



Health Effects Institute WEBINAR

Did Power Plant and Motor Vehicle Controls Improve Air Quality and Health in Atlanta?

Thursday April 19, 1 pm EDT

Presented by the [Health Effects Institute](#) and
Armistead (Ted) Russell, Georgia Institute of Technology

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|----------------|------------------------------------------------------------------|
| 1:00 pm | Welcome
Dan Greenbaum, HEI |
| 1:05 pm | What is Accountability research?
Annemoon van Erp, HEI |
| 1:20 pm | Feature presentation
Ted Russell, Georgia Tech |
| 1:45 pm | Question & answer period |



About the Health Effects Institute

- Over 35 years providing impartial, high-quality science on health effects of air pollution to inform often controversial decisions
- Initially, and still today, joint core funding from
 - Government (U.S. EPA)
 - Industry (Worldwide Vehicle and Engine Manufacturers)
- Also expanded partnerships with:
 - European Union, WHO, California, other agencies
 - Oil (API, CONCAWE), Chemical, other industries
 - Foundations, Development Banks (Global Work)
- HEI structured to maintain credibility & transparency
 - Balanced government and industry funding
 - Independent Board and Expert Science Committees
 - Board agreed to by EPA Administrator and core industry sponsors
 - **Research Committee** selects all research competitively
 - Separate Review Committee intensively peer reviews all results
 - All results and data – both positive and negative – reported
- **Does not take policy positions**



Trusted Science • Cleaner Air • Better Health

HEI Science

All available at www.healtheffects.org

- **Targeted Research and Reanalysis**
 - Over 350 Studies on a wide variety of air pollutants: PM, ozone, diesel, air toxics, others
 - Exposure, Toxicology, Epidemiology
 - Accountability Research
- **Rapid Scientific Review**
 - E.g. The Health Effects of Exposure to Traffic
- **Global Health**
 - North America, Europe
 - Developing Asia
- **NEW Energy Research Program**
 - Potential Exposures and effects from unconventional oil and gas development

Welcome to the

Health Effects Institute

We provide high-quality, trusted science for cleaner air and better health. Read more about our research mission and unique model of equal partnership by government and industry.

> Learn more about HEI

Annual Conference Annual Report

Guide for Authors FAQ Sponsors Careers

State of Global Air Energy Research

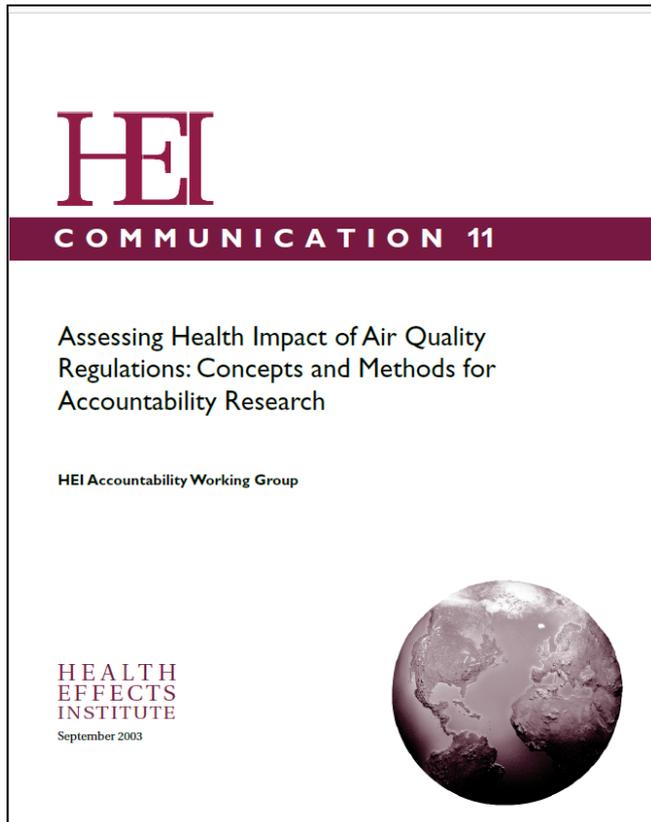
WHAT'S NEW

- > State of Global Air 2018: Over 7 Billion People Face Unsafe Air Quality
- > Webinar: Did power plant and motor vehicle controls improve air quality and health in Atlanta?
- > Request for Qualifications and Proposal for Quality Assurance Oversight
- > Update Winter 2018 now available
- > New studies on health effects of traffic-related pollution



Accountability Research

- How do we know that environmental policies “work”?
- *Accountability Research:*
Evaluating the effectiveness of air quality regulations in improving public health
- Part of a broad effort to assess the performance of environmental regulatory policies

