

Reductions in PM over decade has improved health; ozone pollution remains little changed

May 22 2019

Fewer deaths and serious illnesses have occurred in the U.S. over the past decade as a result of cleaner air, according to a new report focusing on the two most potent air pollutants: fine particle (PM_{2.5}) and ground-level ozone (O₃). However, these improvements are almost entirely due to reductions in PM_{2.5} pollution.

The report, presented at ATS 2019 and published online in the *Annals of the American Thoracic Society*, is the latest in the annual "Health of the Air" series produced by the American Thoracic Society and the Marron Institute at NYU. The series estimates [health](#) impacts from air pollution for every U.S. city.

In "[Trends in Excess Morbidity and Mortality Associated with Air Pollution above ATS-Recommended Standards, 2008 to 2017](#)," researchers report that mortality impacts of air pollution above these ATS-recommended levels fell by nearly half in the last decade as most U.S. counties have seen significant improvements in PM_{2.5}, while health impacts from O₃ pollution has "remained stubbornly high."

The report's findings are based on the ATS's recommendations for PM_{2.5} (11 micrograms per cubic meter for annual concentrations and 25 micrograms per cubic meter for short-term concentrations) and O₃ (60 parts per billion), which are more protective than those adopted by the U.S. Environmental Protection Agency.

Using [air quality data](#) from more than 500 counties with PM_{2.5} data and

more than 700 counties with O₃ data, the researchers estimated the annual health impacts from air pollution from 2008-17. In 2017, the most recent year that pollution data is available, the number of excess deaths from air pollution were:

- 7,140 excess deaths from both pollutants combined, down from 12,600 excess deaths in 2010;
- 3,260 excess deaths from PM_{2.5}, down from 8,330 excess deaths in 2010;
- 3,880 excess deaths from O₃, down from 4,270 excess deaths in 2010.

Based on the levels of the two pollutants, the researchers also quantified serious illnesses (morbidity) and missed school and work days (impacted days). In 2017, the most recent year that pollution data is available, PM_{2.5} pollution above recommended levels was estimated to cause an additional 5,600 morbidity and 2,804,000 impacted days. That same year, O₃ pollution above recommended levels was estimated to cause 10,080 morbidity and 11,600,000 impacted days.

Future Health of the Air

The latest report found that in addition to the lack of consistent improvement in the health impacts associated with O₃, the rate of improvement for PM_{2.5} pollution has also started to level off. Without further efforts at the federal and local levels to reduce the two air pollutants, it is likely that the health impacts from air pollution could increase over time as populations grow, according to the authors.

The report also highlighted other challenges to reducing deaths and illness due to air pollution.

"The proposed roll back of several Clean Air Act regulations and the

proposed roll back of the greenhouse gas standard for automobiles will make it hard for communities to maintain their air quality, and even harder for cities with poor air quality to clean up," said report co-author Gary Ewart, MHS, chief of ATS advocacy and government relations.

The authors also noted that the effects of wildfires contributing to [pollution](#) levels above EPA regulatory levels were excluded from the study, but their increasing frequency and severity may limit the improvements in health that cities and counties can achieve by reducing other [air pollution](#) sources.

Reducing Ozone

Ground-level ozone occurs when sunlight causes a chemical reaction among so-called precursor pollutants, primarily nitric oxides and volatile organic compounds, and forms ozone molecules.

Recently, the U.S. Environment Protection Agency designated many locations in the country as "being in nonattainment" of the national ambient air quality standard for ozone. States that do not show improvement in the next three years will be required to develop a plan for achieving attainment.

"The large number of adverse health impacts attributable to ozone should motivate cities and states to start now to reduce their local emissions of precursors pollutants," said lead author Kevin Cromar, Ph.D., director of the Air Quality Program at the Marron Institute and associate professor of population health and environmental medicine at the NYU School of Medicine. "Coordinated actions at the regional level, as well as strong actions at the federal level, will also be needed in order to make consistent gains in reducing ozone in many parts of the country."

Online Tool for Cities

The latest report is also available online at <http://www.HealthoftheAir.org>. There, readers can find lists for the top cities for excess health impacts attributable to the two pollutants, individually and combined, as well as lists of cities that have shown the most improvement over the past decade. In addition, the site includes a map showing the distribution of [health impacts](#) across the county.

Provided by American Thoracic Society

Citation: Reductions in PM over decade has improved health; ozone pollution remains little changed (2019, May 22) retrieved 27 April 2024 from <https://medicalxpress.com/news/2019-05-reductions-pm-decade-health-ozone.html>

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