Chapter 101: VISIBLE EMISSIONS REGULATION

SUMMARY: This regulation establishes visible emission limitations for emissions from several categories of air contaminant sources not subject to more stringent visible emission standards under any other applicable federal or state regulation.

**1. Scope/Applicability**

**A. Geographic scope.** This regulation applies statewide.

**B. General requirement.** No person shall emit or cause to be emitted any visible air contaminants that exceed the visible emission standards of Sections 2 or 3 of this Chapter, unless the source islisted in Section 1(C) of this Chapter or, for periods of startup or shutdown, malfunction, or certain equipment maintenance for boilers or other emission units, when the work practices in Sections 4(A), (B), or (C) are followed as specified in Section 3. Certain sources are required by air emission license conditions, Best Available Control Technology (BACT), National Emissions Standards for Hazardous Air Pollutants (NESHAP), Best Practical Treatment (BPT), and/or New Source Performance Standards (NSPS) to achieve more stringent visible emissions standards than those listed in this Chapter.

**C. Exemptions from this Chapter.** The following are exempt from this Chapter:

(1) Incinerators regulated by 06-096 C.M.R. ch. 104;

(2) Permitted open burning regulated by 06-096 C.M.R. ch. 102;

(3) Emissions of condensed, uncombined water vapor;

(4) Municipal waste combustors regulated by 06-096 C.M.R. ch. 121;

(5) Diesel-powered motor vehicles regulated by 06-096 C.M.R. ch. 146;

(6) Outdoor wood boilers regulated by 06-096 C.M.R. ch. 150;

(7) Emission units subject to a visible emissions (i.e., opacity) standard under 40 C.F.R. Part 60 as amended up to July 1, 2018;

(8) Emission units subject to a visible emissions (i.e., opacity) standard under 40 C.F.R. Part 63 as amended up to July 1, 2018;

(9) Emission units with a wet plume subject to operating limits to demonstrate compliance with a particulate matter emission limit under 40 C.F.R. Part 63 as amended up to July 1, 2018;

(10) Visible air contaminants emitted for the purpose of visible emissions observer training; and

(11) Visible air contaminants emitted for the purpose of Predictive Emission Monitoring Systems (PEMS) research that has been approved by the Commissioner and EPA.

**2. Interim Visible Emission Standards**

The following standards shall apply until January 1, 2020:

**A.** **Fuel Burning Equipment**

Equipment shall be subject to one of the standards in this section based upon the primary fuel licensed for the unit:

(1) Boilers Firing #4, #5, #6 Fuel Oil.

(a) Visible emissions from any unit firing #4, #5, or #6 fuel oil whose rated input capacity is less than 1000 million BTU/hr shall not exceed an opacity of 30 percent on a six (6) minute block average basis, except for no more than two (2) six (6) minute block averages in a 3‑hour period.

(b) Visible emissions from any unit firing #4, #5, or #6 fuel oil whose rated input capacity is 1000 million BTU/hr or greater shall not exceed an opacity of 20 percent on a six (6) minute block average basis for 90 percent of all six (6) minute block averages on a quarterly basis. The remaining 10 percent of all six (6) minute block averages on a quarterly basis shall be no greater than 30 percent opacity. Quarterly basis is the period of time from January 1 to March 31, April 1 to June 30, etc. A unit subject to this section shall be required to operate and maintain a Continuous Opacity Monitoring System (COMS).

(2) Boilers Firing #2 Fuel Oil. Visible emissions from any unit firing #2 fuel oil shall not exceed an opacity of 20 percent on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a 3‑hour period.

(3) Boilers Firing Natural Gas or Propane. Visible emissions from any unit firing natural gas or propane shall not exceed an opacity of 10 percent on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a 3‑hour period.

(4) Stationary Internal Combustion Engines. Visible emissions from any stationary internal combustion engine manufactured after the year 2000 shall not exceed an opacity of 20 percent on a six (6) minute block average basis, except for no more than two (2) six (6) minute block averages in a 3‑hour period.

(5) Wood Waste/Biomass Units. Visible emissions from any wood waste or biomass unit shall not exceed an opacity of 30 percent on a six (6) minute block average basis, except for no more than two (2) six (6) minute block averages in a 3‑hour period.

(6) Visible emissions from any fuel burning equipment not specifically listed in this section shall not exceed an opacity of 30 percent on a six (6) minute block average basis, except for no more than two (2) six (6) minute block averages in a 3‑hour period.

For any fuel burning equipment monitored by COMS that are not subject to 40 C.F.R. Part 60, 63 and 75, the COMS shall record opacity on a six (6) minute block average basis, and the 3‑hour period shall be a 3‑hour block period beginning from midnight to 3:00, from 3:00 to 6:00, from 6:00 to 9:00, etc. For any fuel burning equipment not monitored by COMS the 3‑hour period shall be any continuous 3‑hour period.

**B. General Process Source**

(1) Visible emissions from any asphalt batch plant baghouse shall not exceed an opacity of 20 percent on a six (6) minute block average basis, except for no more than two (2) six (6) minute block averages in a 3‑hour period.