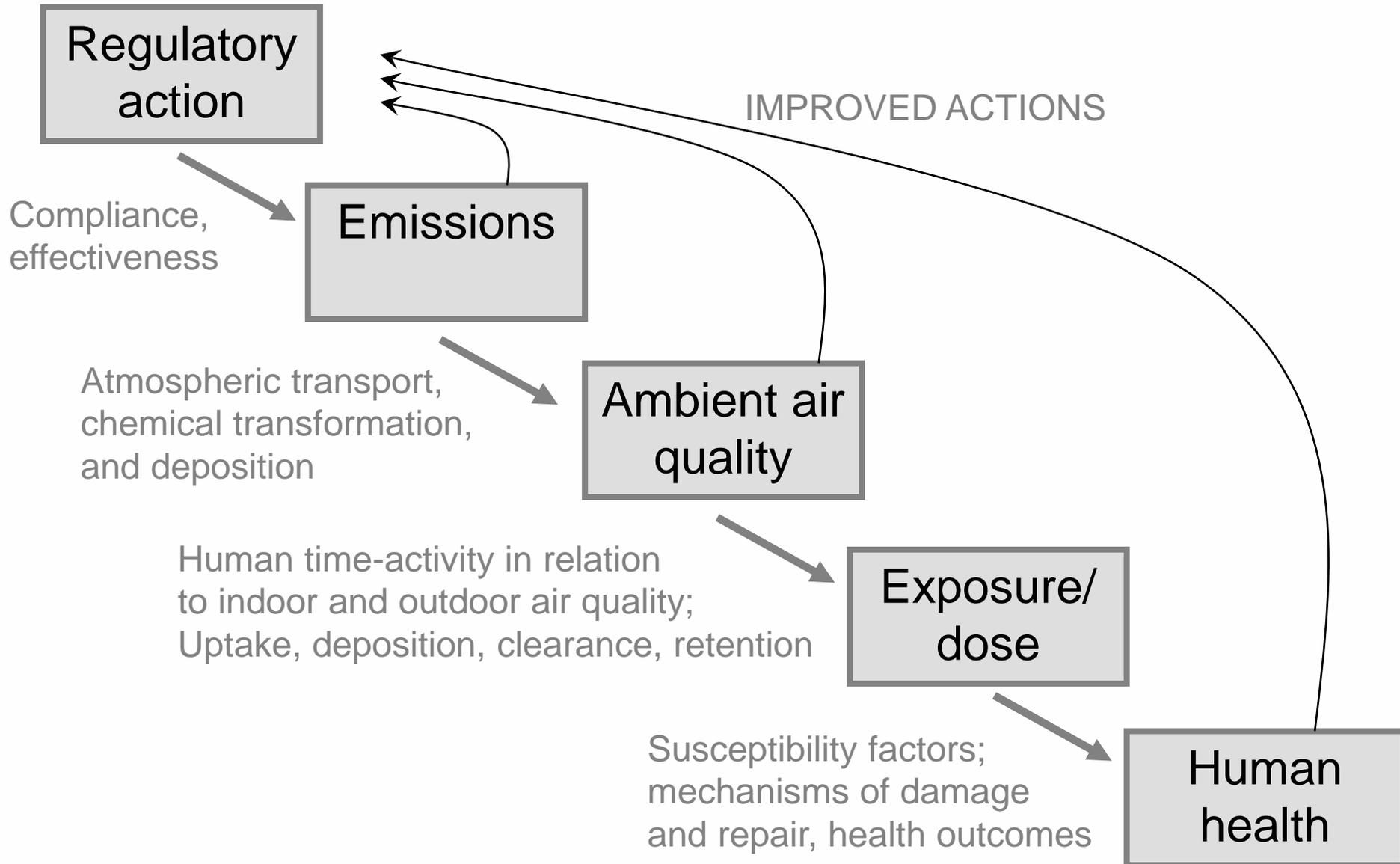


Why assess health impacts of air quality regulations?

- While air quality in North America and Europe has improved substantially, further improvements are becoming more costly
- Ensure that current and future regulations are achieving the intended public health benefits
- Check that projected calculations of benefits have actually happened
- Generate new knowledge



Focusing the challenge on health: *The Chain of Accountability*



HEI's Accountability Program

- Concepts and methods ([HEI Communication 11](#), 2003)
- **Nine first-wave studies**
 - A majority were shorter-term studies of local interventions (e.g. at the city level)
- Interim program evaluation ([HEI Communication 14](#), 2009)
- **Four second-wave studies**
 - Focus on longer-term, national / regional scale regulations



