NC BREATHE CONFERENCE 2017

Conference Summary & Recommendations

Clean Air Carolina
Your advocates for healthy air

MAHA
Medical Advocates for Healthy Air

Environmental Health
Scholars Program

Fred and Alice
Stanback

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Executive Summary

Sponsored by Clean Air Carolina, Medical Advocates for Healthy Air and the Duke Environmental Health Scholars Program, the NC BREATHE Conference provides a forum for sharing the latest research related to the human health, environmental and economic impacts of air pollution policy. Attendees at the 2017 conference developed recommendations for research and policy in North Carolina.

Air pollution research on health and environmental impacts, and its long-term economic consequences has moved forward, but many limitations still exist. Research gaps identified by NC BREATHE participants include:

- **Engaging vulnerable communities in research.** Increase the use of community-based participatory research projects and practices to improve the design and execution of studies and interventions.
- **Implementation of broad-based and hyper-local air quality monitoring.** In addition to investing in more state-of-the-art air monitoring technology, the North Carolina Department of Environmental Quality should take advantage of the growing practice of citizen science.
- **Compiling a comprehensive collection of statewide health data.** The North Carolina Department of Health and Human Services should enhance reporting requirements on the state and local level to increase the quality, quantity and accessibility of health data.

Over the years, North Carolina air policies have contributed to improved public health as well as to poor health outcomes. Areas particularly ripe for ensuring healthy air policies include:

- **Transportation and Land Use Planning.** Local, regional and state government planning and purchasing initiatives should minimize fossil fuel-based transportation activities.
- **Renewable Energy**. State policymakers should assess the state's energy mix and implement policies that incentivize the transition to renewable energy.
- **Air Quality Policy Impact Analysis.** State agencies should be required to perform health and economic impact analyses before and after implementation of new air policies, and provide the findings to policymakers to inform future policy decisions.
- **Medical and Allied Health Education**. Medical and allied health education programs and public health education programs must apprise health care providers of the health impacts air pollution can have on their patients and how to advise their patients about avoiding these adverse effects.

For additional information, visit: https://cleanaircarolina.org/nc-breathe-conference/

Introduction

Economists, environmental scientists, health experts and others interested in exploring the intersectionality of these fields as they relate to air pollution and climate change gathered in Raleigh, North Carolina for the third annual NC BREATHE Conference on March 28 at the North Carolina Museum of Natural Sciences. Sponsored by Clean Air Carolina, Medical Advocates for Healthy Air and the Duke Environmental Health Scholars Program, the conference provided a forum for North Carolinians to share the latest research about the impacts of air pollution on human health, the environment and the economy, and to discuss the critical role policymaking plays. Funding for the conference was provided by the Fred and Alice Stanback Foundation.

The luncheon included a policy perspectives session featuring a variety of state and local policymakers. Former Assistant Director for the Environment at the NC Department of Environment and Natural Resources **Robin Smith** delivered a keynote address in which she urged scientists and legislators to find common ground to explore air policies that will help North Carolina protect public health and the environment while sustaining the economy. Airkeeper awardees **Sen. Angela R. Bryant** of Rocky Mount and **Rep. Chuck McGrady** of Hendersonville briefly commented about their work to protect the environment. **Rep. John Autry** of Mecklenburg County discussed the current legislative challenges in protecting air quality. **Sig Hutchinson**, Chair of the Wake County Board of Commissioners, noted that industry will always resist stricter standards, but that we must continue to advocate for changes to protect public health. Additional attendees included representatives from **Governor Cooper**'s office and **Rep. Chaz Beasley** of Mecklenburg County.

Plenary speakers presented on research related to air quality:
- Dr. Sri Nadadur, National Institute of Environmental Health Sciences, "Perspectives on 21st Century Air Quality Health Research Priorities"
- Professor Andrew Yates, University of North Carolina at Chapel Hill, "Economic Consequences of Electric Car Adoption"
- Dr. Rebecca Dodder, U.S. Environmental Protection Agency, "Energy and Our Environment: A Systems and Life Cycle Perspective"

Following the presentations, attendees participated in breakout sessions to develop recommendations for further action and research. This report explores the key results of those breakout sessions. We hope policymakers and research directors will review these recommendations and consider integrating them into legislation and research projects to protect public health and air quality in North Carolina.

Research Recommendations

Our full-steam ahead approach to new technology, jump-started during the Industrial Revolution, ignored the health and environmental implications of fossil fuel technology development in favor of maximizing short-term economic gains. As a result, research on health and environmental impacts and their long-term economic consequences has lagged behind. Research gaps identified by NC BREATHE participants include:

- Community-based Participatory Research with Vulnerable Populations
- Ambient Air Monitoring
- North Carolina Health Data

Community-based Participatory Research with Vulnerable Populations

When professional scientists involve community members in designing research projects and collecting data, they gain a deeper understanding of the community's priorities and needs along with a richer data set. Community-based participatory research (CBPR) can provide real-world evidence on how and where air pollution exposure is taking place and how that exposure is affecting people's health. CBPR often brings together different types of researchers leading to a more well-rounded understanding of the relationship between air pollution, personal behavior and other community factors. Engaging vulnerable populations, especially those with multiple vulnerabilities such as asthma and poverty, can reveal information that would remain hidden through a traditional research approach. It can also generate information that will help develop more feasible and effective interventions.

