

Presenter



Laura Anderko, PhD, RN

Professor, School of Nursing & Health Studies, Georgetown University
Director, Mid-Atlantic Center for Children's Health & the Environment
Research Workgroup Chair, Alliance of Nurses for Healthy Environments
NEHPC Co-chair



*Environmental Public Health
Action Saves Lives,
Saves Money and
Saves the Future*



The National Environmental Health Partnership Council

- The Council brings together diverse stakeholders to help expand and sustain environmental health awareness, education, policies, & practices
- Funded through a cooperative agreement between APHA and CDC

(Report does not necessarily reflect views of CDC)

Council Endorsements

- Scott Becker
- Suzanne Condon
- Dave Dyjack
- Doug Farquar
- Maida Galvez
- Kristin Hill
- Richard J. Jackson
- Jennifer Li
- Janice Nolen
- Surili Patel
- Jennifer Sass
- Kathy Sessions
- Yalonda Sinde
- Nse Obot Witherspoon

Project Focus

- Review literature on “value” of environmental health as a branch of the public health system that addresses the quality of our food, water, air, and soil, as well as the built environment.



The Environment

The world that surrounds people wherever they go, whatever they do



Environmental Public Health

Focused on preventing disease and
creating healthy, supportive
environments.



Protection of the Environment Should be Given Priority



- 58% of Americans believe that environmental protection should be given priority, even at the risk of curbing economic growth (CBS/NY Times poll, 12/2015)

Valuing EH Services

Americans continue to have a limited understanding of the critical work conducted by local and state environmental health services



Challenges facing EH

- Dwindling financial and human resources; Increasing health costs
- Expanding pressures from traditional EH issues (e.g., vector borne disease)
- Emerging nontraditional EH issues (e.g., climate change and disaster preparedness)

Environmental Health Services

- Prevention
 - Identifying hazards and risks
 - Designing mitigation or abatement strategies
- Surveillance
 - Detection, investigation and monitoring of conditions with the potential for injury or loss
- Education
 - Provide information that increases knowledge and skills to reduce injury, risk and improve health

Valuing EH: Challenges

- EH cannot be evaluated within the same framework as other health interventions - Scope of other health interventions is more narrowly defined, with narrower range of costs and benefits



Valuing EH: Challenges

- The biggest challenge arises in estimating the benefits of an environmental health service
 - requires an understanding of the causal relationship between the pollutant and an array of health outcomes



Approach/Methodology



Health Economist Perspective

- Costing is the easy part
- Approaches should be compared –rarely, if ever happens
- Don't jump to cost benefit before effectiveness is shown
- Causal association-benefits?
- What is the scope and range? There are so many degrees of freedom



Areas Explored

- Indoor air quality/Asthma
- Climate change
- Special populations
- Lead
- Mercury
- Foodborne illness
- Healthy housing



Each topic area reported on the following in matrix

- Author, date;
- Number in study;
- Study Design;
- Indicators;
- Health Outcomes;
- Cost and Utilization Outcomes;
- ROI

Cost & Utilization Outcomes

- Cost of illness
- Quality Adjusted Life Year
- Loss of work, school days
- Number of hospitalizations
- Number of deaths
- Reduced morbidity



Findings



- Searches yielded 79 publications
 - 22 cost/burden of disease
 - 40 cost/benefit/cost-effectiveness
 - 6 methodology
 - 11 ROI
- Grey literature – 38 reports



- The National Asthma Control Program's ROI is compelling: for every dollar spent on national and state-level programs, \$71 in asthma related expenditures is saved

