

Why GAO Did This Study

The national ambient air quality monitoring system shows that the United States has made progress in reducing air pollution but that risks to public health and the environment continue in certain locations. The system consists of sites that measure air pollution levels around fixed locations across the country using specific methods. Since the system began in the 1970s, air quality concerns have changed—such as increased concern about the health effects of air toxics.

GAO was asked to evaluate the national air quality monitoring system. This report examines the role of the system and how it is managed, challenges in managing the system and actions to address them, and needs for additional air quality information and actions to address challenges in meeting those needs.

GAO reviewed literature, laws, and agency documents; conducted a demonstration of low-cost sensors; and interviewed EPA officials, selected state and local officials, representatives from air quality associations, and stakeholders.

What GAO Recommends

GAO is making two recommendations for EPA to (1) establish an asset management framework for the monitoring system that includes key characteristics and (2) develop an air quality monitoring modernization plan that aligns with leading practices. In written comments on the report, EPA generally agreed with the recommendations.

View [GAO-21-38](#). For more information, contact J. Alfredo Gómez at (202) 512-3841 or gomezj@gao.gov.

AIR POLLUTION

Opportunities to Better Sustain and Modernize the National Air Quality Monitoring System

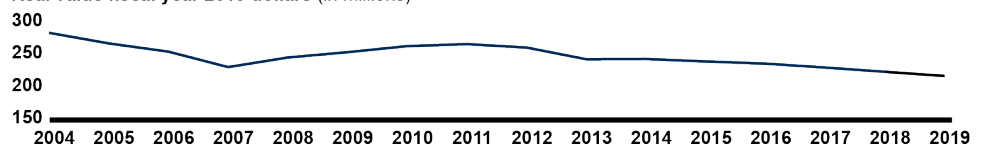
What GAO Found

The ambient air quality monitoring system is a national asset that provides standardized information for implementing the Clean Air Act and protecting public health. The Environmental Protection Agency (EPA) and state and local agencies cooperatively manage the system, with each playing different roles in design, operation, oversight, and funding. For example, EPA establishes minimum requirements for the system, and state and local agencies operate the monitors and report data to EPA.

Officials from EPA and selected state and local agencies identified challenges related to sustaining the monitoring system. For example, they said that infrastructure is aging while annual EPA funding for state and local air quality management grants, which cover monitoring, has decreased by about 20 percent since 2004 after adjusting for inflation (see fig.). GAO found inconsistencies in how EPA regions have addressed these challenges. GAO's prior work has identified key characteristics of asset management, such as identifying needed resources and using quality data to manage infrastructure risks, which can help organizations optimize limited resources. By developing an asset management framework that includes such characteristics, EPA could better target limited resources toward the highest priorities for consistently sustaining the system.

Annual Inflation-Adjusted EPA Funding for State and Local Air Quality Management Grants

Real value fiscal year 2019 dollars (in millions)



Source: GAO analysis of Environmental Protection Agency and U.S. Department of Commerce, Bureau of Economic Analysis, data. | GAO-21-38

Air quality managers, researchers, and the public need additional information so they can better understand and address the health risks from air pollution, according to GAO's review of literature and interviews GAO conducted. These needs include additional information on (1) air toxics to understand health risks in key locations such as near industrial facilities; and (2) how to use low-cost sensors to provide real-time, local-scale air quality information. EPA and state and local agencies face persistent challenges meeting such air quality information needs, including challenges in understanding the performance of low-cost sensors. GAO illustrated this challenge by collecting air quality data from low-cost sensors and finding variability in their performance. EPA has strategies aimed at better meeting the additional air quality information needs of managers, researchers, and the public, but the strategies are outdated and incomplete. For example, they do not clearly define roles for meeting additional information needs. GAO's prior work on asset management suggests that a more strategic approach could help EPA modernize the system to better meet the additional information needs. By developing a modernization plan that aligns with leading practices for strategic planning and risk management, such as establishing modernization goals and roles, EPA could better ensure that the system meets the additional information needs of air quality managers, researchers, and the public and is positioned to protect public health.