

**Chapter 173-476 WAC**  
**AMBIENT AIR QUALITY STANDARDS**

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**WAC**

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**WAC 173-476-010 Purpose.** This chapter establishes maximum acceptable levels in the ambient air for particulate matter, lead, sulfur dioxide, nitrogen oxides, ozone, and carbon monoxide.

[Statutory Authority: Chapter 70.94 RCW. WSR 13-24-010 (Order 12-05), § 173-476-010, filed 11/21/13, effective 12/22/13.]

**WAC 173-476-020 Applicability.** (1) The provisions of this chapter apply to all areas of the state of Washington.

(2) All federal regulations referenced in this regulation are adopted as they exist on January 1, 2016.

[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-476-020, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 13-24-010 (Order 12-05), § 173-476-020, filed 11/21/13, effective 12/22/13.]

**WAC 173-476-030 Definitions.** Definitions in chapter 173-400 WAC apply to this chapter. Definitions specific to this chapter include:

"**FEM**" or "**Federal Equivalent Method**" means an EPA designated ambient air quality sampling and analysis method that has been designated as an equivalent method according to 40 C.F.R. Part 53. It does not include a method for which an equivalent method designation has been canceled according to 40 C.F.R. 53.11 or 53.16.

"**FRM**" or "**Federal Reference Method**" means an EPA designated ambient air quality sampling and analysis method specified in an appendix to 40 C.F.R. Part 50, or a method that has been designated as a reference method according to 40 C.F.R. Part 53. It does not include a method for which a reference method designation has been canceled according to 40 C.F.R. 53.11 or 53.16.

"**mg/m<sup>3</sup>**" means milligrams per cubic meter.

"**Period**" means any interval of the specified time.

"**PM**" means particulate matter.

"**ppbv**" means parts per billion by volume.

"**ppmv**" means parts per million by volume.

"**µg/m<sup>3</sup>**" means micrograms per cubic meter.

[Statutory Authority: Chapter 70.94 RCW. WSR 13-24-010 (Order 12-05), § 173-476-030, filed 11/21/13, effective 12/22/13.]

**WAC 173-476-100 Ambient air quality standard for PM-10.** (1) **Standard for PM-10.** The twenty-four-hour average concentration of PM-10 in the ambient air must not exceed  $150 \mu\text{g}/\text{m}^3$  more than one time per year, on a three-year average.

(2) **Measurement method.** The levels of PM-10 in the ambient air must be measured by:

(a) A FRM based on 40 C.F.R. Part 50, Appendix J and designated according to 40 C.F.R. Part 53; or

(b) A FEM designated according to 40 C.F.R. Part 53.

(3) **Interpretation method.** The interpretation method found in 40 C.F.R. Part 50, Appendix K must be used.

[Statutory Authority: Chapter 70.94 RCW. WSR 13-24-010 (Order 12-05), § 173-476-100, filed 11/21/13, effective 12/22/13.]

**WAC 173-476-110 Ambient air quality standards for PM-2.5.** (1) **Standards for PM-2.5.**

(a) The three-year average of the annual arithmetic mean concentration of PM-2.5 must not exceed  $12.0 \mu\text{g}/\text{m}^3$ .

(b) The three-year average of the ninety-eighth percentile twenty-four-hour average concentration of PM-2.5 must not exceed  $35 \mu\text{g}/\text{m}^3$ .

(2) **Measurement method.** The levels of PM-2.5 in the ambient air must be measured by:

(a) A FRM based on 40 C.F.R. Part 50, Appendix L and designated according to 40 C.F.R. Part 53; or

(b) A FEM designated according to 40 C.F.R. Part 53.

(3) **Interpretation method.** The interpretation method found in 40 C.F.R. Part 50, Appendix N must be used.

[Statutory Authority: Chapter 70.94 RCW. WSR 13-24-010 (Order 12-05), § 173-476-110, filed 11/21/13, effective 12/22/13.]

**WAC 173-476-120 Ambient air quality standard for lead (Pb).** (1) **Standard for lead.** The three-month rolling average concentration of lead and its compounds in the ambient air must not exceed  $0.15 \mu\text{g}/\text{m}^3$ .

(2) **Measurement method.** The levels of lead in the ambient air must be measured by:

(a) A FRM based on 40 C.F.R. Part 50, Appendix G and designated according to 40 C.F.R. Part 53; or

(b) A FEM designated according to 40 C.F.R. Part 53.

(3) **Interpretation method.** The interpretation method found in 40 C.F.R. Part 50, Appendix R must be used.