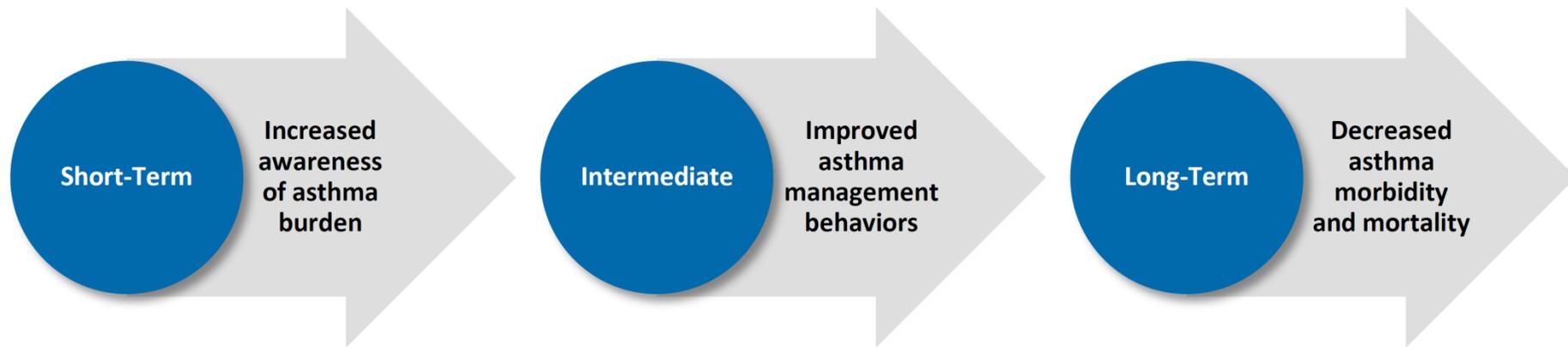
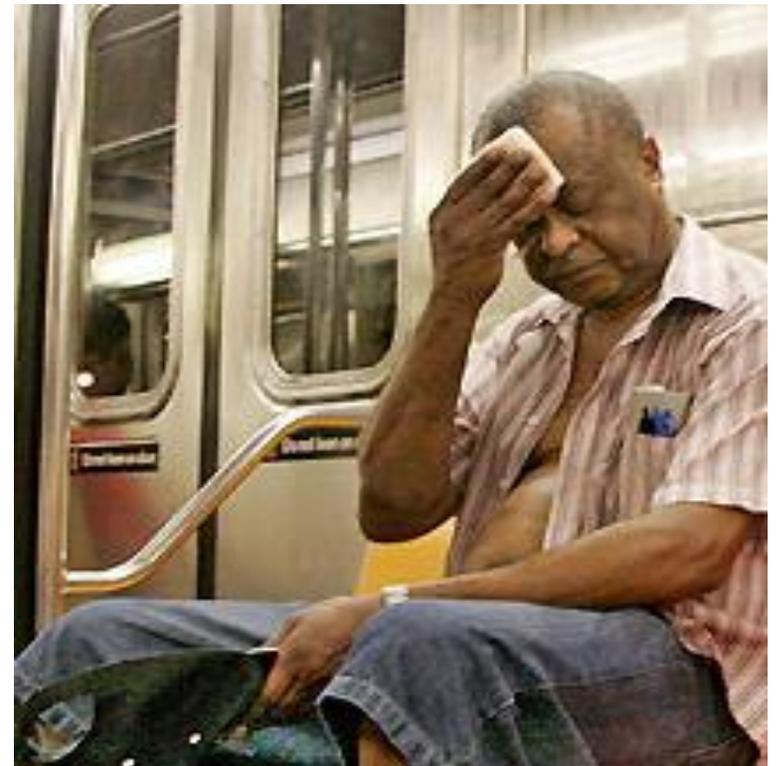


Figure 2. Example of short-, intermediate-, and long-term outcomes associated with asthma control program activities supported by NACP.



CLIMATE CHANGE

- Heat wave program
 - PA heat watch program
 - 65+ alert system during heat waves
 - \$468 million gross benefit (Ebi et al., 2004)





