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science in ACTION
INNOVATIVE RESEARCH FOR A SUSTAINABLE FUTURE

AIR, CLIMATE AND ENERGY (ACE) CENTERS: SUPPORTING AIR QUALITY AND CLIMATE SOLUTIONS

Background

The U.S. Environmental Protection Agency (EPA), through its Science to Achieve Results (STAR) program, is providing $30 million in funding for three university-based research centers to investigate regional differences in air pollution and the effects of global climate change, technology, and societal choices on local air quality and health. The science will be used to develop effective pollution control strategies to protect air quality at the state and local levels.

Air quality today has improved since the enactment of the Clean Air Act and implementation of the National Ambient Air Quality Standards. Science has been the foundation for the standards, providing critical guidance on what pollutants pose a threat, how they harm human health and what technology can be harnessed to achieve clean air objectives.

Since 1999, EPA has funded three rounds of research centers through a competitive grant process to complement its own research on the health effects of air pollutants. The centers have contributed to a greater understanding of the health impacts of particulate matter (PM); determined how specific sources of air pollution cause different effects and answered questions about the health impacts from exposure to multiple pollutants at one time instead of one or two at a time.

The Next Step

The three Air, Climate and Energy Centers are using integrated and multidisciplinary scientific approaches to find new solutions to protect air quality in the midsts of a changing climate and changing energy production choices.

The centers will be located at Carnegie Mellon University, Harvard University and Yale University.

Carnegie Mellon University
Project Title: *Center for Air, Climate and Energy Solutions (CACES)*

The center is studying regional differences, multiple pollutants, and development and dissemination of tools for air quality impact assessment.

The research includes:

- Investigating a range of technology and policy scenarios for addressing the nation's air, climate and energy challenges, and testing their potential ability to meet policy goals such as improved health outcomes and cost-effectiveness.

- Working to improve current air quality models and develop new, faster, simpler models for evaluating policy options.

- Conducting detailed measurement studies in Pittsburgh, Los Angeles and Austin, TX to identify the factors influencing regional differences in air pollution concentrations.

Harvard University
Project Title: *Regional Air Pollution Mixtures: The Past and Future Impacts of Emission Controls and Climate Change on Air Quality and Health*

The center is generating new scientific knowledge on past and future air quality and associated health impacts. Researchers are:

- Investigating pollutant mixtures across the U.S. using past data and future projections.

- Examining how changes in emissions, climate, and other factors affect pollution mixtures.

- Evaluating how future changes in social and economic factors may affect air pollution and its health-related impacts.

Studies will be conducted in Massachusetts and other locations in the U.S.

Yale University
Project Title: *SEARCH: Solutions for Energy, AiR, Climate and Health*

The center is investigating emerging energy transitions in the U.S. and factors contributing to air pollution and health outcomes using state-of-the-science modeling and measurements. The research includes:

Studying the impact of changes in the use of energy in the power and transportation sectors. As a case study, the expansion of the port of Baltimore offers an opportunity to measure real-world air pollution changes using novel methods, such as sensor technologies.

- Advancing models to estimate air pollution under a range of global climate change conditions and assess modifiable factors affecting regional and local differences in air quality.
- Examine how the predicted changes in air quality and climate will affect cardiovascular and respiratory health, and investigate regional variability and other factors that influence health outcomes.

Information about the awards:
https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/recipients.display/rfa_id/588

Information about Air Research Grants:
http://www.epa.gov/research-grants

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