

Particulate Matter Health Information

WHAT IS PARTICULATE MATTER?

Particulate matter is a mixture of microscopic solids and liquid droplets suspended in air. This pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores).

The size of particles is directly linked to their potential for causing health problems. Small particles less than 10 micrometers in diameter pose the greatest problems, because they can get deep into your lungs, and some may even get into your bloodstream.

Exposure to such particles can affect both your lungs and your heart. Larger particles are of less concern, although they can irritate your eyes, nose and throat.

Small particles of concern include "fine particles" (such as those found in smoke and haze), which are 2.5 micrometers in diameter or less, and "coarse particles" (such as those found in wind-blown dust), which have diameters between 2.5 and 10 micrometers.

ARE YOU AT RISK FROM PARTICLES?

People with heart or lung disease, older adults and children are considered at greater risk from particles than other people, especially when they are physically active. Exercise and physical activity cause people to breathe faster and more deeply and to take more particles into their lungs.

People with heart or lung diseases such as coronary artery disease, congestive heart failure, and asthma or chronic obstructive pulmonary disease (COPD) are at increased risk, because particles can aggravate these diseases. People with diabetes also may be at increased risk, possibly because they are more likely to have underlying cardiovascular disease.

Older adults are at increased risk, possibly because they may have undiagnosed heart or lung disease or diabetes. Many studies show that when particle levels are high, older adults are more likely to be hospitalized, and some may die of aggravated heart or lung disease.

Children are likely at increased risk for several reasons. Their lungs are still developing, they spend more time at high activity levels, and they are more

likely to have asthma or acute respiratory diseases, which can be aggravated when particle levels are high.

It appears that risk varies throughout a lifetime, generally being higher in early childhood, lower in healthy adolescents and younger adults, and increasing in middle age through old age as the incidence of heart and lung disease and diabetes increases. Factors that increase your risk of heart attack, such as high blood pressure or elevated cholesterol levels, also may increase your risk from particles.

In addition, scientists are evaluating new studies that suggest that exposure to high particle levels may also be associated with low birth weight in infants, pre-term deliveries and possibly fetal and infant deaths.

HOW CAN PARTICLES AFFECT YOUR HEALTH?

Particle exposure can lead to a variety of health effects. For example, numerous studies link particle levels to increased hospital admissions and emergency room visits—and even to death from heart or lung diseases. Both long- and short-term particle exposures have been linked to health problems.

Long-term exposures, such as those experienced by people living for many years in areas with high particle levels, have been associated with problems such as reduced lung function and the development of chronic bronchitis and even premature death.

Short-term exposures to particles (hours or days) can aggravate lung disease, causing asthma attacks and acute bronchitis, and may also increase susceptibility to respiratory infections. In people with heart disease, short-term exposures have been linked to heart attacks and arrhythmias. Healthy children and adults have not been reported to suffer serious effects from short-term exposures, although they may experience temporary minor irritation when particle levels are elevated.

WHAT ARE THE SYMPTOMS OF PARTICLE EXPOSURE?

Even if you are healthy, you may experience temporary symptoms, such as irritation of the eyes, nose, and throat; coughing, phlegm, chest tightness, and shortness of breath.

If you have lung disease, you may not be able to breathe as deeply or as vigorously as normal, and you may experience coughing, chest discomfort, wheezing, shortness of breath, and unusual fatigue. If you have any of these symptoms, reduce your exposure to particles and follow your doctor's advice. Contact your doctor if symptoms persist or worsen. If you have asthma, carefully follow your asthma management plan when particle levels are high. Your doctor can help you develop a plan if you don't have one.

If you have heart disease, particle exposure can cause serious problems in a short period of time even heart attacks with no warning signs. So don't assume that you are safe just because you don't have symptoms. Symptoms such as chest pain or tightness, palpitations, shortness of breath or unusual fatigue may indicate a serious problem. If you have any of these symptoms, follow your doctor's advice.

HOW CAN YOU AVOID UNHEALTHY EXPOSURE?

Your chances of being affected by particles increase the more strenuous your activity and the longer you are active outdoors. If your activity involves prolonged or heavy exertion, reduce your activity time or substitute another that involves less exertion. Go for a walk instead of a jog, for example. Plan outdoor activities for days when particle levels are lower. And don't exercise near busy roads; particle levels generally are higher in these areas.

Particle levels can be elevated indoors, especially when outdoor particle levels are high. Certain filters and room air cleaners can help reduce indoor particle levels. You also can reduce particle levels indoors by not smoking inside, and by reducing your use of other particle sources such as candles, wood-burning stoves and fireplaces.

FOR MORE INFORMATION

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PARTICULATE MATTER REDUCTION TIPS

You Can Help Keep the Air Cleaner!

Everyday tips:

- Conserve electricity. Consider setting your thermostat a little higher in the summer and lower in winter. Participate in local energy conservation programs. Look for the ENERGY STAR label when buying home or office equipment.
- Keep car, boat and other engines properly tuned, and avoid engines that smoke.
- Car pool, use public transportation, bike or walk when possible.
- Combine errands to reduce "cold starts" of your car and avoid extended idling.
- Consider using gas logs instead of wood. If you use a wood-burning stove or fireplace insert, make sure it meets EPA design specifications. Burn only dry, seasoned wood.
- Mulch or compost leaves and yard waste.

Tips for days when particle pollution is expected to be high:

- Reduce the number of trips you take in your car.
- Slow down on or avoid dirt roads.
- Stabilize loose soils.
- Reduce or eliminate fireplace and wood stove use.
- Avoid using gas-powered lawn and garden equipment.
- Avoid burning leaves, trash and other materials.

Where can I learn more?

- ADEQ's Web site, www.azdeq.gov, includes the daily Air Quality Forecasts and other announcements, plus a great deal of information on air, water, the environment, and community events.
- You can also use the ADEQ website to sign up to receive Air Quality Forecasts by e-mail.
- Go Valley Metro's Web site for more ideas on ride reduction: www.valleymetro.org