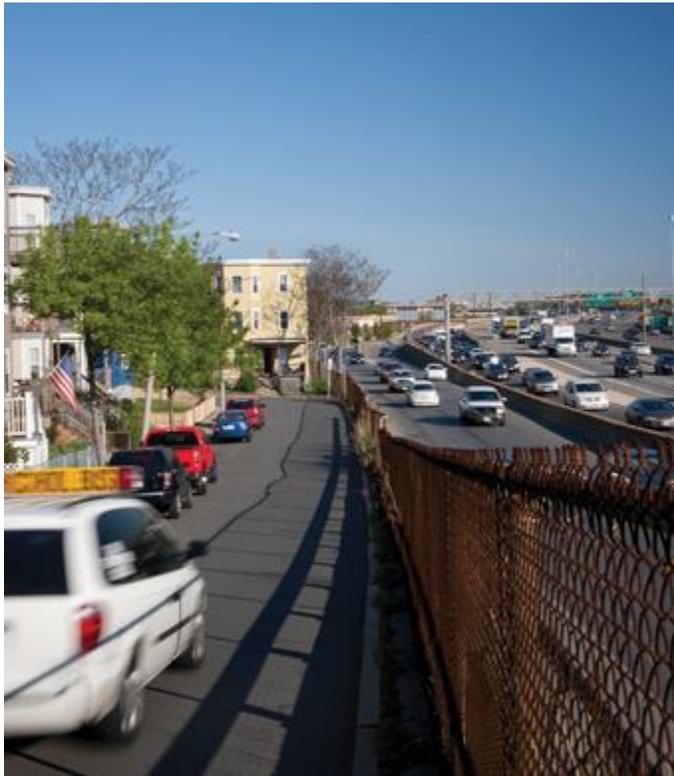
SPECIAL POPULATIONS: CHILDREN AND EJ COMMUNITIES

Children



Costs associated with four major categories of childhood conditions – lead poisoning, MeHg exposure, cancer, developmental disabilities, and asthma totaled \$76.6 billion (2008 dollars) (Transande & Liu, 2011)

EJ Communities



A 3.6% reduction of children living within 75 meters of a major road would result in 5,900 fewer asthma cases attributed to roadway exposure (Perez et al., 2012)



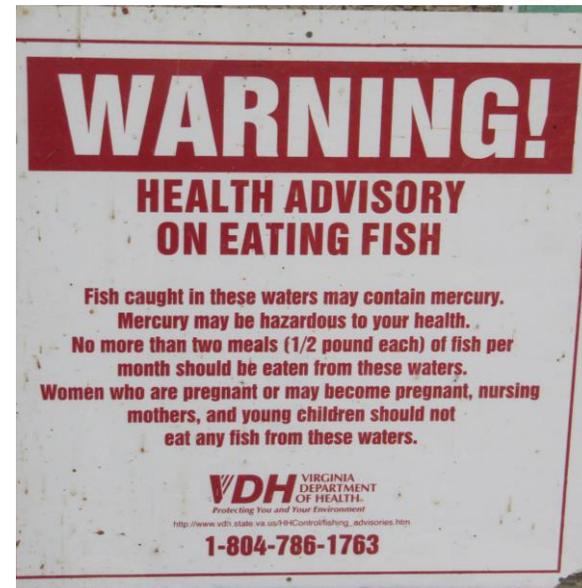
LEAD



- Lead remediation-- each dollar invested in lead paint hazard control results in an ROI of \$12–\$155/household or a net savings of \$124–188 billion (Gould, 2009).



MERCURY



- Children with cord blood mercury levels > 5.8 $\mu\text{g/L}$, a level associated with loss of IQ & economic productivity
- Lost economic productivity is the major cost of methyl mercury toxicity, and it amounts to \$8.7 billion annually (all costs are in 2000 US\$) (Trasande et al, 2005)



FOODBORNE ILLNESS

14 of the 31 major
foodborne pathogens
account for an average
of \$14.0 billion in cost of
illness and a loss of 61,000
Quality Adjusted Life Years
(QALYs) per year
(Hoffman et al, 2012)



