

Dangerous to Breathe: Why EPA needs to protect us from Coarse Particles



March 2011

What are coarse particles?

Inhalable coarse particles, or PM_{10} , are microscopic particles that measure less than 10 microns in diameter. These particles are small enough to evade the body's defense mechanisms and pass into the airways and the lungs.*

- How small? 1,000 PM_{10} particles could fit side to side across one end of a standard paper clip. See the figure below for other comparisons.

PM_{10} is a mixture of materials that can include metals, smoke, diesel soot, acids, dirt, pollen, and molds. These particles are often embedded with toxic substances such as organic hydrocarbons, metals (such as lead), and pesticides.

- Examples of manmade coarse particles include coal dust, fly ash, wood smoke, diesel soot, asbestos fibers, and roadside particles from tire and brake wear.

How does PM_{10} harm health?

Breathing high levels of particle pollution has been found to cause or likely to cause:

- death from respiratory and cardiovascular causes, including strokes;^{1,2,3,4,5,6}
- increased numbers of heart attacks, especially among the elderly and in people with heart conditions;^{7,8}
- increased hospitalization for cardiovascular disease, including strokes and congestive heart failure;^{9,10,11,12}
- increased breathing difficulty and need for asthma inhaler;¹³
- hospitalization for asthma among children; and^{14,15,16}
- aggravated asthma attacks in children.¹⁷

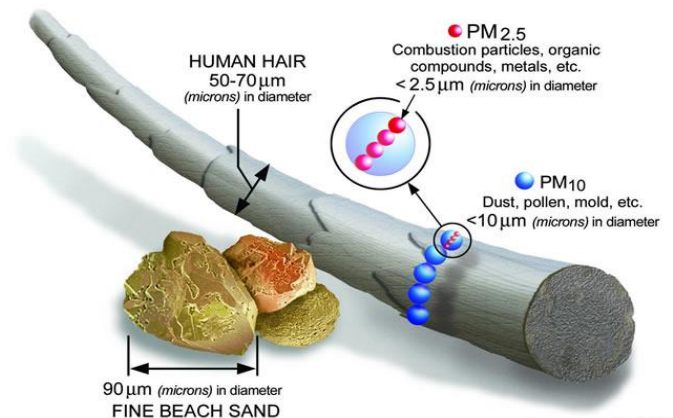


Image courtesy of the U.S. EPA

Coarse particles— PM_{10} —shown here as blue dots, can evade the lungs' natural defenses and harm cardiovascular and respiratory health.

* Particles less than 2.5 microns in diameter are categorized as “fine” particles or $PM_{2.5}$. When inhaled, particles of this size can penetrate into the small airways and air exchange regions of the lungs. PM_{10} also includes particles this size.

EPA must continue to provide protection from coarse particle pollution

Congress long ago recognized that particles were dangerous. When Congress passed the Clean Air Act in 1970, they required EPA to set standards for safe levels of particulate matter. Congress recognized that research needed to continue to ensure that EPA used the most current research to set standards to protect public health, so the law requires EPA to review the standards every five years.

EPA has had standards in place for particles since 1971 and specifically for PM₁₀ since 1987. EPA is in the midst of its latest review that began in 2007. The scientific research has grown, adding more weight to the evidence that EPA needs to strengthen our protection from particle pollution.

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