

**2007 Annual Report
on the
Air Resources Board's
Fine Particulate Matter Monitoring Program**



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California Environmental Protection Agency

Air Resources Board

PM2.5 Air Quality Monitoring Program

State of California
California Environmental Protection Agency
Air Resources Board

2007 Annual Report on the Air Resources Board's Fine Particulate Matter Monitoring Program

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California's PM2.5 monitoring network now includes:

- Federally-approved monitors that measure PM2.5 mass over a 24-hour period at 81 sites;



Health and Safety Code 39619.5 requires the Air Resources Board (ARB or Board) to provide an update by January 1 of each year on the status and results of the fine particulate matter (PM2.5) monitoring program. This report provides a summary of PM2.5 monitoring activities in 2007 and how the data are being used to support ARB programs.

California's PM2.5 air quality monitoring program provides information used for determining which areas violate standards, characterizing the sources that contribute to pollution, determining background concentrations, assessing pollution transport, and supporting health studies and other research. Monitoring data also provide information to develop and evaluate programs for improving air quality.

California's PM2.5 monitoring network began collecting data in 1998. A number of different types of PM2.5 monitors are operated to provide information on PM2.5 mass and chemical composition which are summarized below. Figure 1 displays the locations of PM2.5 monitors throughout the State. Additional information on PM2.5 monitoring can be found at:

<http://www.arb.ca.gov/aaqm/partic.htm>

Federal Reference Monitors

The installation of federally-approved PM2.5 mass monitors at 81 sites throughout California began in 1998 and was completed in 2000. In 2007, an extra monitor was added to the network at Gilroy. These monitors collect particulate samples on filters, which are later weighed and analyzed in a laboratory. Because of this two-step process, PM2.5 air quality data collected with these monitors are not immediately available. To provide "real-time" PM2.5 air quality information, we added continuous PM2.5 mass monitors to our network.

Continuous Mass Monitors

Continuous PM2.5 mass monitors provide valuable information for public reporting, temporal representation, health studies, transport studies, and background monitoring. PM2.5 mass can be measured continuously with several different commercially available technologies.

- Samplers that quantify PM2.5 mass continuously at 50 sites;



and

- Monitors that collect PM2.5 samples for analysis of chemical components at 17 sites.



We chose the Beta Attenuation Monitor (BAM) for use in California and have installed monitors at over 50 sites.

Speciation Monitors

Another major stage of network implementation is the deployment of PM2.5 speciation monitors. Speciation monitoring provides valuable information about the composition (and ultimately sources) of PM2.5 pollution. However, monitoring of the individual species that make up PM is still an emerging field, with continuous speciation measurements the greatest challenge. To develop the best speciation network, California will need to take full advantage of emerging technologies. We are evaluating newly emerging methods not currently used in routine monitoring.

Federally-Required Speciation Monitors

There are two components to the PM2.5 speciation network in California. The first component, mandated by the U.S. EPA, required filter-based PM2.5 speciation monitoring at seven California sites that are now part of a national trends network for PM2.5 speciation. These monitors are the National Air Monitoring Stations (NAMS) monitors for the speciation network. Siting of the seven PM2.5 speciation monitors in Bakersfield, El Cajon, Fresno, Sacramento, San Jose, Riverside, and Simi Valley was completed in January 2002.

Additional Speciation Monitors

The second component of California's PM2.5 speciation network is the selection and deployment of samplers at selected State and Local Air Monitoring Stations (SLAMS). Data from these sites provide additional information needed for developing effective air quality attainment plans. The focus of the SLAMS PM2.5 speciation network is to enhance the spatial coverage of the NAMS sites in areas with a diversity of PM problems.

ARB and the air districts have deployed filter-based speciation monitors at ten sites - Anaheim, Calexico, Chico, Fontana, Escondido, Los Angeles, Modesto, Portola, Sacramento, and Visalia.

State and National PM2.5 Ambient Air Quality Standards* (micrograms per cubic meter)

	California	National
Annual	12	15 ¹
24-hour	---	65 ¹ 35 ²

1. Standards adopted in 1997.
2. Standard adopted in 2006.

In 2007, ARB began monitoring for specific wood smoke tracers to determine the contribution of wood burning sources to PM2.5 ambient levels. Wood smoke tracers are being monitored at seven of the speciation SLAMS sites - Calexico, Chico, Escondido, Modesto, Portola, Sacramento, and Visalia.

