productivity impacted by extreme heat events/ ozone levels?	<p>Our main finding was that a 10 parts per billion increase in ozone lowers worker productivity by 5.5 percent. We also extended this aim by collaborating with two other economists to examine the relationship between environmental conditions and worker productivity, focusing on indoor manufacturing in a factory setting. Our main finding was that fine particulate matter significantly decreases indoor worker productivity, thus offering an important extension to a more sizeable sector of the United States economy.</p> <p>We also explored whether several factors moderated the relationship between ozone and worker productivity. We found that worker experience did not moderate the relationship, suggesting more experienced workers do not appear any better able to moderate the impacts of ozone. We found that, contrary</p>	<p>Graff Zivin, Joshua, and Matthew Neidell. 2012. <a href="#">"The Impact of Pollution on Worker Productivity."</a> American Economic Review, 102(7): 3652-73.</p> <p>Graff Zivin, Joshua, and Matthew Neidell. 2013. <a href="#">"Environment, Health, and Human Capital."</a> Journal of Economic Literature, 51(3): 689-730.</p> <p>Chang, Tom, Joshua Graff Zivin, Tal Gross, and Matthew Neidell. 2014. <a href="#">"Particulate Pollution and the Productivity of Pear Packers."</a> Publicly available as an NBER Working Paper: (No. 19944 available at <a href="http://www.nber.org/papers/w19944">http://www.nber.org/papers/w19944</a>) since February 2014.</p>

					<p>to much laboratory evidence, ozone had a smaller impact on the productivity of female workers, though the magnitude of this difference was very small. These findings have been widely disseminated at various academic and policy seminars. In the short period since publication, this work has been influential on policy, as evidenced by recent efforts to incorporate the main estimates into both Regulatory Impact Analyses and the Environmental Benefits Mapping and Analysis Program (BenMAP) managed by the Environmental Protection Agency.</p>	
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<p><b>Johnathan Patz</b></p>	<p><a href="#">R21ES020232</a></p>	<p>Caroline Dilworth</p>	<p>Climate Change Impacts on Power Plant Emissions, Air Quality, and Health in the US</p>	<p>What is the impact impacts of heat-driven adaptation through building cooling demand on air-quality-related health outcomes in a representative mid-century climate scenario?</p>	<p>Health impacts assessment finds that for a mid-century climate change scenario (with adaptation), annual PM2.5-related adult mortality increases by 13,547 deaths (approximately US\$126 billion cost) and annual O3-related adult mortality increases by 3,514 deaths (approximately US\$32.5 billion cost), calculated as a 3-month summer estimate based on July modeling. Air conditioning adaptation accounts for 654 (range of 87 to 1,245) of the PM2.5-related deaths (approximately US\$6 billion cost, a 4.8% increase above climate change impacts alone) and 315 (range of 198 to 438) of the O3-related deaths (approximately US\$3 billion cost, an 8.7% increase above climate change impacts alone).</p>	<p>Abel DW et al. (2018). Air-quality-related health impacts from climate change and from adaptation of cooling demand for buildings in the eastern United States: An interdisciplinary modeling study. PLoS Med, 15, (7). <a href="https://doi.org/10.1371/journal.pmed.1002599">https://doi.org/10.1371/journal.pmed.1002599</a></p>
<p><b>WORKER TRAINING ECONOMIC IMPACTS</b></p>						
<p><b>Salvatore Cali</b></p>	<p><a href="#">U45ES007850</a></p>	<p>Sharon Beard</p>	<p>OAI Environmental Careers Worker Training Consortium</p>	<p>What is the economic impact of providing health and safety training to workers in terms of reducing lost wages because of injury and increasing wages as a result of specialized training and skills?</p>	<p>No economic findings yet.</p>	<p>No economic related publications yet.</p>

**COMMERCIALIZATION/COST BENEFIT ANALYSIS**

<p><b>Terence Patrick Barry</b></p>	<p><a href="#">R44ES017576</a></p>	<p>Heather Henry</p>	<p>Continued Development of Photoelectrocatalytic Oxidation for Treating Gasoline Co</p>	<p>How effective is our highly efficient, and cost-effective photoelectrocatalytic oxidation technology at treating MTBE contamination in water, both as a stand-alone treatment and as the first stage of a two-stage treatment process in which granular activated carbon is used to polish the water?</p>	<p>The product was developed and is now commercially available. The developer was able to obtain significant funding/investments to continue research and commercial development and deployment of the product. The final report does not contain a specific mention of cost-effectiveness.</p>	<p>No economic related publications yet.</p>
<p><b>Manal Beshay</b></p>	<p><a href="#">R44ES019844</a></p>	<p>Theodore Outwater</p>	<p>Chemical Identification Device for First Responders</p>	<p>Can we build a cost-effective handheld chemical detection device that will enable first responders to rapidly and accurately identify multiple contaminants, measure their concentration, and define site boundaries?</p>	<p>This project saw the development of a cost-effective, handheld chemical detection device that will enable first responders to rapidly and accurately identify several hazardous chemicals and toxins, and reliably measure their concentration. The innovative IOS multi-channel optical sensor array (MOSA) device incorporates a disposable optical chip containing several chemically-sensitive optical channels, with an optoelectronics and signal processing unit. Each optical channel consists of a chemically-permeable optical polymer impregnated with a chemical indicator that undergoes a large and rapid optical change in the presence of a target analyte. The</p>	<p>No publications</p>