(2) Visible emissions from rock crushers shall not exceed an opacity of 10 percent on a six (6) minute block average basis.

(3) Visible emissions from baghouses, excluding asphalt batch plant baghouses, shall not exceed an opacity of 10 percent on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a 1-hour period. The facility shall take corrective action if visible emissions from the baghouses exceed five (5) percent opacity.

(4) Visible emissions from any general process source not specifically listed in this section shall not exceed an opacity of 20 percent on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a 1‑hour period.

For any general process source monitored by COMS that are not subject to 40 C.F.R. Part 60 and 63, the COMS shall record opacity on a six (6) minute block average basis, and the 1‑hour period shall be a 1‑hour period beginning from midnight to 1:00, from 1:00 to 2:00, from 2:00 to 3:00, etc. For any general process source not monitored by COMS the 1‑hour period shall be any continuous 1‑hour period.

**C.** **Fugitive Emission Sources**

Visible emissions from a fugitive emission source shall not exceed an opacity of 20 percent, except for no more than five (5) minutes in any 1-hour period. Compliance shall be determined by an aggregate of the individual fifteen (15)-second opacity observations which exceed 20 percent in any one (1) hour.

**D.** **Combined Stack Emissions**

Except as provided for in subsection 2(E)(2), visible emissions from two or more of any combination of sources subject to this Chapter, which are operating and emitting visible air contaminants through one stack or vent, shall meet one of the following limits as specified in the source’s air emission license.

(1) The common stack opacity shall not exceed an opacity of 30 percent recorded as six (6) minute block averages, except for no more than three (3) six (6) minute block averages in a 3‑hour block period; or

(2) The common stack opacity shall not exceed 30 percent opacity on a six (6) minute block average basis for 98 percent of all six (6) minute block averages on a quarterly basis. In addition, the common stack opacity shall not exceed 40 percent opacity on a six (6) minute block average basis for 99.5 percent of all six (6) minute block averages on a quarterly basis. Periods of start-up, shutdown and malfunctions are included for the purpose of calculating block averages under this subsection. Quarterly basis is the period of time from January 1 to March 31, April 1 to June 30, etc., as specified in the source’s air emission license. Only sources which use COMS may, at their option, be subject to this paragraph; or

(3) The common stack opacity for sources operating below 50% of the boiler load capacity that the common stack was designed for, based on a 12-month rolling total, shall not exceed 30 percent opacity on a six (6) minute block average basis for 95 percent of all six (6) minute block averages on a quarterly basis. In addition, the common stack opacity shall not exceed 40 percent opacity on a six (6) minute block average basis for 99 percent of all six (6) minute block averages on a quarterly basis. Periods of start-up, shutdown and malfunctions are included for the purpose of calculating block averages under this subsection. Quarterly basis is the period of time from January 1 to March 31, April 1 to June 30, etc., as specified in the source’s air emission license. Only sources which use COMS may, at their option, be subject to this paragraph.

For any combined stack emissions monitored by COMS that are not subject to 40 C.F.R. Part 60, 63 and 75, the COMS shall record opacity on a six (6) minute block average basis, and the 3‑hour period shall be a 3‑hour block period beginning from midnight to 3:00, from 3:00 to 6:00, from 6:00 to 9:00, etc. For any combined stack emissions not monitored by COMS the 3‑hour period shall be any continuous 3‑hour period. Sources which emit through a combined stack subject to this section are not subject to the standards applicable to individual sources elsewhere in this Chapter.

**E.** **Fuel burning sources that are restricted to less than 20 percent capacity on an annual basis.**

(1) Visible emissions from any fuel burning source shall not exceed an opacity of 30 percent on a six (6) minute block average basis, except for no more than two (2) six (6) minute block averages in a 3-hour period.

(2) Visible emissions from any fuel burning source comprised of two or more units emitted through one stack shall not exceed an opacity of 40 percent on a six (6) minute block average basis, except for no more than three (3) six (6) minute block averages in a 2-hour period.

**3. Visible Emission Standards Effective January 1, 2020 and Thereafter**

The following standards shall apply except as provided in Sections 3(D) and 3(E) of this Chapter:

**A.** **Fuel Burning Equipment.** Equipment shall be subject to one of the standards in this section:

(1) Boilers Firing #4, #5, or #6 Fuel Oil

Boilers firing #4, #5, or #6 fuel oil shall comply with either (a), (b), or (c) below, as applicable:

