

## Fine Particulate Matter

In October 2018 the Missouri portion of the St. Louis region was found by the U.S. Environmental Protection Agency (EPA) to be in attainment of the 1997 annual fine particulate matter (PM<sub>2.5</sub>) standard of 15 micrograms/cubic meter (ug/m<sup>3</sup>). In May 2019 EPA redesignated the Illinois counties of Madison, Monroe and St. Clair and Baldwin Township in Randolph County to attainment of this standard. On the effective date of the redesignation, EPA revoked the 1997 annual PM<sub>2.5</sub> standard for these areas. They are considered to be maintenance (standard revoked).

EPA revised the annual PM<sub>2.5</sub> standard to 12 ug/m<sup>3</sup> in December 2012. In 2015, EPA found that it could not determine if the St. Louis region met this standard, based on available information, and identified both the Missouri and Illinois portions of the St. Louis region as “unclassifiable”. More information was needed for EPA to make an attainment or non-attainment designation. Based on three years of quality-assured monitoring data for Missouri and Illinois, the region is now meeting the 2012 standard. Each state submitted a request to EPA to revise the designation to attainment. In January 2019 EPA revised the designation for all of Illinois to attainment/unclassifiable for the 2012 annual PM<sub>2.5</sub> standard. The Missouri counties making up the St. Louis region were designated by EPA as attainment/unclassifiable in July 2019.

Particulate matter (PM) is a mix of solid particles and liquid droplets suspended in the air. Fine Particulate Matter (PM<sub>2.5</sub>) is considered to be less than or equal to 2.5 microns in diameter (about 1/30 the width of a human hair). Many manmade and natural sources emit PM directly or emit other pollutants which have a chemical reaction in the atmosphere to form PM.

### PM<sub>2.5</sub> Formation

PM<sub>2.5</sub> is made up of a variety of components including acids, organic chemicals, metals, dirt, or dust particles. PM<sub>2.5</sub> can be emitted directly from the combustion of fuel (power plants, motor vehicles, wood burning) and certain industrial activities. Other fine particle pollution may be formed indirectly from the chemical change of gases, such as sulfur dioxide, nitrogen oxides and volatile organic compounds, in the air. PM<sub>2.5</sub> can be formed when these gases react with sunlight and water vapor. PM<sub>2.5</sub> can affect human health and is a source of haze reducing visibility.

### PM Health Effects

PM is able to penetrate and lodge in deep areas of the lungs. Health effects include irritation of the eyes, sore throat, coughing, chest tightness, and shortness of

breath. PM may also trigger asthma attacks. People most at risk from exposure include those with asthma, heart or lung disease, children and the elderly. Children and adults who are active outdoors may be at increased risk because during physical activity, people breathe faster and more heavily, taking more particles deeper into their lungs. When air quality is poor and if your outdoors activity involves prolonged or heavy exertion, reduce your activity time or substitute another activity that involves less exertion. Furthermore, attempt to plan outdoor activities for days when PM levels are low.