					handheld unit has an advanced system of semiconductor light sources and detectors to monitor changes in the light that is guided through the sensors. Disposable chips with a specific "panel" of indicator waveguides can be designed to meet a variety of applications, enabling MOSA to be used in virtually any chemical detection application.	
<b>Michael J. Blaylock</b>	<a href="#">R43ES025483</a>	Heather Henry	Endophyte Assisted Phytoremediation of Arsenic	Can we develop a low-cost tool for removal of arsenic from contaminated soils?	No economic findings yet.	No economic related publications yet.
<b>Steven N. Chillrud</b>	<a href="#">R33ES024734</a>	David Balshaw	Potential Inhaled Dose of Particulates, Biking and Cardiovascular Indicators	Can we build a cheaper, more effective air pollution sensor?	No economic findings yet.	No economic related publications yet.
<b>Andrew Feiring</b>	<a href="#">R43ES022870</a>	Daniel Shaughnessy	Enhanced Membrane Systems for Supplying Quality Drinking Water	Can we develop a cost-effective system for using enhanced oxidation chemicals (EOC) resistant membranes for supplying EOCs as a strategy for reducing the cost of water disinfection?	While the membranes were successfully fabricated that were not successful in non-laboratory testing. No specific economic findings were reported.	No economic related publications yet.

<b>Pat James</b>	<a href="#">R43ES020096</a>	Heather Henry	Value Added Product Generation from ARD	Can we demonstrate the ability of a new core technology variant to profitability remove iron (a predominant contaminant) from Acid Rock Drainage (ARD) and recover it as a high-value product widely used in a variety of number of industrial processes?	The new technology was successfully tested in real world situations. Test showed that it is cost-effective to harvest the iron and the cost for harvesting the iron is well below the value of harvested product.	No economic related publications yet.
<b>Kaspars Krutkrame Lis</b>	<a href="#">R44ES024620</a>	Heather Henry	On Site Mercury Remediation via Activated Fly Ash	Can we design a new, cost-effective Hg-capture technology to mitigate human health risks and associated national healthcare costs, and to control industry/consumer costs under the upcoming regulations related to coal-fired power plants and burners?	No economic findings yet.	No economic related publications yet.
<b>Jennifer Rettew McCall</b>	<a href="#">R42ES023724</a>	Daniel Shaughnessy	Development of User-Friendly Fluorescence Based Assays for Marine Toxins	Can we develop a fluorescence based receptor binding assay (FBA) for the detection of marine neurotoxins that cause paralytic shellfish poisoning (saxitoxin) and amnesic shellfish poisoning (domoic acid) that are more cost-effective and have higher sensitivity than current assays that are available?	By the end of Phase II experiments, we will have a validated animal-free assay kit for PbTx <sub>s</sub> , CTX <sub>s</sub> , and DA that does not need to be continuously frozen to retain utility. This will result in an economical alternative test for these marine neurotoxins ideal for locations both inside and outside of the US where these toxins are endemic.	No economic related publications yet.
<b>Curtis William</b>	<a href="#">R44ES015422</a>	Daniel Shaughnessy	Arsenic Selective	Can we develop an arsenic selective ligand-	A provisional patent application has been filed (application	No economic related publications yet.

<p><b>Onan (contact); Annie Elise Belcourt; Anthony John Ward;</b></p>			<p>Ligand-Anchored Fiber for Purification of Drinking Water</p>	<p>anchored fiber adsorbent that can be used to remove arsenic from drinking water with higher capacity, good selectivity, and enhanced robustness compared to conventional technologies such as ion exchange, activated alumina, and others?</p>	<p>#61802514; filed March 16, 2013) on our invention titled "Selective Adsorbent Fabric for Water Purification". Our arsenic-removing filter can be used in point of use water filtration modules or large-scale municipal water treatment plants. We will license our filter to established filtration companies with a strong presence in the US (~\$3B) and global (&gt;\$30B) water filtration markets. Our filter will benefit the ~ 70 million Americans drinking water with unsafe levels of arsenic as well as the millions of residents of arsenic-rich Thailand, Indonesia, and Africa. No specific findings related to cost-effectiveness were reported.</p>	
<p><b>Joseph Salanitro</b></p>	<p><a href="#">R44ES022123</a></p>	<p>Heather Henry</p>	<p>Development of a High-Performance Bioprocess for Eliminating 1,4-Dioxane in Water</p>	<p>Can we develop a novel high performance, cost-effective, water technology to degrade 1,4-dioxane into harmless products?</p>	<p>The product was successfully developed and tested and is now commercially available. Overall, the project is likely to contribute to significantly lower costs for communities with 1,4-dioxane contamination. The recovery of value otherwise spent on expensive and energy-intense oxidation technologies will contribute to the economic growth of local communities and municipalities, as well as Federal sites containing 1,4-dioxane.</p>	<p>No economic related publications yet.</p>

<b>Takuji Tsukamoto</b>	<a href="#">R43ES020665</a>	Daniel Shaughnessy	Smart Absorption System for Removal of Toxic, Organic Chemicals from Drinking Water	Can we build a cost-effective smart adsorption system for removing organic chemicals from drinking water?	A prototype adsorption system was found to effectively and efficiently remove chemicals from sampled well water. Specific cost-effectiveness findings were not reported.	No economic related publications yet.
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