Interventions can include creating incentives for personal behavior change as well as developing and enforcing policy. A collaboration between the University of North Carolina at Chapel Hill and Duplin County residents on the health impacts of living near large hog farms, or Concentrated Animal Feeding Operations (CAFOs), empowered residents to unite with other organizations in filing a Title VI case that has focused U.S. Environmental Protection Agency (US EPA) attention on North Carolina's CAFO policies.

Some conference participants expressed concern about the quality of data gathered by CBPR. A consensus emerged that CBPR can provide a general understanding of air quality and community health, and findings from CBPR may be able to identify areas that warrant more precise study.

Recommendation: Increase the use of Community-Based Participatory Research projects and practices in the design and execution of studies and interventions.

Ambient Air Monitoring

Ambient air monitoring data allows us to understand air pollution sources and composition. The current sparse network of ambient air monitors in North Carolina offers scant data, leaving most counties – including the ones with the most vulnerable populations – with extrapolated data instead of actual data points. Data from air quality monitors offers context for health data, provides better information for policymaking and allows individual communities to understand their exposure and needs.

The growing practice of citizen science may be an effective way to engage communities and to improve ambient air monitoring. Clean Air Carolina, along with community members, are using the AirBeam and Purple Air, low cost fine particulate matter sensors, to measure air quality in Mecklenburg County. While citizen science and low-cost sensors cannot replace regulatory monitors, they can provide data that could be used to spur action by environmental agencies as was done in Tonawanda, NY. The information can also be used to fill in the gaps of data between regulatory monitor locations. To help plan an air quality citizen science project, the US EPA created the Air Sensor Toolbox, which was presented at the 2016 NC BREATHE conference.

Recommendation: In addition to investing in more state-of-the-art air monitoring, the North Carolina Department of Environmental Quality should take advantage of the growing practice of citizen science.

North Carolina Health Data

In his opening plenary, National Institute of Environmental Health Sciences program director Sri Nadadur, Ph.D., highlighted how improved data can help researchers, policymakers and communities better understand the different individual responses to air pollution exposure and the synergistic effects of multiple pollutants. However, obtaining accurate and exhaustive health data can be challenging. In some cases, the data simply isn't collected, and there is no central clearinghouse for data which is collected.

Recommendation: The North Carolina Department of Health and Human Services should enhance reporting requirements on the state and local levels in order to increase the quality, quantity and accessibility of health data.

Policy Recommendations

At its most basic level, the role of government is to protect its people. When it comes to air policy, this means protecting public health. Key to a healthy population is a healthy environment and economy. North Carolina air policies have variously promoted and threatened public health. NC BREATHE participants urge a recognition that energy, transportation and educational policies can impact air quality. Recommendations support a return to prioritizing public health when developing air policies, especially in the following areas:

- Transportation and Land Use Planning
- Renewable Energy
- Air Quality Policy Impact Analysis
- Medical and Allied Health Education

Transportation and Land Use Planning

Local city and county governments can have a significant impact on reducing air pollution and greenhouse gas (GHG) emissions through better transportation and land use planning. While a considerable amount of emissions comes from energy production, the transportation sector is a substantial energy consumer in the U.S. In her plenary talk on the environment, US EPA Scientist, Rebecca Dodder, Ph.D., noted that the transportation sector was responsible for 27.9 percent of U.S. energy consumption in 2016.

Local governments can help reduce this transportation impact by upgrading their vehicle fleet and incentivizing residents to change their transportation choices by making low energy consumption and low emission transportation widely available. Local governments can use the purchasing power and management of their vehicle fleet to reduce emissions and fossil fuel energy consumption. They can use dense urban and transportation planning to incentivize residents to use more public transit, bicycles and other pedestrian-friendly methods to get around and commute. Smart planning can also be done at the state level with its fleet, transportation planning and incentive programs. By reducing fossil fuel dependent transportation and encouraging more efficient transportation, both local municipalities and the state can help reduce air pollution and GHG emissions.

Recommendation: Local, regional and state government planning and purchasing initiatives should minimize energy consumption by transportation activities.

Renewable Energy

As the University of North Carolina at Chapel Hill economics professor, Andrew Yates, noted in his economy plenary, an understanding of the environmental impact of an energy consumption technology such as electric vehicles requires understanding the environmental impact of the energy generation that powers them. While electric cars themselves may be emissions-free, the electricity that powers them may not be. Electric vehicles in California, which generates a higher percentage of electricity through clean renewables, ultimately are "cleaner" than electric vehicles in North Carolina, where most electricity is generated through fossil fuel combustion.