[Statutory Authority: Chapter 70.94 RCW. WSR 13-24-010 (Order 12-05), § 173-476-120, filed 11/21/13, effective 12/22/13.]

**WAC 173-476-130 Ambient air quality standards for sulfur oxides (sulfur dioxide).** (1) **Standard for sulfur oxides (measured as sulfur dioxide).**

(a) Annual. The annual average concentration for sulfur oxides in the ambient air must not exceed 0.02 ppmv in a calendar year.

(b) Twenty-four-hour. The twenty-four-hour average concentration for sulfur oxides in the ambient air must not exceed 0.14 ppmv more

than once per calendar year. The twenty-four-hour averages must be determined from successive nonoverlapping twenty-four-hour blocks starting at midnight each calendar day.

(c) **Three-hour.** The three-hour average concentration for sulfur oxides in the ambient air must not exceed 0.5 ppmv more than once per calendar year. The three-hour averages must be determined from successive nonoverlapping three-hour blocks starting at midnight each calendar day.

(d) **One-hour.** The three-year average of the annual ninety-ninth percentile of the daily maximum one-hour average concentrations for sulfur oxides in the ambient air must not exceed 75 ppbv.

(2) **Measurement method.** The levels of sulfur oxides must be measured as sulfur dioxide by:

(a) A FRM based on 40 C.F.R. Part 50, Appendix A-1 or A-2; or

(b) A FEM designated according to 40 C.F.R. Part 53.

(3) **Interpretation methods.**

(a) The annual arithmetic mean is based on the average of hourly data. To be used in calculating the annual average, the hourly data must be at least seventy-five percent complete in each calendar quarter of the year.

(b) The interpretation method for the twenty-four-hour average found in 40 C.F.R. Part 50.4(d) must be followed.

(c) The interpretation method for the three-hour average found in 40 C.F.R. Part 50.5(c) must be followed.

(d) The interpretation method for the one-hour average found in 40 C.F.R. Part 50, Appendix T must be followed.

(4) **Rounding of values.**

(a) The annual arithmetic mean and twenty-four-hour averages must be rounded to two decimal places. Fractional parts equal to or greater than 0.005 ppmv must be rounded up.

(b) The three-hour standard averages must be rounded to one decimal place. Fractional parts equal to or greater than 0.05 ppmv must be rounded up.

(5) **Sunset provision.** The ambient standards in WAC 173-476-130 (1)(a) and (b) are no longer applicable in a specific area one year after the effective date of the EPA's designation of attainment status of that area for the standard in WAC 173-476-130 (1)(d) and 40 C.F.R. 50.17.

[Statutory Authority: Chapter 70.94 RCW. WSR 13-24-010 (Order 12-05), § 173-476-130, filed 11/21/13, effective 12/22/13.]

**WAC 173-476-140 Ambient air quality standards for nitrogen oxides (nitrogen dioxide).** (1) **Standards for nitrogen oxides (measured as nitrogen dioxide).**

(a) The annual average concentration for nitrogen oxides in ambient air must not exceed 53 ppbv ( $100 \mu\text{g}/\text{m}^3$ ) measured in the ambient air as nitrogen dioxide.

(b) The three-year average of the ninety-eighth percentile of the daily maximum one-hour average concentration of nitrogen oxides must not exceed 100 ppbv, as measured in the ambient air as nitrogen dioxide.

(2) **Measurement method.** The levels of nitrogen oxides must be measured as nitrogen dioxide by:

(a) A FRM based on 40 C.F.R. Part 50, Appendix F; or

(b) A FEM designated according to 40 C.F.R. Part 53.

(3) **Interpretation method.** The interpretation method found in 40 C.F.R. Part 50, Appendix S must be followed.

[Statutory Authority: Chapter 70.94 RCW. WSR 13-24-010 (Order 12-05), § 173-476-140, filed 11/21/13, effective 12/22/13.]

**WAC 173-476-150 Ambient air quality standard for ozone.** (1) **Standard for ozone.** The three-year average of the annual fourth highest daily maximum eight-hour average concentration of ozone in the ambient air must not exceed 0.070 ppmv.

(2) **Measurement method.** The levels of ozone in the ambient air must be measured by:

(a) A FRM based on 40 C.F.R. Part 50, Appendix D and designated according to 40 C.F.R. Part 53; or

(b) A FEM designated according to 40 C.F.R. Part 53.

(3) **Interpretation method.** The interpretation method found in 40 C.F.R. Part 50, Appendix U must be followed.

[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-476-150, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 13-24-010 (Order 12-05), § 173-476-150, filed 11/21/13, effective 12/22/13.]

