EAST-WEST GATEWAY
Council of Governments

Creating Solutions Across Jurisdictional Boundaries

# 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 ($PM_{2.5}$) standard of 15 micrograms/cubic meter (ug/$m^3$). Illinois is preparing a request for EPA to designate Madison, Monroe and St. Clair counties and Baldwin Township in Randolph county as in attainment of this standard.

In December 2012 the annual $PM_{2.5}$ standard was revised by EPA to be 12 ug/$m^3$. Based on available data, the EPA found it could not determine if the region met the 2012 standard and in 2015 designated the region as “unclassifiable”. Based on three years of quality-assured monitoring data, the St. Louis area is now meeting the 2012 standard. Missouri and Illinois are both preparing requests to EPA to finalize their classification to attainment of the 2012 standard.

Particulate matter (PM) is a mix of solid particles and liquid droplets suspended in the air. Fine Particulate Matter ($PM_{2.5}$) 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.

## $PM_{2.5}$ Formation

$PM_{2.5}$ is made up of a variety of components including acids, organic chemicals, metals, dirt, or dust particles. $PM_{2.5}$ 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. $PM_{2.5}$ can be formed when these gases react with sunlight and water vapor. $PM_{2.5}$ 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.