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310 CMR 6.00: AMBIENT AIR QUALITY STANDARDS FOR THE COMMONWEALTH OF MASSACHUSETTS

Section

6.01: Definitions
6.02: Scope
6.03: Reference Conditions
6.04: Standards

6.01: Definitions

Ambient Air means that portion of the atmosphere, external to buildings, to which the general public has access.

Department means the Department of Environmental Protection.

Equivalent Method means a method of sampling and analyzing the ambient air for an air pollutant that has been designated as an equivalent method in accordance with 40 CFR Part 53; it does not include a method for which an equivalent method designation has been canceled in accordance with 40 CFR Part 53.11 or 53.16.

Reference Method means a method of sampling and analyzing the ambient air for an air pollutant that is specified as a reference method in an appendix to 40 CFR Part 50, or a method that has been designated as a reference method in accordance with 40 CFR Part 53; it does not include a method for which a reference method designation has been cancelled in accordance with 40 CFR Part 53.11 or 53.16.

6.02: Scope

(1) Primary ambient air quality standards define levels of air quality which the Department judges are necessary, with an adequate margin of safety, to protect the public health. Secondary ambient air quality standards define levels of air quality which the Department judges are necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Such standards are subject to revision, and additional primary and secondary standards may be promulgated as the Department deems necessary to protect the public health and welfare.

(2) The promulgation of primary and secondary ambient air quality standards shall not be considered in any manner to allow significant deterioration of existing air quality in any portion of the Commonwealth.

6.03: Reference Conditions

All measurements of air quality that are expressed as mass per unit volume (*e.g.*, micrograms per cubic meter) other than for particulate matter ($PM_{2.5}$) standards contained in 310 CMR 6.04(2)(b) and (c), and lead standards contained in 310 CMR 6.04(6), shall be corrected to a reference temperature of 25°C. and a reference pressure of 760 millimeters of mercury (1,013.2 millibars). Measurements of $PM_{2.5}$ for purposes of comparison to the standards contained in 310 CMR 6.04(2)(b) and (c), and of lead for purposes of comparison to the standards contained in 310 CMR 6.04(6) 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.

6.04: Standards

(1) Oxides of Sulfur (sulfur dioxide).

(a) Primary Ambient Air Quality Standards for Oxides of Sulfur (sulfur dioxide).

1. The level of the primary one hour ambient air quality standard for oxides of sulfur is 75 parts per billion (ppb, which is 1 part in 1,000,000,000), measured in the ambient air as sulfur dioxide (SO_2).

6.04: continued

2. The one hour primary standard is met at an ambient air quality monitoring site when the three-year average of the annual (99^{th} percentile) of the daily maximum one hour average concentrations is less than or equal to 75 ppb, as determined in accordance with 40 CFR Part 50, Appendix T.

3. The level of the standard shall be measured by a reference method based on 40 CFR Part 50, Appendix A or A-1 or by a federal equivalent method (FEM) designated in accordance with 40 CFR Part 53.

(b) Secondary Ambient Air Quality Standards for Oxides of Sulfur (sulfur dioxide).

1. The level of the annual secondary national ambient air quality standard for oxides of sulfur is 10 parts per billion (ppb), measured in the ambient air as sulfur dioxide (SO2) by a reference method based on 40 CFR 50, Appendix A-1 and Appendix A-2, or by a Federal Equivalent Method (FEM) designated in accordance with 40 CFR 53.

2. The annual secondary standard is met when the three-year average of the annual SO2 concentration is less than or equal to 10 ppb, as determined in accordance with 40 CFR 50, Appendix T.

3. An SO2 annual secondary standard design value is valid if it encompasses three consecutive calendar years of complete data. A year meets data completeness requirements when all four quarters are complete. A quarter is complete when at least 75% of the sampling days for each quarter have complete data. A sampling day has complete data if 75% of the hourly concentration values, including State-flagged data affected by exceptional events which have been approved for exclusion by EPA, are reported.

(2) Particulate Matter.

(a) Primary and Secondary Ambient Air Quality Standards for PM_{10}:

1. The level of the primary and secondary 24-hour ambient air quality standards for particulate matter is 150 micrograms per cubic meter (µg/m3), 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 µg/m3, as determined in accordance with 40 CFR Part 50, Appendix K is equal to or less than one.

2. For the purpose of determining attainment of the primary and secondary standards, particulate matter shall be measured in the ambient air as PM_{10} (particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers) by:

a. A reference method based on 40 CFR Part 50, Appendix J and designated in accordance with 40 CFR Part 53, or

b. An equivalent method designated in accordance with 40 CFR Part 53.

(b) Primary Ambient Air Quality Standards for PM2.5:

1. The primary ambient air quality standards for PM2.5 are 9.0 micrograms per cubic meter (µg/m3) annual arithmetic mean concentration and 35 µg/m3 24-hour average concentration measured in the ambient air as PM2.5 (particles with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers) by either:

a. A reference method based on 40 CFR Part 50, Appendix L and designated in accordance with 40 CFR Part 53; or

b. An equivalent method designated in accordance with 40 CFR Part 53.

2. The primary annual PM2.5 standard is met when the annual arithmetic mean concentration, as determined in accordance with 40 CFR Part 50, Appendix N is less than or equal to 9.0 µg/m3.

3. The primary 24-hour PM2.5 standard is met when the 98th percentile 24-hour concentration, as determined in accordance with 40 CFR Part 50, Appendix N is less than or equal to 35 µg/m3.

