



DEPARTMENT OF
ECOLOGY
State of Washington

Preliminary Cost-Benefit and Least Burdensome Alternative Analyses

Chapter 173-476 WAC

Ambient Air Quality Standards

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Preliminary Cost-Benefit and Least Burdensome Alternative Analyses

Chapter 173-476 WAC Ambient Air Quality Standards

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Executive Summary

The Department of Ecology (Ecology) is proposing to adopt a new rule, Ambient Air Quality Standards (Chapter 173-476 WAC), and repeal the following outdated chapters: 173-470 WAC Ambient Air Quality Standards (formerly Ch. 18-40 WAC), 173-474 WAC Ambient Air Quality Standards for Sulfur Oxides (formerly Ch. 18-56 WAC), and 173-475 WAC Ambient Air Quality Standards for Carbon Monoxide, Ozone, and Nitrogen. The Administrative Procedures Act (APA; RCW 34.05.328(1)(d), (e)) requires two types of analyses before adopting a significant legislative rule – a cost-benefit analysis and a least burdensome alternative analysis. This report provides the results of these analyses and shows the potential impacts associated with the proposed rule.

Ecology's rule proposal aligns state ambient air quality standards with the National Ambient Air Quality Standards (NAAQS; 40 CFR part 50). The proposed rule contains either "housekeeping" amendments or is mandated by federal or existing state statute.

The proposed rule includes changes to:

- Consolidate three existing ambient air quality chapters in the Washington Administrative Code into one new chapter.
- Add an ambient air quality standard for Lead (Pb).
- Incorporate current federal NAAQS.
- Include existing state Sulfur Dioxide standards (Chapter 173-474 WAC) that are more stringent than federal standards.
- Delete references to Total Suspended Particulate and particulate fallout standards.
- Delete obsolete reporting requirements for local agencies.

The Federal Clean Air Act requires that Washington State develop a plan to:

- Attain and maintain the National Ambient Air Quality Standard (NAAQS) in all areas of the state.
- Attain the standards for each area designated nonattainment for a NAAQS.

These plans, known as State Implementation Plans (SIPs), are developed by state and local air quality management agencies and submitted to the Environmental Protection Agency (EPA) for approval.

Ecology is proposing to adopt Chapter 173-476 WAC and repeal the outdated chapters described above to ensure consistency with federal requirements, so that Washington can meet EPA Infrastructure SIP requirements. Ecology cannot submit delinquent or future infrastructure SIPs until the proposed rule is adopted. Adoption of the rule does not guarantee EPA approval of SIP revisions. There is certainty of disapproval however in the absence of the proposed rule.

Cost-benefit analysis

The rule proposal does not impose additional costs. The proposed rule contains either “housekeeping” amendments or is mandated by federal or existing state statute. These changes are expected to relieve some of the regulatory burden on users.

The primary benefits from the proposed rule results from increased clarity of the permitting requirements, resulting in less uncertainty. Additionally, the proposed “housekeeping” changes are expected to increase readability and reduce regulatory burden by expediting the process for future updates and consolidating all standards in one location. The proposed rule will ensure that Washington State ambient air standards are consistent with federal requirements, so that Washington can meet EPA Infrastructure SIP requirements.

While it is not possible to quantify these benefits to any degree of certainty, they are greater than zero.

The proposed rule creates benefits and does not create costs. Therefore, the net benefits of the proposed rule are greater than zero.

Least burdensome analysis

Based on research and analysis required by RCW 34.05.328(1)(e) the Department of Ecology determines:

Given the requirement of state law for Ecology to establish ambient air quality standards in rule, there is sufficient evidence that the proposed rule is the least burdensome version of the rule for those who are required to comply.

1. Background and Scope

History of existing rule

Washington clean air act Chapter 70.94 RCW

Washington’s clean air act was first enacted by the state legislature in 1957. The Act has been periodically amended since that time. The most significant amendments occurred in 1965, 1971, and 1991.

The act directs Ecology to establish rules to implement the programs and requirements in the state Clean Air Act (CAA). It is the intent of the CAA that the implementation of programs and rules to control air pollution shall be the primary responsibility of the local air pollution control authorities and Ecology.