Accessing PM2.5 Data

Data collected as part of California’s PM2.5 monitoring program can be obtained through a number of means. Daily PM2.5 values as well as summary statistics can be accessed through the interactive query program on ARB’s web page at:

<http://www.arb.ca.gov/adam/welcome.html>

Real-time hourly PM2.5 data from California’s continuous monitors can also be found at:

<http://www.arb.ca.gov/aqmis2/paqdselect.php>

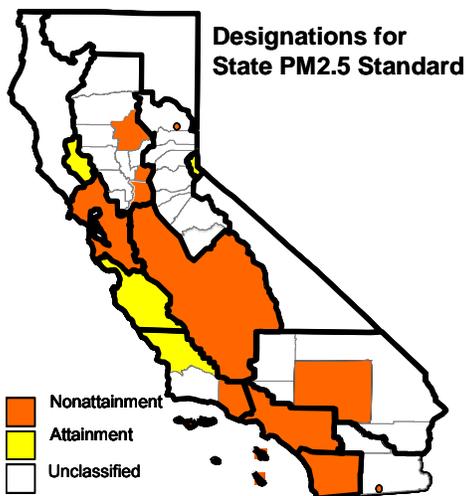
In addition, the annual California Almanac of Emissions and Air Quality now includes an eight-year summary of PM2.5 air quality data which is available at:

<http://www.arb.ca.gov/aqd/almanac/almanac.htm>

PM2.5 Designations

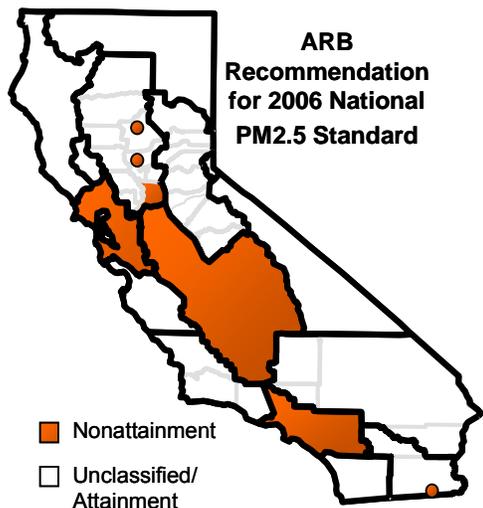
Based on data collected as part of California’s PM2.5 monitoring network, in 2006, the ARB designated areas as attaining or not attaining the State PM2.5 ambient air quality standard. All major urban areas of California exceed the State PM2.5 standard, as well as several more isolated sub-areas. ARB will be updating the designations in 2009.

The ARB also identified areas that do not meet the 1997 national PM2.5 standards (annual of 15 micrograms per cubic meter (µg/m3) and 24-hour of 65 µg/m3) and proposed designations to the U.S. Environmental Protection Agency (U.S. EPA) in 2004. The U.S. EPA issued final designations which became effective in April 2005. Two areas in California do not meet the federal standards – the San Joaquin Valley Air Basin, and the South Coast Air Basin. PM2.5 Attainment Plans are due to U.S EPA in 2008.





Attainment Plans for 1997 standards are due to U.S. EPA in 2008.



U.S. EPA will formalize designations for 2006 standards in 2009.

In September 2006, the U.S. EPA strengthened the national 24-hour PM2.5 standard from the 1997 level of 65 µg/m³ to 35 µg/m³. In 2007, the ARB identified areas that do not meet this standard and submitted area designation recommendations to U.S. EPA. Seven areas in California do not meet the strengthened federal 24-hour PM2.5 standard – the South Coast Air Basin, San Joaquin Valley Air Basin, Bay Area Air Basin, Sacramento Metropolitan Air Quality Management District; combined cities of Yuba and Marysville, the city of Chico, and the city of Calexico. Information on ARB’s recommended designations can be found at:

<http://www.arb.ca.gov/degis/pm25degis/pm25degis.htm>

U.S. EPA will formalize designations in 2009.

PM2.5 Attainment Plans

Using network monitoring data as one of the tools, the South Coast Air Quality Management District prepared the 2007 Air Quality Management Plan for attaining the 1997 PM2.5 federal standards in the South Coast Air Basin. The Plan projects attainment of the standards by the 2015 deadline. ARB adopted the Plan in the fall of 2007 and submitted it to U.S. EPA as a revision to the California State Implementation Plan. Information on the South Coast Plan is available at:

<http://www.arb.ca.gov/planning/sip/2007sip/southcoast/scabsip.htm>

In 2007, the San Joaquin Valley Air Pollution Control District initiated the planning process for their PM2.5 State Implementation Plan. After consideration by the ARB, the plan will be submitted to U.S. EPA in the spring of 2008.

Figure 1: PM2.5 Monitoring Stations in California