North Carolina is a leader in solar energy capacity, second to California. This leadership position was achieved through policy interventions such as requiring renewable energy to be a percentage of our energy mix and an aggressive tax incentive. This exemplary role is in danger of being lost due to changing focus of state policymakers turning back to fossil fuels. In an op-ed published in conjunction with the conference, June Blotnick and H. Kim Lyerly, M.D., discuss how a policy enabling third-party energy sales would eliminate the high upfront cost that currently makes rooftop solar inaccessible to most residents. Statewide access to renewable energy would ensure that other clean technologies, such as electric vehicles, do not inadvertently contribute to air pollution.

Recommendation: State policymakers should assess the state's energy mix and implement policies that incentivize the transition to renewable energy.

Air Quality Policy Impact Analysis

Policymakers at all levels of government and in institutions can learn from research scientists to endorse policies based on a comprehensive understanding of their potential impacts as well as test their effectiveness through continuing analysis. Comprehensive health and economic impact analysis of air pollution policies, both at baseline and following implementation, can help move air quality policy forward. The 2002 Clean Smokestacks Act offers an example of how strong air quality legislation benefitted public health, the environment and the economy of North Carolina by strengthening the Western North Carolina tourism industry and reducing the economic burden of disease associated with air pollution exposure on the state. Currently the North Carolina Department of Environmental Quality requires an environmental impact analysis for many policy decisions, but health and economic impacts are not adequately explored.

Recommendation: Require state agencies to perform health and economic impact analyses before and after the implementation of new policies which will affect air quality, and provide the findings to policymakers to inform policy decisions.

Medical and Allied Health Education

Environmental health education is lacking in most medical, nursing and allied health education programs. Some asthma educators have succeeded in raising awareness about the contribution of air pollution to asthma exacerbation and other respiratory diseases. There has been a push by the U.S. EPA, CDC and American Heart Association to increase education about the adverse cardiovascular effects of air pollution, but these programs are still small and not included in most curricula. Making air pollution a regular part of the medical conversation, similar to diet and exercise, can improve health while ameliorating the associated economic burden of disease.

Recommendation: Medical and allied health education programs and public health education programs must apprise health care providers of the health impacts air pollution can have on their patients and how to advise their patients about avoiding these adverse effects.

Future Direction for NC BREATHE

The conference planning team for NC BREATHE led by Clean Air Carolina will continue to work with our partners at the state and local government levels, colleges and universities and national agencies including the U.S. EPA and the National Institute of Environmental Health Sciences to promote these research and policy recommendations and create a framework for moving them forward. We welcome input from our partners and policymakers as we create this framework and work to implement it. The planning team will also consider these recommendations as we design the goals and structure of the 2018 NC BREATHE Conference.

For more information on NC BREATHE, please contact June Blotnick, Executive Director of Clean Air Carolina, at june@cleanaircarolina.org.

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NC BREATHE CONFERENCE 2017

Tuesday, March 28, 2017
NC Museum of Natural Sciences
Raleigh, NC

Conference Agenda

Time	Session
8:00 AM	**Registration & Breakfast** - Student Research Posters & Exhibitors
8:30 AM	**Welcome & Opening Remarks**
8:45 AM	**Plenary** - Perspectives on 21st Century Air Pollution Health Research Priorities, Dr. Sri Nadadur
9:45 AM	**Plenary** - Economic Consequences of Air Pollution from Electric Car Adoption, Prof. Andrew Yates
10:40 AM	**Break** - Student Research Posters & Exhibitors
10:55 AM	**Plenary** - Energy and Our Environment: A Systems and Life Cycle Perspective, Dr. Rebecca Dodder
12:00 PM	**Luncheon** - Policymaker Perspectives and Airkeeper Awards
1:15 PM	**Break** - Student Research Posters & Exhibitors
1:45 PM	**Participant Discussion Breakout Sessions** - Health, Economy, and Environment
3:05 PM	**Break** - Student Research Posters and Exhibitors
3:35 PM	**Poster Award**
3:50 PM	**Participant Discussion Breakout Reports**
4:30 PM	**Advocacy Practices & Opportunities**
4:50 PM	**Closing Remarks**
5:00 PM	**Conference Adjourns**

Download the Conference Agenda and Program Before You Arrive!

The 2017 NC BREATHE Conference is going green! To cut cost and save on paper waste, we are distributing conference materials electronically to registrants in advance of the conference. Materials will be available on the conference website to download and print. The NC Museum of Natural Sciences will have free WIFI available, however, downloading the program in advance is highly recommended. Attendees will also receive a USB drive containing the conference program along with related materials at registration. PRINTED PROGRAMS WILL NOT BE AVAILABLE ONSITE.

WiFi: DNCR-GUEST

For more information about conference materials, please visit
www.ncbreatheconference.org.

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Environmental Health Scholars Program

MAHA + Medical Advocates for Healthy Air

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