Reason for this rule proposal

Ecology's proposed rule aligns state ambient air quality standards with National Ambient Air Quality Standards (NAAQS).

The Federal Clean Air Act (42 U.S.C. 7401–7671q) requires that Washington State develop a plan to attain and maintain the National Ambient Air Quality Standard (NAAQS) in all areas of the state. When an area has been determined to have concentrations of air pollutants above the NAAQS for an air pollutant, a specific plan to attain the NAAQS for each area designated nonattainment for a NAAQS is required to be developed. These plans, known collectively as State Implementation Plans (SIPs), are developed by state and local air quality management agencies and submitted to the EPA for approval.

Ecology is proposing to rescind Chapters 173-470, 474, and 475, WAC, and adopt Chapter 173-476 WAC to ensure that the State's ambient air quality standards are consistent with federal requirements so that Washington can meet EPA Infrastructure SIP requirements. Ecology cannot submit delinquent or future infrastructure SIPs until the proposed rule is adopted. Adoption of the rule does not guarantee EPA approval of SIP revisions. There is certainty of disapproval however in the absence of the proposed rule.

Scope of analysis

Ecology is proposing to adopt all the ambient air quality standards into a single chapter, Chapter 173-476 WAC. The proposed language falls into one of two categories:

- Federal (EPA) and state mandates.
- Housekeeping.

The Administrative Procedures Act (APA - RCW 34.05.328) exempts from analysis any rule change necessary to meet state and federal mandates. These are changes that adopt or incorporate by reference without material change federal statutes or regulations, and Washington state statutes.

The APA also exempts housekeeping revisions that only correct typographical errors, or clarify language without changing its effect.

Ecology analyzed the impacts of the proposed rule in the following sections:

- **Chapter 2: Baseline for Analysis**
Explains the baseline concepts to which Ecology's proposed rule was compared in the analysis, and analyzes the rule impacts.
- **Chapter 3: Costs of Proposed Rule**
Examines if there are any costs associated with the rule proposal.
- **Chapter 4: Benefits of Proposed Rule**
Explains the benefits of the proposed rule.

- **Chapter 5: Conclusion**

Summarizes Ecology’s results and includes comments on the analysis.

- **Chapter 6: Least Burdensome Alternative Analysis**

Explains Ecology’s determination on whether the proposed rule places the least burden possible on those required to comply with it, while fulfilling the goals and objectives of the authorizing legislation.

2. Baseline for Analysis

The baseline is the regulatory context in the absence of the proposed rule language. In most cases, the regulatory baseline is the existing rule or rules. If there is no existing rule, the federal or local rule is the baseline. If there is no existing regulation at any level of government, the baseline is the statute authorizing the rule.

We are interested in the impact to stakeholders and the change in behavior that results from the rule proposal, compared to the impact and behavior we would expect in the absence of this rule proposal. In the case of this rule proposal, Ecology and local agencies already implement federal NAAQS.

The Administrative Procedures Act (APA - RCW 34.05.328) exempts from analysis any rule change necessary to meet state and federal mandates. These are changes that adopt or incorporate by reference without material change federal statutes or regulations, and Washington state statutes. The APA also exempts housekeeping revisions that only correct typographical errors, or clarify language without changing its effect.

We elaborate which existing state and federal statutes dictate the rule proposal below, in Chapter 3: Costs of Proposed Rule.

3. Costs of Proposed Rule

This section will describe costs generated by the rule proposal that are exempt from analysis. These include:

- Federal (EPA) and state mandates.
- Housekeeping.

The rule proposal, with an explanation of what federal and state statutes are being incorporated (including quotations), is available for reference in Appendix A.

As part of this rule proposal, Ecology is repealing the following chapters and combining the requirements into a new chapter, WAC 173-476 Ambient Air Quality Standards.

- 173-470 WAC Ambient Air Quality Standards (formerly Ch. 18-40 WAC)
- 173-474 WAC Ambient Air Quality Standards for Sulfur Oxides (formerly Ch. 18-56 WAC)
- 173-475 WAC Ambient Air Quality Standards for Carbon Monoxide, Ozone, and Nitrogen.

