

Ground - level Ozone

DESCRIPTION

Ozone and small particles in outdoor air (also known as PM_{2.5}) are primary causes of poor air quality in Minnesota. Ozone, unlike the other pollutants, is not emitted directly into the air by any one source. Ground-level ozone is a secondary pollutant, exists in the atmosphere close to earth. It is not the same as the “ozone layer” in the earth’s outer atmosphere (the stratosphere), where ozone helps to absorb ultraviolet radiation that would otherwise be harmful to organisms on the earth’s surface.¹

Sources of pollutants that form ozone include gasoline and diesel vehicles, construction equipment, lawn and garden equipment, paints and solvents, refueling stations, factories, electric utilities and other activities that result in the burning of fossil fuels.² Ozone can irritate the eyes, nose and throat; aggravate asthma, bronchitis and allergies; decrease lung function; and possibly lead to death.³ The Minnesota Pollution Control Agency (MPCA) monitors ozone pollution at locations across Minnesota from March through October each year.

HOW WE ARE DOING

The number of “good” days for ozone concentration in the Twin Cities area has increased over the past five years, while the number of “moderate” and unhealthy days has decreased. Because of the role of heat and sunlight play in the formation of ground-level ozone, it is generally not a concern in Minnesota during the winter months. On hot, sunny summer days, however, ozone concentrations can rise to unhealthy levels. In the past 10 years, about 1 percent of all days were unhealthy for ozone in the metro area.

While Ramsey County and Minnesota are currently in compliance with the federal standard (70 ppb), ozone is a pollutant of concern because levels have been relatively close to the national standard for the past six years. Due to the significant role that weather conditions play in daily ozone concentrations, predicting future levels and trends is difficult.

BENCHMARK INDICATOR

U.S. Environmental Protection Agency: Reduce ground-level ozone.

U.S. Target: 70 parts per billion (ppb).

DISPARITIES

Greater air pollution impacts from all sources, and especially transportation sources, have been found in nonwhite and low socio-economic status populations than in white and higher socio-economic status populations.⁴

RISK FACTORS

While ozone can affect anyone, people most likely to experience negative health effects include: people with asthma or other lung diseases, older adults, people of all ages who exercise or work hard outside, babies and children.⁵ Exposure to high levels of ground-level ozone can increase the risk of premature death in individuals already suffering from heart or lung disease.

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Information to note

- The number of “good” days for ozone concentration in the Twin Cities has increased in the past five years.
- On hot, sunny summer days, ozone concentrations can rise to unhealthy levels.
- Emissions from vehicles, factories, electric utilities and other activities that burn fossil fuels are top contributors to ground-level ozone.

¹ Ozone. Minnesota Pollution Control Agency. <https://www.pca.state.mn.us/air/ozone>. Accessed January 23, 2018.

² Ozone pollution. United States. Environmental Protection Agency. https://19january2017snapshot.epa.gov/ozone-pollution_.html. Accessed January 23, 2018.

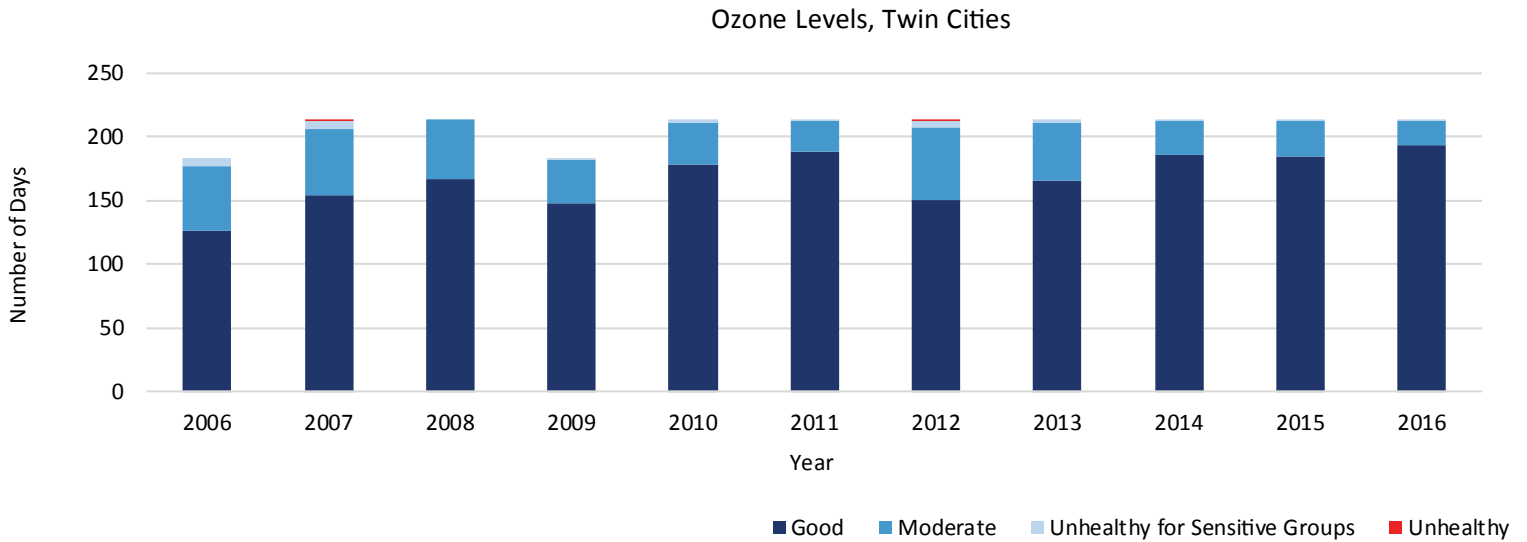
³ Air Quality. Ground-level ozone. Minnesota Department of Health. <http://www.health.state.mn.us/divs/climatechange/air.html>. Accessed January 23, 2018.