First-wave studies

Traffic measures

[Frank Kelly](#): Congestion charging scheme in London

[Frank Kelly](#): London low emission zone baseline study

[Jennifer Peel](#): Traffic measures during the 1996 Olympic Games in Atlanta

Fuel changes

[Curtis Noonan](#): Wood stove change-out program in Montana

[Chit-Ming Wong](#): Reducing sulfur in fuel in Hong Kong

[Doug Dockery](#): Coal bans in Irish cities

Multiple sources

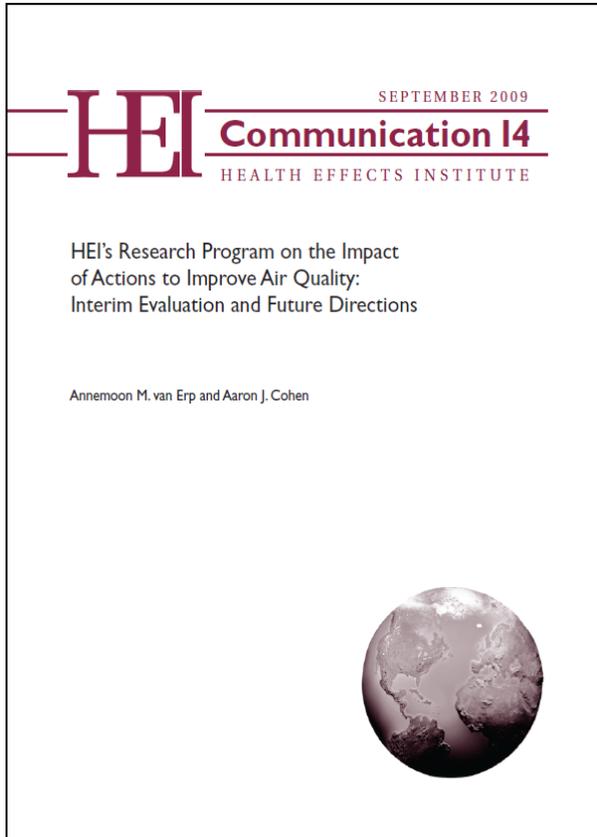
[Dick Morgenstern](#): Air quality improvement under Title IV of the 1990 Clean Air Act Amendments

[Annette Peters](#): Air quality improvement after German reunification

[Jim Zhang](#): Air quality improvements during the 2008 Olympic Games in Beijing



HEI's interim evaluation : *What have we learned ?*



- Importance of exposure contrast: establish size of AQ improvement before starting a health study
- Sensitivity analyses: select appropriate time windows, geographic areas for comparison
- Studies of short-term actions: useful, achievable, though with some challenges, generalizability a consideration
- Evaluation of regulations implemented over **long term** remains most challenging



Considerations for HEI's Second Wave Accountability Request for Applications

- Conceptual groundwork laid in HEI Monograph remains valid
- Importance of **exposure contrast**
 - Establish the size of AQ improvement before starting a health study: adopt a staged approach
- Research of **shorter-term and small scale** actions under well-defined circumstances:
useful, achievable, though with some challenges, generalizability can be an issue
 - Ensure sufficient power



- Research of **long-term, national scale** actions is needed but remains most challenging
 - Need for high quality data collected continuously (health & AQ monitoring)
 - Develop platforms for key research data
- **Overarching issues**
 - Studies encompassing the entire “accountability chain” remain very difficult
 - Need for further development of tool kits and statistical methods including analysis for trends, sensitivity, confounding and causality
 - Need for collaboration among health and atmospheric scientists and regulatory agencies
 - Integrate outcomes research into policy implementation



Second wave RFA studies

Statistical Methods

Cory Zigler: Causal inference methods for estimating long-term health effects of air quality regulations ([HEI Report 187](#), 2016)

Ports

Ying-Ying Meng: Improvements in air quality and health outcomes among California Medicaid Enrollees due to Goods Movement Actions (First phase completed; [ongoing](#) – see poster at 2018 HEI Annual Conference)

Multiple sources

Frank Gilliland: The Effects of Policy-Driven Air Quality Improvements on Children's Respiratory Health ([HEI Report 190](#), 2017)

Ted Russell: Impacts of Regulations on Air Quality and Emergency Department Visits in the Atlanta Metropolitan Area, 1999–2013 ([HEI Report 195](#), 2018)



(Presentation by Dr. Russell)



What this study adds

- In this study in Atlanta, a suite of air quality regulations was shown to be **effective**:
- Emissions and levels of all evaluated pollutants **decreased by 14% to 91%** over the study period.
- There were **fewer emergency department visits for asthma** and other cardiorespiratory outcomes than would have been expected without the regulations.



What this study adds (2)

- For a variety of reasons, the HEI Review Committee had more confidence in the results that were attributed to **all regulations combined** than to individual regulatory programs.
- This is one of few accountability studies to follow the effect of individual regulations on emissions all the way through health outcomes, using **scenarios** with and without regulation.
- The **approach is valuable** and worth considering for future accountability studies.



Further information

HEI Reports and Communications

www.healtheffects.org/publications

Search for Topic = Accountability

Free downloads!

Questions?

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