This new chapter will also include standards for lead.

Standard for PM-10

40 CFR 50.6(a) specifies the 24-hour average concentration limit of 150 micrograms per cubic meter for PM-10. Appendix K of 40 CFR 50 specifies that an exceedance of this standard is determined by recording the number of exceedances in each calendar year and then averaging them over the past 3 calendar years. If the average is above the specified PM-10 standard then the determination is that there is an exceedance and a violation has occurred.

The measurement and interpretation methods would incorporate by reference without material change federal regulations, specifically 40 CFR 50 Appendix J, 40 CFR 53, and 40 CFR 50 Appendix K.

This rule proposal for PM-10 would adopt or incorporate by reference without material change federal regulations. Ecology and local agencies already implement federal NAAQS. As a result, Ecology does not expect additional costs or changes in behavior.

Standards for PM-2.5

40 CFR 50.18(b) specifies the annual arithmetic mean limit of 12.0 micrograms per cubic meter for PM 2.5. Appendix N of 40 CFR 50 specifies the interpretation that an exceedance of the standard is determined by three years of valid annual means.

40 CFR 50.18(c) specifies the 98th percentile 24-hour average limit of 35 micrograms per cubic meter for PM-2.5. Appendix N of 40 CFR 50 specifies the interpretation that exceedance is determined by three years of valid annual means.

The measurement and interpretation methods would incorporate by reference without material change federal regulations, specifically 40 CFR 50 Appendix L, 40 CFR 53, and 40 CFR 50 Appendix N.

The proposed changes for PM-2.5 would adopt or incorporate by reference without material change federal regulations. Ecology and local agencies already implement federal NAAQS. As a result, Ecology does not expect additional costs or changes in behavior.

Standards for lead

40 CFR 50.16(b) specifies the average limit 0.15 micrograms per cubic meter for lead. Appendix R of CFR 50 specifies the interpretation that an exceedance of the standard is determined by the rolling arithmetic average of three consecutive monthly means.

The measurement and interpretation methods would incorporate by reference without material change federal regulations, specifically 40 CFR 50 Appendix G, 40 CFR 53, and 40 CFR 50 Appendix R.

The language for a lead standard would adopt or incorporate by reference without material change federal regulations. Ecology and local agencies already implement federal NAAQS. As a result, Ecology does not expect additional costs or changes in behavior.

Standards for sulfur oxides (measured as sulfur dioxide)

We note that some of the standards for sulfur oxides proposed are stricter than their federal counterparts. We show below that these standards are adopted from existing state statutes. In the absence of the proposed rule regulated entities would still be required to follow the existing state statutes.

The annual average limit of 0.02 parts per million for sulfur dioxide is from WAC 173-474-100(4) and is not changed. The 24-hour average limit of 0.1 parts per million is from WAC 173-474-100(3), and 40 CFR 50.4 specifies the interpretation that 24-hour averages shall be determined from successive nonoverlapping 24-hour blocks starting at midnight each calendar day.

40 CFR 50.5(a) specifies the 3-hour average limit of 0.5 parts per million for lead, as well as the interpretation that averages must be determined from successive nonoverlapping three-hour blocks starting at midnight each calendar day.

40 CFR 50.17(b) specifies the 3-year average of the annual 99th percentile of the daily maximum 1-hour average limit of 75 parts per billion.

The measurement methods would incorporate by reference without material change federal regulations, specifically 40 CFR 50 Appendix A or A-1, and 40 CFR 53.

Interpretation methods and rounding of values for sulfur dioxides

40 CFR 50.4 specifies that the annual arithmetic mean must be based on hourly data that are at least 75 percent complete in each calendar year.

40 CFR 50.4 specifies that the annual arithmetic mean shall be rounded to three decimal places and fractional parts equal to or 0.0005 parts per million shall be rounded up.

40 CFR 50.4 specifies that 24-hour averages must be rounded to two decimal places and fractional parts equal to or 0.05 parts per million shall be rounded up.

40 CFR 50.5 specifies that 3-hour standard averages must be rounded to one decimal place and fractional parts equal to or greater than 0.05 parts per million shall be rounded up.