**WAC 173-476-160 Ambient air quality standards for carbon monoxide.** (1) **Standards for carbon monoxide.**

(a) The eight-hour average concentration of carbon monoxide in the ambient air must not exceed 9 ppmv (10 milligrams per cubic meter) more than once per year.

(b) The one-hour average concentration of carbon monoxide in the ambient air must not exceed 35 ppmv (40 milligrams per cubic meter) more than once per year.

(2) **Measurement method.** The levels of carbon monoxide in the ambient air must be measured by:

(a) A FRM based on 40 C.F.R. Part 50, Appendix C and designated according to 40 C.F.R. Part 53; or

(b) A FEM designated according to 40 C.F.R. Part 53.

(3) **Interpretation method.** An eight-hour average must be considered valid if at least seventy-five percent of the hourly averages for the eight-hour period are available. In the event that only six (or seven) hourly averages are available, the eight-hour average must be computed on the basis of the hours available using six (or seven) as the divisor.

(4) **Rounding of values.** When summarizing data for comparison with the standards, averages must be stated to one decimal place. Comparison of the data with the levels of the standards in ppmv must be made in terms of integers with fractional parts of 0.5 or greater rounding up.

[Statutory Authority: Chapter 70.94 RCW. WSR 13-24-010 (Order 12-05), § 173-476-160, filed 11/21/13, effective 12/22/13.]

**WAC 173-476-170 Monitor siting criteria.** Ambient monitors must be sited as required in 40 C.F.R. Part 58.

[Statutory Authority: Chapter 70.94 RCW. WSR 13-24-010 (Order 12-05), § 173-476-170, filed 11/21/13, effective 12/22/13.]

**WAC 173-476-180 Reference conditions.** (1) All measurements of air quality that are expressed as mass per unit volume  $\mu\text{g}/\text{m}^3$  must be corrected to:

(a) A reference temperature of 25°C; and

(b) A reference pressure of 760 millimeters of mercury (1,013.2 millibars (hectopascals)).

(2) **Exception for measurements of PM-2.5 and lead.** Measurements of PM-2.5 and lead must be reported based on the actual ambient air volume measured at the actual ambient temperature and pressure at the monitoring site during the measurement period.

[Statutory Authority: Chapter 70.94 RCW. WSR 13-24-010 (Order 12-05), § 173-476-180, filed 11/21/13, effective 12/22/13.]

**WAC 173-476-900 Table of standards.**

*Disclaimer: This table is provided as an overview. See complete rule for more detail.*

Pollutant		Averaging Time	Level	Remarks	Measurement Method	Interpretation Method
Particle Pollution	PM-10	24-hour	150 $\mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year averaged over 3 years	40 C.F.R. Part 50, Appendix J	40 C.F.R. Part 50, Appendix K
	PM-2.5	Annual	12.0 $\mu\text{g}/\text{m}^3$	Annual mean, averaged over 3 years	40 C.F.R. Part 50, Appendix L	40 C.F.R. Part 50, Appendix N
		24-hour	35 $\mu\text{g}/\text{m}^3$	98th percentile, averaged over 3 years		
Lead		Rolling 3-month average	0.15 $\mu\text{g}/\text{m}^3$	Not to be exceeded	40 C.F.R. Part 50, Appendix G	40 C.F.R. Part 50, Appendix R
Sulfur Dioxide		Annual	0.02 ppmv	Not to be exceeded in a calendar year	40 C.F.R. Part 50, Appendix A-1 or A-2	WAC 173-476-130(3)
		24-hour	0.14 ppmv	Not to be exceeded more than once per year		
		3-hour	0.5 ppmv	Not to be exceeded more than once per year		
		1-hour	75 ppbv	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years		
Nitrogen Dioxide		Annual	53 ppbv	Annual Mean	40 C.F.R. Part 50, Appendix F	40 C.F.R. Part 50, Appendix S
		1-hour	100 ppbv	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years		
Ozone		8-hour	0.070 ppmv	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years	40 C.F.R. Part 50, Appendix D	40 C.F.R. Part 50, Appendix U

<b>Pollutant</b>	<b>Averaging Time</b>	<b>Level</b>	<b>Remarks</b>	<b>Measurement Method</b>	<b>Interpretation Method</b>
Carbon Monoxide	8-hour	9 ppmv	Not to be exceeded more than once per year	40 C.F.R. Part 50, Appendix C	WAC 173-476-160(3)
	1-hour	35 ppmv			

[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-476-900, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 13-24-010 (Order 12-05), § 173-476-900, filed 11/21/13, effective 12/22/13.]