

SACRAMENTO METROPOLITAN  
AIR QUALITY MANAGEMENT DISTRICT

For Agenda of: January 26, 2006

**To:** Board of Directors  
Sacramento Metropolitan Air Quality Management District

**From:** Larry Greene  
Air Pollution Control Officer

**Subject:** Particulate Matter - proposed EPA changes to air quality standards and other information

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### Recommendation

This item is for Board members information only.

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### EPA Proposed Rulemaking

To further improve public health across the country, on December 20, 2005, the EPA Administrator signed proposed revisions to the national air quality standards for particulate matter pollution. The proposed rulemaking will be open for public comment for 90 days. A consent agreement requires that EPA issue final standards by September 27, 2006.

EPA is proposing four major changes:

1. to revise the existing fine particulate matter standard (PM fine) to become more stringent,
  2. to revise the existing inhalable coarse particulate matter standard,
  3. to revoke some PM coarse nonattainment area designations, and
  4. to establish new monitoring requirements for the revised coarse particulate matter standard (PM coarse).
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### New Health Information

The new EPA standards are based on a range of newly available health information. Scientific studies have linked particle pollution, especially fine particles, with a series of significant health problems. The new findings are shown in bold below.

- \* Increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing
- \* Decreased lung function
- \* Aggravated asthma
- \* Development of chronic bronchitis
- \* **Irregular heartbeat**
- \* **Nonfatal heart attacks**
- \* Premature death in people with heart or lung disease

Particle pollution can cause coughing, wheezing, and decreased lung function, **even in otherwise healthy children and adults**. Studies estimate that thousands of elderly people die prematurely each year nationwide from exposure to fine particles.

### Basic information about particulate matter pollution.

Particulate matter pollution is a mixture of solid particles and liquid droplets. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small, they can only be detected using an electron microscope.

Particle pollution includes “inhalable coarse particles,” with diameters ranging from 2.5 micrometers ( $\mu\text{m}$ ) to  $10\mu\text{m}$  and “fine particles,” with diameters equal to or smaller than  $2.5\ \mu\text{m}$ . To give you some perspective about how small 2.5 micrometers, is the average human hair is about 70 micrometers in diameter – making it 30 times larger than the largest fine particle.

Some particles, known as *primary particles* are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks or fires. Others form in complicated reactions in the atmosphere of chemicals such as sulfur dioxides and nitrogen oxides that are emitted from power plants, industries and automobiles. These particles, known as *secondary particles*, make up most of the fine particle pollution.

### Comparison of standards

In 1997, when the PM fine standards were established, litigants challenged the standards because the existing PM coarse standards, covering all particulate matter less than 10 micrometers in diameter, overlapped the new PM fine standard which covered particulate matter less than 2.5 micrometers in diameter. Consequently, in addition to revising the PM fine standard, EPA is proposing a new PM coarse standard that excludes the PM fine fraction. In other words, the federal PM coarse standard will include particulate matter less than 10 micrometers but greater than 2.5 micrometers. The California PM Coarse standards will continue to cover all particulate matter less than 10 micrometers.

In addition, EPA proposes that the new PM coarse standard cover only emissions from sources in urban areas such as high-density traffic on paved roads, industrial sources, and construction activities; and exclude rural area sources such as windblown dust, agricultural sources, and mining operations. California standards do not exclude pollution from rural sources.

#### PM fine

	<b>Proposed New Federal Standards</b>	<b>Existing Federal Standards</b>	<b>Existing California Standards</b>
Annual	No change	$15\ \mu\text{g}/\text{m}^3$	$12\ \mu\text{g}/\text{m}^3$
24 hour (3-year average 98 <sup>th</sup> percentile, allows about 4 high days/year)	$35\ \mu\text{g}/\text{m}^3$	$65\ \mu\text{g}/\text{m}^3$	None

#### PM coarse

	<b>Proposed New Federal Standards</b>	<b>Existing Federal Standards</b>	<b>Existing California Standards</b>
Annual	None	Federal - $50\ \mu\text{g}/\text{m}^3$	$20\ \mu\text{g}/\text{m}^3$
24 hour	$70\ \mu\text{g}/\text{m}^3$	Federal - $150\ \mu\text{g}/\text{m}^3$	$50\ \mu\text{g}/\text{m}^3$

## Attainment status for Sacramento County

### PM fine

If the changes are finalized as proposed, Sacramento County will become a nonattainment area for the PM fine standard. We are currently attainment for that standard. It is unclear whether the nonattainment area will be limited to Sacramento County or whether a larger area will be included. That issue will be addressed during the designation process in 2009.