The sunset provision stating the annual and 24-hour ambient sulfur oxides standards 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 is dictated by 40 CFR 50.4(e).

These are changes that adopt or incorporate by reference without material change federal regulations, and Washington state statutes. Ecology and local agencies already implement federal NAAQS. As a result, Ecology does not expect additional costs or changes in behavior.

Standards for nitrogen oxides (measured as nitrogen dioxide)

40 CFR 50.11(a) specifies the annual average limit of 53 parts per billion for nitrogen oxides.

40 CFR 50.11(f) specifies the three-year average of the annual 98th percentile of the daily maximum 1-hour average limit of 100 ppb.

The measurement and interpretation methods would incorporate by reference without material change federal regulations, specifically 40 CFR 50 Appendix F, 40 CFR 53, and 40 CFR 50 Appendix S.

The standards for nitrogen oxides would adopt or incorporate by reference without material change federal regulations. Ecology and local agencies already implement federal NAAQS. As a result, Ecology does not expect additional costs or changes in behavior.

Standard for ozone

40 CFR 50.15(b) specifies the 3-year average of the annual fourth-highest daily maximum 8-hour average limit of 0.075 parts per million for ozone.

The measurement and interpretation methods would incorporate by reference without material change federal regulations, specifically 40 CFR 50 Appendix D, 40 CFR 53, and 40 CFR 50 Appendix P.

The standards for ozone would adopt or incorporate by reference without material change federal regulations. Ecology and local agencies already implement federal NAAQS. As a result, Ecology does not expect additional costs or changes in behavior.

Standard for carbon monoxide

40 CFR 50.8(l) specifies the 8-hour concentration of carbon monoxide cannot exceed 9 parts per million more than once per year. 40 CFR 50.8 specifies the 1-hour concentration of carbon monoxide cannot exceed 35 parts per million more than once per year.

The measurement methods would incorporate by reference without material change federal regulations, specifically 40 CFR 50 Appendix C and 40 CFR 53.

Ecology and local agencies already implement federal NAAQS. As a result, Ecology does not expect additional costs or changes in behavior.

Interpretation methods and rounding of values

40 CFR 50.8(c) specifies an 8-hour average is valid if at least 75 percent of the hourly average for the 8-hour period are available, and that in the event that only six (or seven) hourly averages are available, the 8-hour average will be computed on the basis of the hours available using six (or seven) as the divisor.

40 CFR 50.8(d) specifies that averages will be stated to one decimal place, and that comparison of data must be made in terms of integers with fractional parts of 0.5 or greater rounding up.

The carbon monoxide standards would adopt or incorporate by reference without material change federal regulations. Ecology and local agencies already implement federal NAAQS. As a result, Ecology does not expect additional costs or changes in behavior.

Monitor siting criteria

Monitor siting criteria would be incorporated by reference, as required by 40 CFR 58.

These are changes that would adopt or incorporate by reference without material change federal statutes or regulations. Ecology and local agencies already implement federal NAAQS. As a result, Ecology does not expect additional costs or changes in behavior.

Reference conditions

40 CFR 50.3 specifies measurements that are expressed as mass per unit volume must be corrected to a reference temperature of 25 degrees Celsius and a reference pressure of 760 millimeters of mercury. 40 CFR 50.3 also states measurements of PM-2.5 and lead shall be reported based on actual ambient air volume measured at the actual ambient temperature and pressure at the monitoring site during the measurement period.

These are changes that would adopt or incorporate by reference without material change federal statutes or regulations. Ecology and local agencies already implement federal NAAQS. As a result, Ecology does not expect additional costs or changes in behavior.

Delete references to total suspended particulate and particulate fallout standards

Ecology would eliminate criteria for total suspended particulate and particle fallout standards. Total suspended particulate is no longer regulated as a NAAQS, and is also no longer measured in Washington State by Ecology and local air authorities. Ecology believes the proposed changes does not increase burdens for regulated entities, and does not expect costs to human health or the environment, because total suspended particulate is no longer regulated as a NAAQS and is not measured.