⁴ Pratt GC, Vadali ML, Kvale DK, Ellickson KM. Traffic, air pollution, minority and socio-economic status: addressing inequities in exposure and risk. *Int. J. Environ. Res. Public Health*. 2015;12(5):5355-5372. <http://www.mdpi.com/1660-4601/12/5/5355/htm>. Published May 19, 2015. Accessed January 28, 2018.

⁵ Ozone and your health. Centers for Disease Control and Prevention. <https://www.cdc.gov/air/ozone.html>. Accessed January 23, 2018.

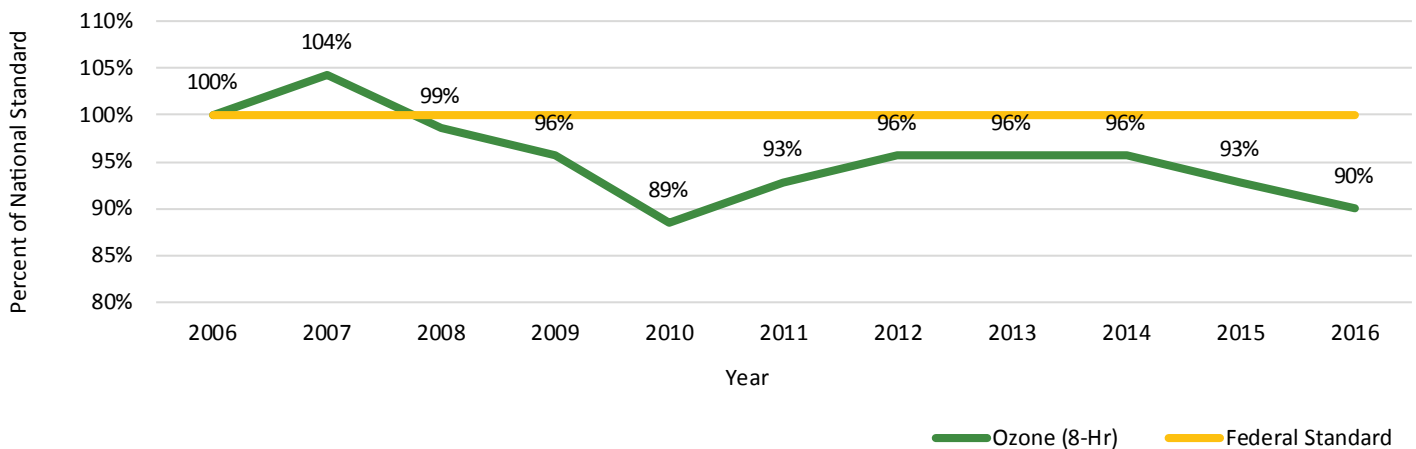
WHAT RAMSEY COUNTY GOVERNMENT IS DOING

Ramsey County alerts the public through its website when ground-level ozone levels are expected to reach unhealthy levels. The website also includes advice for staying healthy during periods of poor air quality by partnering with “Be Air Aware.” Saint Paul – Ramsey County Public Health’s “Solid Waste Management Master Plan” and “Energy Management and Stewardship Plan” describe the commitment to reducing greenhouse gas emissions (including ozone) and encouraging the use of renewable energy.



Source: Minnesota Pollution Control Agency.⁶

Ramsey County Air Quality as a Percent of the National Ambient Air Quality Standard



Source: Minnesota Pollution Control Agency.⁶

⁶Source: Cassie McMahon (Environmental Research Scientist), Air Assessment Section of the Environmental Analysis and Outcomes Division, Minnesota Pollution Control Agency.