

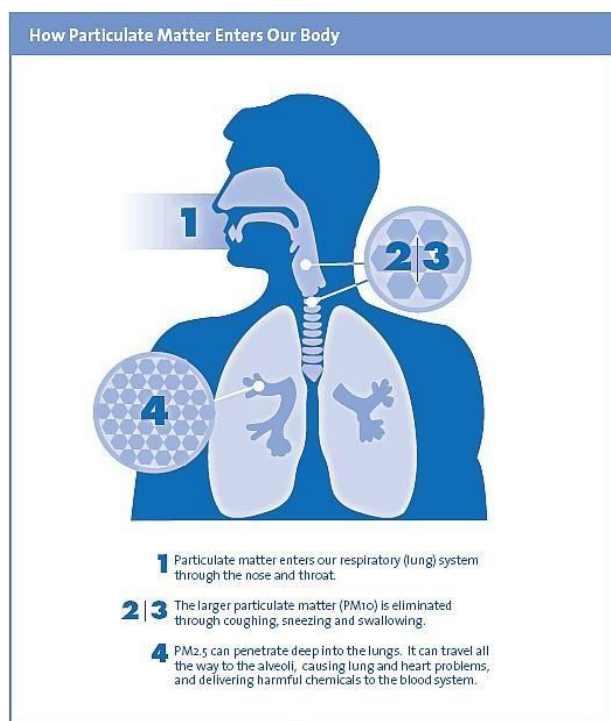
MODULE 2

Regulatory Standards for Particulate Matter

El Dorado County Exceeds State Particulate Matter (PM) Standard

Particulate Matter (PM)

Sources of particulate matter include motor vehicle tires and brakes, wood burning stoves, fireplaces, construction site dust, landfill operations, agriculture operations, brush burning, waste burning, wildfires, industrial sources and windblown dust from open land. In addition to its potential harmful human health effects, PM is often responsible for much of the haze described as smog. Airborne PM is a problem in several of our cities, rural areas, national parks and forests.



PM10 (big) particles can stay in the air for minutes or hours while PM2.5 (small) particles can stay in the air for days or weeks. Because of these residence times, PM10 particles can travel as little as a hundred yards or as much as 30 miles while PM2.5 particles go even farther; many hundreds of miles.

As mentioned in Module 1, PM can have grave health effects, especially PM2.5 as the particles are so small, they can pass through the alveoli and directly into your blood stream. The air and the particles travel into your respiratory system (your lungs and airway). Along the way the particles can stick to the sides of the airway or travel deeper into the lungs. The farther they go, the worse the effect.

Your lungs produce mucous to trap the particles, and tiny hairs wiggle to move the mucous and particles out of the lung. If the particle is small and it gets very far into the lungs, special cells in the lung trap the particles and this can result in lung disease, emphysema, lung cancer.

Both PM10 (big) and PM2.5 (small) particles can cause health problems; specifically respiratory health (that's the lungs and airway). Because the PM2.5 travels deeper into the lungs AND because the PM2.5 is made up of things that are more toxic (like heavy metals and cancer causing organic compounds), PM2.5 can have worse health effects than the bigger PM10.

Federal and State Standards

The United States Environmental Protection Agency has set national air quality standards for PM10 and PM2.5, based on health research, identifying acceptable levels of ambient particulate matter. Currently, many parts of the western United States violate these standards. The State of California has established generally more stringent ambient (outdoor) air quality standards for PM10 and PM2.5.¹ These standards define the maximum amount of particles that can be present in outdoor air without threatening the public's health. The California Air Resources Board (CARB) adopted an annual average standard for PM10 of 20 µg/m³ (micrograms per cubic meter), and 12 µg/m³ for PM2.5. CARB also adopted a 24-hour standard PM10 of 50 µg/m³. PM10 levels in most areas of California exceed current state standards from a few to many times each year. El Dorado County is designated as a Non-Attainment Area for the state PM10 standard.² The 24-hour PM10 standard was exceeded in El Dorado County in 2003 and 2008.

Monitoring

California's ambient air monitoring network is one of the most extensive in the world, consisting of over 250 sites where air pollution levels are monitored and more than 700 monitors used to measure pollutant levels to demonstrate *Attainment* or *Nonattainment* of national and state ambient air quality standards.³ State area designations for ten criteria pollutants: ozone, suspended particulate matter (PM10), fine suspended particulate matter (PM2.5), carbon monoxide, nitrogen dioxide, sulfur dioxide, sulfates, lead, hydrogen sulfide, and visibility reducing particles are updated annually by CARB. El Dorado County monitors are located at; South Lake Tahoe – Sandy Way, Cool – Hwy 193, Echo Summit, and Placerville – Canal St.

Consequences of Non-attainment

Consequences for a region or air basin not showing progress toward achieving attainment might include; state- or district-imposed limitations such as strict indoor fireplace and wood stove burn bans on poor air quality days, suspending residential open burning for greater periods of time, increased penalties for illegal burning, or the development of stricter rules and regulations. Homes in which wood burning is the primary source of heat are typically exempt from burn bans.

What is being done to reduce PM10 pollution?

Air quality districts are required to develop programmatic strategies and regulations to achieve needed emission reductions required by state and federal statutes or mandates. Data from the ambient monitoring network are used to indicate the success of the strategies and regulations, in terms of the rate of progress towards *attaining* the standards. Air quality districts have air quality plans to bring PM concentrations down to healthful levels. Plans include:

1. Dust control for roads, construction, and landfills.
2. Programs to reduce emissions from open burning, wood stoves and fireplaces.
3. Cleaner-burning gasoline and diesel fuels.
4. Emissions control devices for motor vehicles.
5. Controls for industrial facilities.

¹ CARB website: <https://ww2.arb.ca.gov/resources/california-ambient-air-quality-standards>

² CARB website: https://ww2.arb.ca.gov/sites/default/files/2022-12/state_pm10.pdf

³ CARB website: <https://ww2.arb.ca.gov/our-work/programs/ambient-air-monitoring-regulatory>