Eliminate 173-470-160 Reporting of Data

Ecology would eliminate section 173-470-160 (and similar requirements in WAC 173-474 and 475), which specified requirements for local agencies to report data to Ecology. This data is now reported electronically to Ecology eliminating the need for the required reports. Ecology believes the proposed repeal would result in fewer burdens for regulated entities, and does not expect a change in information reported because the information is automatically available electronically.

Housekeeping

Ecology would consolidate three existing ambient air quality chapters in the Washington Administrative Code into one chapter – Chapter 173-476 WAC. As described, these are changes that adopt or incorporate by reference without material change federal statutes or regulations. Ecology and local agencies already implement federal NAAQS. Ecology does not expect additional costs as a result of this rule proposal.

4. Benefits of the Proposed Rules

Housekeeping

Ecology consolidated three existing ambient air quality chapters in the Washington Administrative Code into one new chapter – Chapter 173-476 WAC. These changes are expected to relieve some of the regulatory burden on users.

The primary benefits would result from increased clarity of the applicable ambient air quality standards requirements, resulting in less ambiguity and uncertainty. Additionally, the proposed “housekeeping” changes are expected to increase readability and reduce

regulatory burden by expediting the process for future updates and consolidating all standards in one location.

Incorporate NAAQS standards

Ecology proposes to amend the Ambient Air Quality Standards to align state ambient standards with National Ambient Air Quality Standards (NAAQS). The proposed is described above in Chapter 3, and contains changes that adopt or incorporate by reference without material change federal regulations. Ecology and local agencies already implement federal NAAQS. As a result, Ecology does not expect changes in behavior.

NAAQS support state implementation plans

Ecology does expect benefits, however, described qualitatively below. Aligning state ambient standards with NAAQS allows Washington State to meet EPA Infrastructure State Implementation Plan (SIP) requirements. The EPA requires Ecology to update ambient standard rules before they are able to approve infrastructure SIPs. Failure to meet legal deadlines to submit infrastructure SIPs to EPA can result in loss of federal highway funds. SIPs also play a key role in attaining good air quality and protecting citizen's health. In the absence of an approved infrastructure SIP, EPA would also issue a Federal Implementation Plan to implement and enforce the standard(s). Regulatory control (as in the issuance of permits to new and modified sources) would revert to federal control (as opposed to state and local control). Ecology cannot submit delinquent or future infrastructure SIPs to EPA until the proposed rule is adopted.

Ecology also expects specific benefits to stakeholders in the Tacoma-Pierce County Nonattainment Area¹, because of an attainment SIP for the Tacoma-Pierce County Nonattainment Area submitted for EPA approval. Until ambient air standards are updated, however, Washington State is unable to demonstrate that all requirements for an approvable SIP demonstrating attainment with the PM-2.5 standards have been met. Adoption of this rule proposal is necessary for EPA approval of the state's SIP. Adoption of the rule does not guarantee EPA approval of SIP revisions. There is certainty of disapproval however in the absence of the proposed rule.

5. Conclusion

Ecology's rule proposal would align state ambient air quality standards with National Ambient Air Quality Standards. The proposed changes do not impose additional costs. The proposed changes are either "housekeeping" changes or are requirements in federal laws or existing state statute. These changes are expected to relieve some of the regulatory burden on users.

The primary benefits from the proposal result from increased clarity of the permitting requirements, resulting in less uncertainty. Additionally, the proposed "housekeeping"

¹ A nonattainment area is an area with air quality that does not meet the NAAQS (for at least one pollutant).

changes are expected to increase readability and reduce regulatory burden by expediting the process for future updates and consolidating all standards in one location. The rule proposal will ensure that Washington State ambient air standards are consistent with federal requirements, so that Washington can meet EPA Infrastructure SIP requirements.

While it is not possible to quantify these benefits to any degree of certainty, they are greater than zero.

The rule proposal creates benefits and does not create costs. Therefore, the net benefits of the proposed rule are greater than zero.

6. Least Burdensome Analysis

RCW 34.05.328(1)(e) requires Ecology to “determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection.”

Ecology assesses alternatives to the rule proposal, and determines whether they met the general goals and specific objectives of the authorizing statute. Of those meeting these objectives, Ecology determines whether the rule proposal is the least burdensome.

