



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

June 22, 2020

OFFICE OF  
AIR AND RADIATION

**MEMORANDUM**

**SUBJECT:** Air Sensors

**FROM:** Anne L. Idsal  
Principal Deputy Assistant Administrator

A handwritten signature in black ink, which appears to read "Anne L. Idsal", is written over the printed name and title.

**TO:** EPA Regional Administrators  
Regions I - X

**PURPOSE:**

The purpose of this memorandum is to address recent questions from state and local air agencies regarding EPA's position on the use of air sensor data for National Ambient Air Quality Standard (NAAQS) compliance and describe steps the Agency is taking to better understand the data quality, interpretation, and management of sensor data in the ambient environment.

**DISCUSSION:**

For NAAQS compliance, instruments, including sensors, must meet the applicable requirements in the Code of Federal Regulations (CFR) - Part(s) of Title 40, Protection of Environment or other state environmental regulations (see, e.g. 40 CFR Parts 50, 53, and 58). Technical requirements include detailed sampling, siting, and quality assurance requirements. Data from new air sensor instruments should not be used in a regulatory context at this time unless those instruments meet all applicable regulatory requirements. While such rigor is needed to ensure the quality of data used for policy making and regulatory decisions, we recognize that certain data streams may likely never meet these requirements but could still be very useful in non-regulatory applications such as providing a better understanding of local air quality, helping in the siting of regulatory monitors, or identifying hot spots. However, many data quality, data interpretation, and data management questions remain. To address these questions, EPA, states, tribes, and local air agencies have taken a collaborative approach in developing and implementing recommendations for advanced monitoring.

Through E-Enterprise for the Environment – a model for collaborative leadership among environmental co-regulators – EPA, state, and tribal representatives have identified three key areas of focus for air sensors: data quality; data interpretation; and data management. Each area is intended to address uncertainties in the current state of air sensor measurements and identify steps toward understanding new data streams in a systematic way. Uncertainties related to the key focus areas include, but are not limited to, the accuracy of measurements under various meteorological conditions, the appropriateness of data algorithm assumptions, how well real-time measurements meet basic data quality indicators of performance (e.g., precision, accuracy), how well a device performs over time, how to interpret short-term values, and data privacy and ownership issues.

In order to systematically characterize air sensor measurements, EPA is supporting research on sensor performance including the development of non-regulatory performance targets and testing protocols for supplemental and informational monitoring applications that complement – but do not replace – existing regulatory programs and requirements. These efforts are intended to provide regulators, outside parties, and the public alike with streamlined, unbiased assessments of sensor performance in the near-term and into the future.

Further, EPA recognizes the need for context and guidance related to the interpretation of real-time, non-regulatory sensor data. Communication of real-time information should be grounded in both health and measurement science. For example, while sensor data may indicate episodic spikes in pollutant concentrations, the health science often does not tell us what short term (e.g., one minute) exposures mean for an individual. To ensure that air sensor data can help meaningfully inform the public’s ability to reduce potentially harmful exposure to poor air quality, EPA will continue to provide information on the interpretation and display of disparate datasets, recognizing that each pollutant will require individual considerations.

Finally, EPA recognizes that it will likely be asked to use or respond to streams of non-regulatory data. The Agency will continue to facilitate conversations with interested parties on the issues identified above as well others relating to data ownership, standardized data formats, information security, privacy, and proprietary algorithms.

The Agency remains committed to promoting innovation and advancing technology. EPA will take an agile approach in setting priorities, developing materials or programs, and working with partners to conduct the necessary research to ensure that current and future efforts support the continued understanding of new measurement and information technologies.