(c) Secondary Ambient Air Quality Standards for $PM_{2.5}$:

1. The secondary ambient air quality standards for $PM_{2.5}$ are 15.0 micrograms per cubic meter (µg/m3) annual arithmetic mean concentration, and 35 µg/m3 24-hour average concentration measured in the ambient air as $PM_{2.5}$ (particles with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers) by either:

a. A reference method based on 40 CFR Part 50, Appendix L and designated in accordance with 40 CFR Part 53; or

b. An equivalent method designated in accordance with 40 CFR Part 53.

6.04: continued

2. The annual secondary $PM_{2.5}$ standard is met when the annual arithmetic mean concentration, as determined in accordance with 40 CFR Part 50, Appendix N is less than or equal to 15.0 µg/m3.

3. The 24-hour secondary $PM_{2.5}$ standard is met when the 98th percentile 24-hour concentration, as determined in accordance with 40 CFR Part 50, Appendix N is less than or equal to 35 µg/m3.

(3) Carbon Monoxide.

(a) The primary ambient air quality standards for carbon monoxide are:

1. 9 parts per million (10 milligrams per cubic meter) for an eight-hour average concentration not to be exceeded more than once per year; and

2. 35 parts per million (40 milligrams per cubic meter) for a one hour average concentration not to be exceeded more than once per year.

(b) The levels of carbon monoxide in the ambient air shall be measured by:

1. A reference method based on 40 CFR Part 50, Appendix C and designated in accordance with 40 CFR Part 53; or

2. An equivalent method designated in accordance with 40 CFR Part 53.

(c) An eight-hour average shall be considered valid if at least 75% of the hourly average for the eight-hour period are available. In the event that only six (or seven) hourly averages are available, the eight-hour average shall be computed on the basis of the hours available using six (or seven) as the divisor.

(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.

(4) Ozone. Primary and Secondary Ambient Air Quality Standards for Ozone:

(a) The level of the eight hour primary ambient air quality standard for ozone (O_3) is 0.070 parts per million (ppm), daily maximum eight-hour average, measured by a reference method based on 40 CFR Part 50, Appendix D and designated in accordance with 40 CFR Part 53 or an equivalent method designated in accordance with 40 CFR Part 53.

(b) The eight-hour primary O_3 ambient air quality standard is met at an ambient air quality monitoring site when the three-year average of the annual fourth-highest daily maximum eight-hour average O_3 concentration is less than or equal to 0.070 ppm, as determined in accordance with 40 CFR Part 50, Appendix U.

(c) The level of the secondary ambient air quality standard for O_3 is 0.070 ppm, daily maximum eight-hour average, measured by a reference method based on 40 CFR Part 50, Appendix D and designated in accordance with 40 CFR Part 53 or an equivalent method designated in accordance with 40 CFR Part 53.

(d) The eight-hour secondary O_3 ambient air quality standard is met at an ambient air quality monitoring site when the three-year average of the annual fourth-highest daily maximum eight-hour average O_3 concentration is less than or equal to 0.070 ppm, as determined in accordance with 40 CFR Part 50, Appendix U.

(5) Oxides of Nitrogen (nitrogen dioxide). Primary and Secondary Ambient Air Quality Standards for Oxides of Nitrogen:

(a) The level of the 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.

(b) The level of the primary one hour ambient air quality standard for oxides of nitrogen is 100 ppb, one hour average concentration, measured in the ambient air as nitrogen dioxide.

(c) The level of the secondary ambient air quality standard for nitrogen dioxide is 0.053 parts per million (100 micrograms per cubic meter), annual arithmetic mean concentration.

6.04: continued

(d) The levels of the standards shall be measured by:

1. A reference method based on 40 CFR Part 50, Appendix F; or
2. By a Federal equivalent method (FEM) designated in accordance with 40 CFR Part 53.

(e) The annual primary standard is met when the annual average concentration in a calendar year is less than or equal to 53 ppb, as determined in accordance with 50 CFR Part 50, Appendix S for the annual standard.

(f) The one hour primary standard is met when the three-year average of the annual 98^{th} percentile of the daily maximum one hour average concentration is less than or equal to 100 ppb, as determined in accordance with 40 CFR Part 50, Appendix S for the one hour standard.

(g) The secondary standard is attained when the annual arithmetic mean concentration in a calendar year is less than or equal to 0.053 ppm, rounded to three decimal places (fractional parts equal to or greater than 0.0005 ppm must be rounded up). To demonstrate attainment, an annual mean must be based upon hourly data that are at least 75% complete or upon data derived from manual methods that are at least 75% complete for the scheduled sampling days in each calendar quarter.

(6) Lead.

(a) The primary and secondary ambient air quality standards for lead (Pb) and its compounds are 0.15 micrograms per cubic meter, arithmetic mean concentration over a three-month period, measured in the ambient air as Pb either by:

1. A reference method based on 40 CFR Part 50, Appendix G and designated in accordance with 40 CFR Part 53 or;
2. An equivalent method designated in accordance with 40 CFR Part 53.

(b) The primary and secondary ambient air quality standards for Pb are met when the maximum arithmetic three-month mean concentration for a three-year period, as determined in accordance with 40 CFR Part 50, Appendix R is less than or equal to 0.15 micrograms per cubic meter.

REGULATORY AUTHORITY

310 CMR 6.00: M.G.L. c. 111, § 142D.