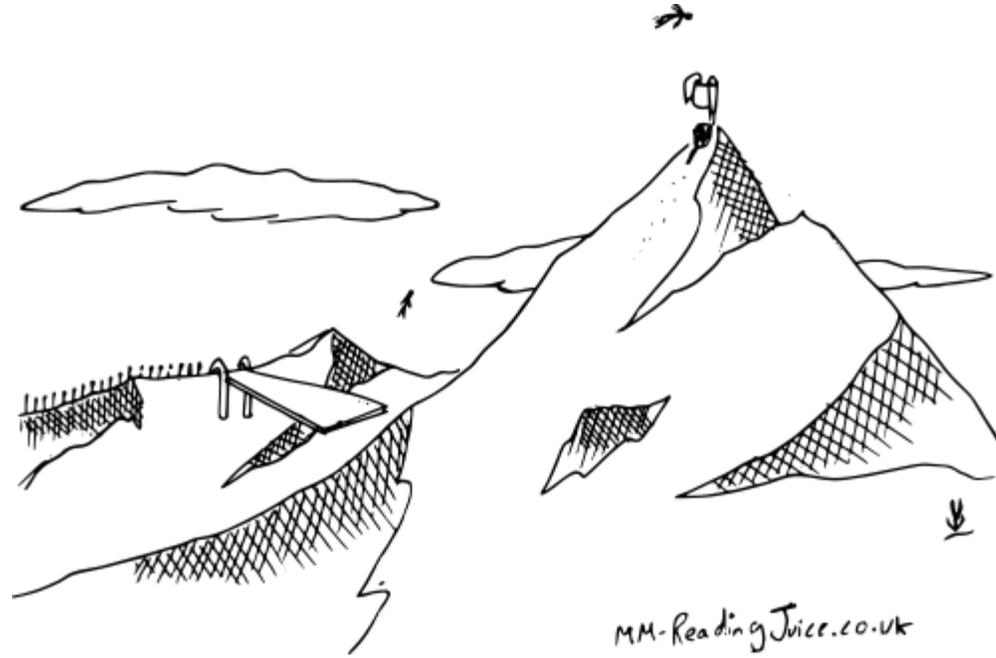


HEALTHY HOUSING



- 12 years after window replacement intervention, homes had 41% lower interior floor dust lead in comparison to homes without replaced windows (1.4 versus 2.4 $\mu\text{g}/\text{ft}^2$, $p < 0.001$)
- The net economic benefit of window replacement is \$1700-\$2000 dollars per housing unit (Dixon et al., 2012)





SUMMARY OF FINDINGS

- The existing economic evaluation of environmental health interventions is relatively weak
- There are too few studies for each intervention, which limits the generalizability of findings



- Difficult to compare findings
 - A variety of indicators are used and often times measured differently
- The majority of articles are based on state or smaller area case studies
- Cost/burden articles mainly focus on lead remediation, mercury exposure, childhood disease, asthma, climate change and particulate matter.



- Lack of standards in methods used for valuation
- The majority of publications focused on cost-benefit or cost-effectiveness, rather than on the return on investment



Benefits of Environmental Health Interventions

- Positive impacts on:
 - health status
 - economic productivity
 - expenditure patterns





Future Directions



Dissemination Strategies

- Report
- Fact sheet
- Paper presentations
- Peer reviewed publication



Nature.com

Phase 2

Regulatory and
legislative economic
evaluation



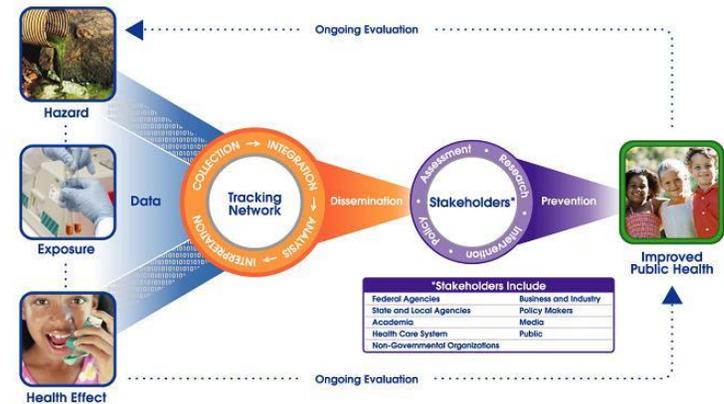


RECOMMENDATIONS

- Improve collection of economic data
- Increase comparative effectiveness research
- Improve management of environmental health risks and public awareness

- Improve the tools for quantifying health outcomes (Gibson et al, 2011)

ENVIRONMENTAL PUBLIC HEALTH TRACKING



Conclusion

- Critical to demonstrate to policymakers and the public that investments in environmental health services add value
- More economic studies needed
- Guidelines for economic research needed



It is critical that environmental health services be viewed as absolute necessities for ensuring the health and safety of our citizens

Thank you!

