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The Hidden Effects of Air Pollution on the Heart, Brain, and Bones

Morrisville, NC (September 20, 2018) – It is well known that air pollution caused by cars, energy production, industrial facilities and wildfires can cause conditions like asthma and lung disease. Two articles in the latest issue of the North Carolina Medical Journal highlight some of the less-discussed impacts of air pollution on human health: increased risk of cardiovascular disease, neurocognitive disorders such as ADHD and Autism, adult neurogenerative disease, osteoporosis and diabetes.

In "Ambient Air Quality and Cardiovascular Health: Translation of Environmental Research for Public Health and Clinical Care," Wayne Cascio and Thomas Long of the EPA National Health and Environmental Effects Research Laboratory argue that air pollution's cardiovascular effects pose an even larger public health burden than its respiratory effects. They write that fewer than 40 percent of health care professionals report discussing this risk factor with patients with heart disease.

Cascio and Long point to research showing that long-term exposure to air pollution can lead to cardiovascular events and death from heart disease, accumulation of calcium in the coronary artery, and changes in the heart and blood vessels. One study of North Carolinians found that long-term exposure raised the severity of coronary artery disease and the likelihood of a heart attack.

"Through hard work and partnership with local, state, and federal agencies North Carolina has reduced emissions and improved the quality of its air," writes Cascio. "Yet, for those individuals who are particularly sensitive to the adverse health effects of air pollution, namely older adults, those with chronic heart and lung disease, and children, additional actions to avoid exposure are prudent when air quality is poor."

In a sidebar article titled "The Unexpected Health Effects of Air Pollution," David B. Peden, a professor and senior associate dean at the Center for Environmental Medicine, Asthma and

Lung Biology at the University of North Carolina at Chapel Hill, further emphasizes the widespread impacts of air pollution on the whole body. Peden cites studies showing that that NO2, 03, particulate matter and traffic-related air particulates are connected to a higher risk of Autism, an increase in ADHD, and even dementia. Research suggests a relationship between ambient air particulate matter and decreased cognitive function in older citizens, as well as an increased risk for osteoporosis markers and diabetes mortality.

"These all seem to be disparate health effects related to air pollution. However, each of these diseases is likely impacted by inflammation," writes Peden. "This suggests a common mechanism by which air pollution may modulate each of these diseases."

To read "Ambient Air Quality and Cardiovascular Health: Translation of Environmental Research for Public Health and Clinical Care" by Wayne Cascio and Thomas Long; and "The Unexpected Health Effects of Air Pollution" by David Peden, visit ncmedicaljournal.com.

This issue of the Journal is sponsored by Clean Air Carolina and the Duke University Environmental Health Scholars Program.

"Health professionals who understand the health impacts of air pollution beyond respiratory issues could significantly improve patient care," said Rachel McIntosh-Kastrinsky, manager of Medical Advocates for Healthy Air, a program of Clean Air Carolina. "That is why we are thrilled to co-sponsor this important issue of the North Carolina Medical Journal."

The North Carolina Medical Journal is a journal of health policy analysis and debate co-published by the North Carolina Institute of Medicine and The Duke Endowment. The NCMJ publishes six issues per year. This issue is co-sponsored by Medical Advocates for Healthy Air. To learn and read more, visit ncmedicaljournal.com.

Clean Air Carolina is a non-profit organization devoted to ensuring cleaner air quality for all North Carolinians through education, advocacy and by working with its network of partners to reduce sources of pollution. To learn more, please visit cleanaircarolina.org.

The Duke Environmental Health Scholars Program supports collaborative studies between students and investigators whose major goal is to study the effects of the environment on health, disease risk and medical outcomes.

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