Alternatives considered

Alternatives considered include:

- Do nothing;
- Add standard for lead to new rule or add it to an existing rule;
- Keep three current rules and update them individually;
- Include updates to the radionuclides standard rule (Chapter 173-480 WAC); and
- The proposed rule revisions.

Do nothing

If Ecology did not adopt Chapter 173-476 WAC, Washington State would not be able to meet EPA Infrastructure State Implementation Plan (SIP) requirements. The EPA requires Ecology to update ambient air quality standard rules before they are able to approve SIPs. Failure to meet legal deadlines to submit infrastructure SIPs to EPA can result in loss of federal highway funds. SIPs also play a key role in attaining good air quality and protecting citizen's health. The EPA would also issue Federal Implementation Plans to implement standards. Regulatory control would revert to federal control (as opposed to state control).

**Add standard for lead to new rule or add it to an existing rule;
Keep three current rules and update them individually**

Ecology also considered other forms of housekeeping, such as adding a standard for lead to an existing rule, developing a new rule just for lead, and updating three current rules individually. Ecology decided to consolidate the three existing ambient air quality chapters in the Washington Administrative Code into one chapter – WAC 173-476. These changes are expected to relieve some of the regulatory burden on users by expediting the process for future updates and consolidating all standards in one location.

Include updates to the radionuclides standard rule (Chapter 173-480 WAC)

The radionuclide rule is administered by the Washington State Department of Health (DOH). These ambient standards are required by the State clean air act but not required by federal law. The radionuclide standard is not required to be included in the SIP. When evaluating the rule for updating, the DOH has identified specific sections in the existing rule that need updates, but both Ecology and the DOH agreed more preparation was needed.

The proposed rule revisions

Ecology believes the selected approach will provide for increased clarity of the permitting requirements, resulting in less ambiguity and uncertainty. Additionally, the proposed housekeeping changes are expected to increase readability and reduce regulatory burden by expediting the process for future updates and consolidating all standards in one location.

Works Cited

- States, United. *Clean Air Act; P.L. 88-206; 77 Stat. 392; 42 U.S.C. 7401–7671q.*
- U.S. EPA. (2013). *Title 40: Protection of Environment, PART 50—NATIONAL PRIMARY AND SECONDARY AMBIENT AIR QUALITY STANDARDS.*
- Washington State Department of Ecology. (2003). *Washington Administrative Code 173-474, Ambient Air Quality Standards for Sulfur Oxides.*

Appendix A: Rule proposal and relevant federal and state statutes

NEW SECTION

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 August 3, 2013.

[]

NEW SECTION

WAC 173-476-030 Definitions. (1) Unless a different meaning is clearly required by context, words and phrases in this chapter have meanings consistent with general terms defined in chapter 173-400 WAC.

(2) Definitions specific to this chapter:

(a) "Period" means any interval of the specified time.

(b) "ppmv" means parts per million by volume.

(c) "ppb" means parts per billion by volume, which is 1 part in 1,000,000,000 parts by volume.

(d) "Federal Reference Method" or "FRM" 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.

(e) "Federal Equivalent Method" or "FEM" 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.

[]

NEW SECTION

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

40 CFR 50.6(a): "The level of the national primary and secondary 24-hour ambient air quality standards for particulate matter is 150 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), 24-

hour average concentration. The standards are attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu\text{g}/\text{m}^3$, as determined in accordance with appendix K to this part, is equal to or less than one.”

40 CFR 50 Appendix K(a): “Under 40 CFR 50.6(a) the 24-hour primary and secondary standards are attained when the expected number of exceedances per year at each monitoring site is less than or equal to one. In the simplest case, the number of expected exceedances at a site is determined by recording the number of exceedances in each calendar year and then averaging them over the past 3 calendar years.”

(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.

[]

NEW SECTION

WAC 173-476-110 Ambient air quality standards for particulate matter, 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 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

40 CFR 50.18(b): “The primary annual $\text{PM}_{2.5}$ standard is met when the annual arithmetic mean concentration, as determined in accordance with appendix N of this part, is less than or equal to 12.0 $\mu\text{g}/\text{m}^3$.”

