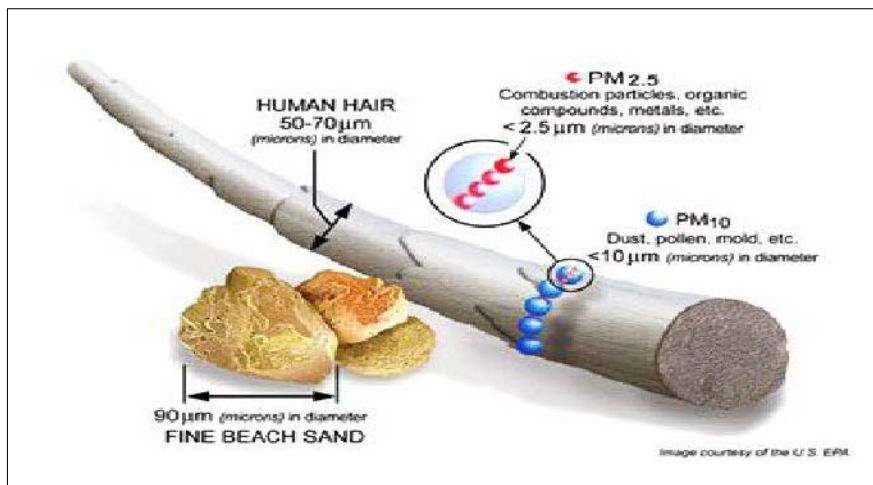




Air Quality Analysis of PM₁₀

PM₁₀ refers to airborne particles — particulate matter — smaller than 10 micrometers in diameter. People may inhale these particles, but no one can see them with the naked eye. Examples include microscopic mold, dust and pollen. The general public may encounter particulate matter in this size range near roads and industries, among other areas. These particles are so tiny that by comparison, the average human hair is seven times larger than the widest ones.



Due to their small size, these particles can entrench themselves in one's lungs and bloodstream. Studies have shown that particle pollution can impact people in all age groups. However, children, the elderly, and those with heart and/or lung disease are highest at risk. Particle pollution also impairs the environment and damages buildings. For more information, go to <https://www.epa.gov/pm-pollution>.

Monitoring sites use filters to trap these particles. Some sites operated by the Missouri Department of Natural Resources require a chemist to weigh the filters and calculate the concentration of airborne PM₁₀. The U.S. Environmental Protection Agency (EPA) classifies this process as a federal reference method, the gold standard of air monitoring. Other sites use newer methods that the EPA recently approved as federal equivalent methods. They also use filters, but the equipment does not require chemists to weigh the filters to determine the concentration of airborne PM₁₀. These methods continuously measure PM₁₀. Furthermore, some sites monitor PM₁₀ using a combination of methods.

The EPA has set a standard for PM₁₀ at 150 micrograms per cubic meter of ambient air (150 µg/m³), averaged over a 24-hour day. A site does not meet this standard if it exceeds the level more than once per year, averaged over a three-year period. The PM₁₀ standard is expressed as “expected number of days exceeding the standard.” The word *expected* is used because PM₁₀ is not always measured every day at a specific monitoring site. Consequently, determining the number of days of exceedance requires adjustment by the ratio of the number of days in the year (365 or 366) to the number of days on which PM₁₀ is measured.

The following pages show a map with PM₁₀ monitoring sites operated by the department and a table of PM₁₀ design values. A value greater than one indicates exceedance of the PM₁₀ standard; a value less than or equal to one indicates that a site is meeting the standard. As shown on the map and table, half of the sites use a PM₁₀ instrument that EPA only recently designated and approved as a federal equivalent method. The department currently does not publish all of this data.

All but two of the department’s sites have met the PM₁₀ standard in recent years. One site exceeded the standard for the 2011-2013 period, and the other exceeded the standard for the 2012-2014 period. Both are located in areas near industrial facilities whose operations may release PM₁₀ into the air. Staff members from the department’s Air Pollution Control Program continue to work with these facilities to ensure that the PM₁₀ standard will continue to be met in the future.



PM₁₀ Design Values
Expected Numbers of Days that Air Monitoring Sites
in Missouri Exceed the PM₁₀ Standard
 (150 micrograms per cubic meter)

Updated 4/05/2018

Site numbers correspond to map legend.