### PM coarse

EPA officially recognized that Sacramento County attained the existing PM coarse standards several years ago, and preliminary information suggests that the region will attain the new federal PM coarse standards. EPA also proposes to revoke the federal nonattainment/maintenance designations for areas, like Sacramento County, that meet the PM coarse standards.

## Monitoring changes

EPA proposes many changes to the air monitoring network that would require the addition of many new monitors to the network operated by District staff. The EPA regulation indicates that funding for roughly half of the new monitors will be provided. In some areas of the country, operational costs may be offset by other changes to EPA's monitoring regulation that authorize the removal of several monitors. However, removal of most of the monitors in our District may not be permitted as they provide data needed to assess attainment with California standards.

	<b>Additional Monitors (locations to be determined)</b>	<b>Remove Monitors ( EPA Proposal)</b>
PM Coarse	2-3 - manual monitors	6 - manual monitors
	1 - continuous monitor	3- continuous monitors
	1- speciation monitor	None
PM Fine	No new monitors	None
Other monitoring changes	1-trace <sup>1</sup> sulfur dioxide	2-sulfur dioxide
	2 - trace nitrogen oxide	2 - nitrogen dioxide
	1- trace carbon monoxide	4-carbon monoxide
<b>Total no. of monitors</b>	<b>8-9 new monitors</b>	<b>17 monitors removed</b>

## Schedule

### PM fine

EPA's public comment period ends 90 days from publication which is expected to occur mid-January 2006. Staff intends to submit comments. A consent agreement requires that EPA's final regulations be signed September 27, 2006. EPA proposes to make the standards effective in November 2006. Unless stayed by a subsequent legal challenge, the Clean Air Act requires that we be designated nonattainment for the PM fine standards in November 2009. The subsequent plan would be due in April 2013. The plan must include specified control requirements and show

<sup>1</sup> Trace monitors provide more accurate readings at lower concentrations, levels generally observed in our area.

how the area would attain the new standard by the 2015 deadline. The Clean Air Act authorizes an extension of that deadline to 2020, if needed.

#### PM coarse

EPA must approve the new PM coarse monitors prior to installation. Therefore, new monitors would begin operation in 2009. EPA designations require three years of data, therefore, final action on designations is expected to occur in May 2013. If it turned out that Sacramento County was designated nonattainment, contrary to expectations, then in 2016 a plan would be due to show how to attain the PM coarse standard by 2018.

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### **Recent Particulate Matter Air Quality and related work efforts**

In December 2005, cold stagnant weather conditions resulted in elevated particulate matter levels in Sacramento County. District staff meteorologist, John Ching, forecast high particulate matter readings. Our Community Education office issued a press release, December 13, 2005, requesting the public avoid burning in fireplaces for the duration of the episode. An agricultural no-burn day was also declared. On four days in December, preliminary data for our continuous PM fine samplers showed readings above the current federal 24 hour PM fine standards. EPA has not validated any continuous PM fine monitors for comparison with federal air quality standards yet. Therefore, that data must be validated with manual samplers. Data will not be available for approximately 2-3 months.

Staff continues to work on state particulate matter requirements of SB656, and the implementation schedule approved by your Board in July 2005 that established control requirements for residential wood burning, combustion emissions, fugitive dust, and transportation emission sources. In light of these changes to federal air quality standards, District staff intends to accelerate the schedule for two items related to reduction in residential wood combustion emissions, which accounts for approximately 44 percent of our PM fine emissions inventory: 1) a rule to require only EPA certified wood burning appliances in new construction, and 2) a rebate program for clean burning devices. We will also work with City of Sacramento staff, in response to interest expressed by the Law and Legislation committee of the Sacramento City Council, on the following items: public education program, rebate for replacement of existing fireplaces, a voluntary curtailment program, and methods to restrict wood moisture content.

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### **Conclusion**

#### PM fine

EPA has proposed a more health protective PM fine standard. EPA has asked for comments on the stringency of the standards.

#### PM coarse

EPA proposes changes to the PM coarse standard and will exclude some emission sources. The exclusion of emission sources will be a controversial element of the proposed regulations. Although Sacramento County is largely unaffected by the changes to the PM coarse standards, it should be noted that approximately 65 percent of the Sacramento County emission inventory is comprised of fugitive dust and other sources that could be excluded from EPA's new federal standards. The regulation would revoke the existing PM nonattainment designations for areas (like ours) that have attained the standards.

Monitoring

EPA changes will require substantial funding to support the installation of new monitors. Removal of existing monitors to reduce costs may not be feasible since the monitors are needed to collect data for determining attainment with state standards. Staff is concerned that funding must be provided by EPA to support the costs of the new monitors without reducing funding from other existing programs.

Staff plans to submit comments on the draft regulations during the public hearing process.

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Respectfully submitted,

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Approved as to form:

Katherine Pittard  
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