40 CFR 50 Appendix N(b): “Three years of valid annual means are required to produce a valid annual $\text{PM}_{2.5}$ NAAQS DV. A year meets data completeness requirements when quarterly data capture rates for all four quarters are at least 75 percent.”

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

40 CFR 50.18 (c): “The 24-hour primary and secondary $\text{PM}_{2.5}$ standards are met when the 98th percentile 24-hour concentration, as determined in accordance with appendix N of this part, is less than or equal to 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.
- []

NEW SECTION

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

40 CFR 50.16(b): "The national primary and secondary ambient air quality standards for Pb are met when the maximum arithmetic 3-month mean concentration for a 3-year period, as determined in accordance with Appendix R of this part, is less than or equal to 0.15 micrograms per cubic meter."

40 CFR 50 Appendix R: "Three-month means are arithmetic averages of three consecutive monthly means. Three-month means are computed on a rolling, overlapping basis."

- (2) **Measurement method.** The levels of Pb 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.
- []

NEW SECTION

WAC 173-476-130 Ambient air quality standards for sulfur oxides (sulfur dioxide). (1) **Standard for sulfur oxides (measured as sulfur dioxide).** Annual. The annual average concentration for sulfur oxides in the ambient air must not exceed 0.02 ppmv in a calendar year.

WAC 173-474-100 (4): "Two one-hundredths parts per million (0.02 PPM) by volume average for a one-year period."

Twenty-four-hour. The twenty-four-hour average concentration for sulfur oxides in the ambient air must not exceed 0.1 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.

WAC 173-474-100(3): “One-tenth parts per million (0.1 PPM) by volume average for a one-day period more than once per one-year period.”

40 CFR 50.4: “The 24-hour averages shall be determined from successive nonoverlapping 24-hour blocks starting at midnight each calendar day and shall be rounded to two decimal places (fractional parts equal to or greater than 0.005 ppm shall be rounded up).”

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.

40 CFR 50.5(a) “The level of the 3-hour standard is 0.5 parts per million (ppm), not to be exceeded more than once per calendar year. The 3-hour averages shall be determined from successive nonoverlapping 3-hour blocks starting at midnight each calendar day and shall be rounded to 1 decimal place (fractional parts equal to or greater than 0.05 ppm shall be rounded up).”

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 ppb.

40 CFR 50.17(b): “The 1-hour primary standard is met at an ambient air quality monitoring site when the three-year average of the annual (99th percentile) of the daily maximum 1-hour average concentrations is less than or equal to 75 ppb, as determined in accordance with appendix T of this part.”

(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 or A-1; 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.

40 CFR 50.4: "To demonstrate attainment, the annual arithmetic mean and the second-highest 24-hour averages must be based upon hourly data that are at least 75 percent complete in each calendar quarter."

(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 must be rounded to three decimal places (fractional parts equal to or greater than 0.005 ppmv must be rounded up).

40 CFR 50.4: "The annual arithmetic mean shall be rounded to three decimal places (fractional parts equal to or greater than 0.0005 ppm shall be rounded up)."

(b) The twenty-four-hour averages must be rounded to two decimal places (fractional parts equal to or greater than 0.05 ppmv must be rounded up).

40 CFR 50.4: "...shall be rounded to two decimal places (fractional parts equal to or greater than 0.005 ppm shall be rounded up)."

(c) 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).

40 CFR 50.5: "...shall be rounded to 1 decimal place (fractional parts equal to or greater than 0.05 ppm shall 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.

40 CFR 50.4(e): "The standards set forth in this section will remain applicable to all areas notwithstanding the promulgation of SO₂ national ambient air quality standards (NAAQS) in § 50.17. The SO₂ NAAQS set forth in this section will no longer apply to an

area one year after the effective date of the designation of that area, pursuant to section 107 of the Clean Air Act, for the SO₂ NAAQS set forth in § 50.17; except that for areas designated nonattainment for the SO₂ NAAQS set forth in this section as of the effective date of § 50.17, and areas not meeting the requirements of a SIP call with respect to requirements for the SO₂ NAAQS set forth in this section, the SO₂ NAAQS set forth in this section will apply until that area submits, pursuant to section 191 of the Clean Air Act, and EPA approves, an implementation plan providing for attainment of the SO₂ NAAQS set forth in § 50.17.”