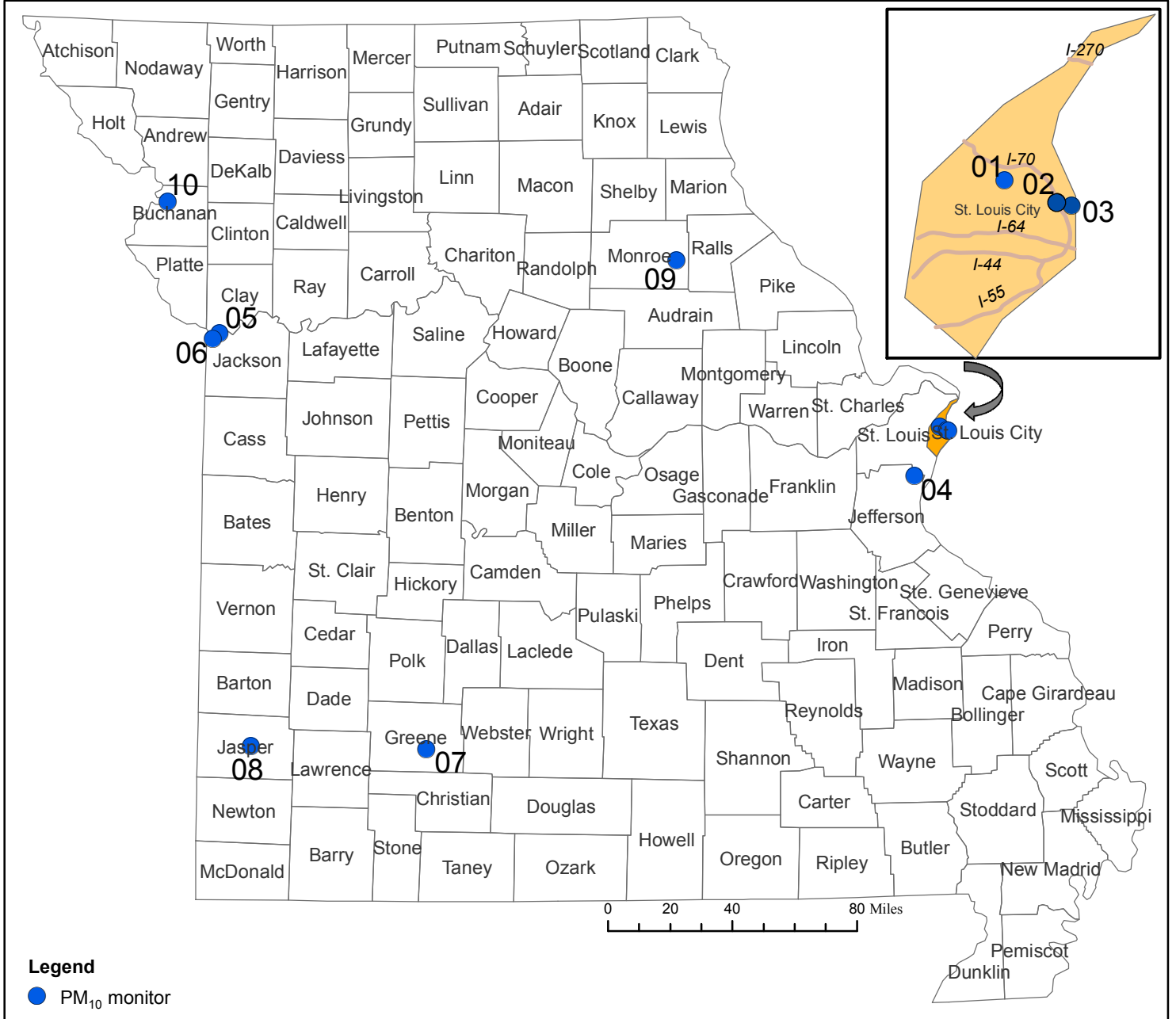
Expected exceedance days through December 2017 are based on quality assured data as reported to US EPA.

Yellow highlighting indicates expected exceedance days greater than 1. The standard is exceeded at these sites for the indicated period.

| Site/3-Year Period | 2007-2009 | 2008-2010 | 2009-2011 | 2010-2012 | 2011-2013 | 2012-2014 | 2013-2015 | 2014-2016 | 2015-2017 | 2016-2018† |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| Nos. 01 - 04 in St. Louis area | | | | | | | | | | |
| 01 Margareta | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 02 Blair Street | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 03 Branch Street | 0.7 | 0.7 | 0.7 | 1.8 | 2.1 | 2.1 | 1.0 | 0.7 | 0.3 | 0.3 |
| 04 Arnold West | | | | | | | | 0.0 | 0.0 | 0.0 |
| Nos. 05 -06 in Kansas City area | | | | | | | | | | |
| 05 Front Street | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 06 Troost | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| No. 07 in Springfield area | | | | | | | | | | |
| 07 Hillcrest High School | | | | | | | | 0.0 | 0.0 | 0.0 |
| Nos. 08 - 10 in Outstate area | | | | | | | | | | |
| 08 Carthage in southwest Missouri | 0.3 | 0.0 | 1.3 | 1.9 | 1.9 | 0.9 | 0.3 | 0.7 | 0.3 | 0.3 |
| 09 Mark Twain State Park in northeast Missouri | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10 St. Joseph Pump Station in northwest Missouri | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

†Data from 2018 includes first quarter only and is preliminary. Arnold West data are from July 2015.

Missouri Statewide PM₁₀ Monitoring Network, 2018



Legend

● PM₁₀ monitor

St. Louis Area

Site# Site Name

- 01 Margaretta
- 02 Blair Street*
- 03 Branch Street
- 04 Arnold West^^

Kansas City Area

Site# Site Name

- 05 Front Street
- 06 Troost

Springfield Area

Site# Site Name

- 07 Hillcrest High School

Outstate Area

Site# Site Name

- 08 Carthage
- 09 Mark Twain State Park
- 10 St. Joseph Pump Station

* Filter based monitor at Blair

^^ Less than 3 years of data

