

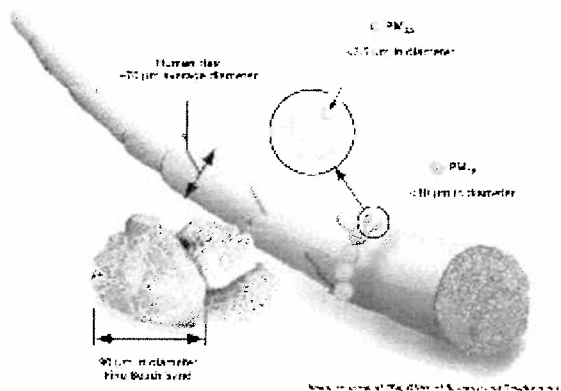
Particulate Matter - Background Information

According to the Environmental Protection Agency (EPA), Particulate Matter (PM) is a "mixture of extremely small particles and liquid droplets."

Air quality professionals pay attention to particulate matter because these very small particles can cause health problems when inhaled. Specifically, particles less than 10 micrometers in diameter can pass the nose and throat and enter the lungs. A micrometer is one millionth of a meter.

Size is important to understand because the EPA classifies particulate matter as two types based on size. Alaska has problems with both types of particulate matter.

- **Coarse Particulate Matter (PM₁₀)** is less than 10 micrometers in diameter. It primarily comes from road dust, agriculture dust, river beds, construction sites, mining operations, and similar activities. Most people in Alaska experience PM₁₀ as dust.
- **Fine Particulate Matter (PM_{2.5})** is less than 2.5 micrometers in diameter. PM_{2.5} is a product of combustion, primarily caused by burning fuels. Examples of PM_{2.5} sources include power plants, vehicles, wood burning stoves, and wildland fires.



A single human hair is approximately 70 micrometers or seven of the largest PM₁₀ particles in diameter. A single human hair is almost 30 times larger than the largest fine particle, PM_{2.5}.

Air pollution standards are given as a mass of material in a volume of air: micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). A microgram is one millionth of a gram. A paper clip weighs about a gram. Imagine chopping the paperclip into a million equally sized pieces. One of those pieces would weigh about a microgram. A cubic meter (approximately 39" X 39" X 39") describes a volume of air that is about the size of a washing machine. If you place one of the million pieces of the paper clip in the space occupied by the washing machine, you would have 1 $\mu\text{g}/\text{m}^3$.

NEW PARTICULATE MATTER REGULATIONS

The EPA recently updated the national standards for Particulate Matter. For PM₁₀, the EPA retained the current 24 hour PM₁₀ standard of 150 $\mu\text{g}/\text{m}^3$ and eliminated the annual PM₁₀ standard. The EPA increased the stringency of the PM_{2.5} standard by lowering the previous 24 hour standard of 65 $\mu\text{g}/\text{m}^3$ to 35 $\mu\text{g}/\text{m}^3$. EPA left the annual PM_{2.5} standard of 15 $\mu\text{g}/\text{m}^3$ in place.

CONTROLLING PARTICULATE MATTER

Violations of air quality standards mean the state government and impacted communities must work together to formulate a plan to reduce particulate emissions.

PM10 - The state may recommend EPA designate areas violating the PM10 standard as "nonattainment." If EPA agrees, a process of planning and rulemaking begins for transportation related problems; these areas gain access to federal highway funds dedicated to air quality improvement. A second option might be for state and impacted communities to sign a "Memorandum of Agreement" with EPA for a pollution reduction plan. A Memorandum Of Agreement (MOA) avoids the stigma of being in "nonattainment" and provides some flexibility and timeliness in formulating a pollutant reduction plan, but does not allow special access to the air quality transportation funds.

PM2.5 - With the new PM2.5 standard, the EPA expects and is looking for states to designate communities in violation of the standard as nonattainment areas. The state may recommend designating the Fairbanks North Star Borough as a nonattainment area for PM2.5.

What does "nonattainment" status mean?

The state may recommend either a community or a region as a PM non-attainment area. Exactly how the state will group or classify portions of Alaska is still being discussed.

If the state submits an area as "nonattainment" for PM, the EPA has 18 months to approve or disapprove the request. The state begins forming plans to reduce PM levels. This is done in close cooperation with local and regional governments as pollution controls are generally enacted at a local level. If EPA approves the state's request for designating an area as "nonattainment," the state has 18 months to submit an "attainment" plan which includes all the controls and programs agreed to by the state and local governments. Two 18 month periods means it can take 3 years from submittal of the state recommendation to when controls are put into place. The state and local governments then have five years to bring nonattainment areas into attainment.

Next Steps

The state is in the early stages of planning a strategy to comply with EPA's new PM rules. The state will work with communities to determine the most effective controls. At this point, the state does not know how the areas will be designated, or what the controls might be. As the state works with communities and is given permission from communities to publicize information on PM levels and control strategies, the state will post updates on this website.