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NEW SECTION

WAC 173-476-140 Ambient air quality standards for nitrogen oxides (nitrogen dioxide). (1) Standards for nitrogen oxides (measured as nitrogen dioxide). The annual average concentration for nitrogen oxides in ambient air must not exceed 53 ppb (100 µg/m³) measured in the ambient air as nitrogen dioxide.

40 CFR 50.11(a): “The level of the national primary annual ambient air quality standard for oxides of nitrogen is 53 parts per billion (ppb, which is 1 part in 1,000,000,000), annual average concentration, measured in the ambient air as nitrogen dioxide.”

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

40 CFR 50.11(f): “The 1-hour primary standard is met when the three-year average of the annual 98th percentile of the daily maximum 1-hour average concentration is less than or equal to 100 ppb, as determined in accordance with Appendix S of this part for the 1-hour standard.”

(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.

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NEW SECTION

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 0.075 ppmv.

40 CFR 50.15(b): "The 8-hour primary and secondary O₃ ambient air quality standards are met at an ambient air quality monitoring site when the 3-year average of the annual fourth-highest daily maximum 8-hour average O₃ concentration is less than or equal to 0.075 ppm, as determined in accordance with appendix P to this part."

(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 P must be followed.

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NEW SECTION

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

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.

40 CFR 50.8(1): "9 parts per million (10 milligrams per cubic meter) for an 8-hour average concentration not to be exceeded more than once per year..."

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.

40 CFR 50.8: "35 parts per million (40 milligrams per cubic meter) for a 1-hour average concentration not to be exceeded 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.

40 CFR 50.8(c): “An 8-hour average shall be considered valid if at least 75 percent of the hourly average for the 8-hour period are available. In the event that only six (or seven) hourly averages are available, the 8-hour average shall 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.

40 CFR 50.8(d): “When summarizing data for comparison with the standards, averages shall be stated to one decimal place. Comparison of the data with the levels of the standards in parts per million shall be made in terms of integers with fractional parts of 0.5 or greater rounding up.”

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NEW SECTION

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

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NEW SECTION

WAC 173-476-180 Reference conditions. (1) All measurements of air quality that are expressed as mass per unit volume (e.g., micrograms per cubic meter) 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 particulate matter (PM-2.5) and Pb.

Measurements of PM-2.5 and Pb 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.

40 CFR 50.3: “All measurements of air quality that are expressed as mass per unit volume (e.g., micrograms per cubic meter) other than for particulate matter (PM2.5) standards contained in §§ 50.7, 50.13, and 50.18, and lead standards contained in § 50.16 shall be corrected to a reference temperature of 25 (deg) C and a reference

pressure of 760 millimeters of mercury (1,013.2 millibars). Measurements of PM2.5 for purposes of comparison to the standards contained in §§ 50.7, 50.13, and 50.18, and of lead for purposes of comparison to the standards contained in § 50.16 shall be reported based on actual ambient air volume measured at the actual ambient temperature and pressure at the monitoring site during the measurement period.”

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REPEALER

The following chapter of the Washington Administrative Code is repealed:

- WAC 173-470-010 Purpose.
- WAC 173-470-020 Applicability.
- WAC 173-470-030 Definitions.
- WAC 173-470-100 Ambient air quality standards.
- WAC 173-470-110 Particle fallout standards.
- WAC 173-470-150 Method of measurement.
- WAC 173-470-160 Reporting of data.

REPEALER

The following chapter of the Washington Administrative Code is repealed:

- WAC 173-474-010 Purpose.
- WAC 173-474-015 Objective.
- WAC 173-474-020 Applicability.
- WAC 173-474-030 Definitions.
- WAC 173-474-100 Air quality standards.
- WAC 173-474-150 Measurement method.
- WAC 173-474-160 Data reporting.

REPEALER

The following chapter of the Washington Administrative Code is repealed:

- WAC 173-475-010 Purpose.
- WAC 173-475-020 Definitions.
- WAC 173-475-030 Air quality standards.
- WAC 173-475-040 Measurement methods.
- WAC 173-475-050 Reporting of data.