1. Visible emissions from any unit whose rated input capacity is less than 100 million BTU/hr shall not exceed an opacity of 30 percent on a six (6) minute block average basis, except for periods of startup, shutdown, malfunction, or certain equipment maintenance, during which times the unit operator may elect to comply with the work practice standards of Sections 4(A) or 4(C) of this Chapter in lieu of this visible emission standard. Eligible equipment maintenance must be specifically identified in the facility’s air emission license as subject to work practice standards in this rule.
2. Visible emissions from any unit whose rated input capacity is 100 million BTU/hr or greater shall not exceed an opacity of 20 percent on a six (6) minute block average basis, except for periods of startup, shutdown, malfunction, or certain equipment maintenance, during which times the unit operator may elect to comply with the work practice standards of Sections 4(A) or 4(C) of this Chapter in lieu of this visible emission standard. Eligible equipment maintenance must be specifically identified in the facility’s air emission license as subject to work practice standards in this rule.
3. Visible emissions from any unit whose rated input capacity is 100 million BTU/hr or greater shall not exceed an opacity of 20 percent on a six (6) minute block average basis for 95 percent of all six (6) minute block averages on a quarterly basis. The remaining 5 percent of all six (6) minute block averages on a quarterly basis shall be no greater than 45 percent opacity. Periods of start-up, shutdown and malfunctions are included for the purpose of calculating block averages under this subsection. Periods when the unit is not operating are not included for the purpose of calculating block averages under this subsection. Quarterly basis is the period of time from January 1 to March 31, April 1 to June 30, etc. A unit subject to this subsection shall be required to operate and maintain a COMS.

(2) Boilers Firing Distillate Fuel

Visible emissions from any unit firing distillate fuel shall not exceed an opacity of 20 percent on a six (6) minute block average basis.

For the purposes of this Chapter, *distillate fuel* means the following:

1. Fuel oil that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials (ASTM) in ASTM D396;
2. Diesel fuel oil numbers 1 or 2, as defined in ASTM D975;
3. Kerosene, as defined in ASTM D3699;
4. Biodiesel, as defined in ASTM D6751; or
5. Biodiesel blends, as defined in ASTM D7467.

(3) Boilers Firing Natural Gas or Propane

Visible emissions from any unit firing natural gas or propane shall not exceed an opacity of 10 percent on a six (6) minute block average basis.

(4) Stationary Internal Combustion Units

Visible emissions from any stationary internal combustion unit (either reciprocating engine or combustion turbine) shall not exceed an opacity of 20 percent on a six (6) minute block average basis.

1. During periods of startup, the unit operator of a reciprocating engine may elect to comply with the work practice standards of Section 4(B) of this Chapter in lieu of this visible emission standard.
2. During periods of startup, the unit operator of a combustion turbine may elect to comply with the work practice standards of Sections 4(A) or 4(C) of this Chapter in lieu of this visible emission standard.

(5) Boilers Firing Wood /Biomass and Multi-Fuel Boilers

Boilers firing wood/biomass and multi-fuel boilers shall comply with either (a) or (b) below:

1. Visible emissions shall not exceed 30 percent opacity on a six (6) minute block average basis, except for periods of startup, shutdown, malfunction, or certain equipment maintenance, during which times the unit operator may elect to comply with the work practice standards of Sections 4(A) or 4(C) of this Chapter in lieu of this visible emission standard. Eligible equipment maintenance must be specifically identified in the facility’s air emission license as subject to work practice standards in this rule.
2. Visible emissions shall not exceed an opacity of 20 percent on a six (6) minute block average basis for 95 percent of all six (6) minute block averages on a quarterly basis. The remaining 5 percent of all six (6) minute block averages on a quarterly basis shall be no greater than 45 percent opacity. Periods of start-up, shutdown and malfunctions are included for the purpose of calculating block averages under this subsection. Periods when the unit is not operating are not included for the purpose of calculating block averages under this subsection. Quarterly basis is the period of time from January 1 to March 31, April 1 to June 30, etc. A unit subject to this subsection shall be required to operate and maintain a COMS.

For the purposes of this Chapter, *multi-fuel boiler* means a boiler which fires more than one type of fuel simultaneously.

(6) Visible emissions from any fuel burning equipment not specifically listed in this section shall not exceed an opacity of 30 percent on a six (6) minute block average basis, except for periods of startup, shutdown, malfunction, or certain equipment maintenance, during which times the unit operator may elect to comply with the work practice standards of Sections 4(A) or 4(C) of this Chapter in lieu of this visible emission standard. Eligible equipment maintenance must be specifically identified in the facility’s air emission license as subject to work practice standards in this rule.

For any fuel burning equipment monitored by COMS that is not subject to 40 C.F.R. Part 60, 63, or 75 as amended up to July 1, 2018, the COMS shall record opacity on a six (6) minute block average basis.

**B. General Process Sources**

1. Visible emissions from any asphalt plant baghouse shall not exceed an opacity of 20 percent on a six (6) minute block average basis, except for periods of startup, shutdown, malfunction, or certain equipment maintenance, during which times the unit operator may elect to comply with the work practice standards of Sections 4(A) or 4(C) of this Chapter in lieu of this visible emission standard. Eligible equipment maintenance must be specifically identified in the facility’s air emission license as subject to work practice standards in this rule.
2. Visible emissions from rock crushers shall not exceed an opacity of 10 percent on a six (6) minute block average basis.
3. Visible emissions from baghouses, excluding asphalt plant baghouses, shall not exceed an opacity of 10 percent on a six (6) minute block average basis. The facility shall take corrective action if visible emissions from the baghouses exceed five (5) percent opacity on a six (6) minute block average basis.
4. Visible emissions from any general process source not specifically listed in this section shall not exceed an opacity of 20 percent on a six (6) minute block average basis.
5. For any general process source monitored by COMS and for which the COMS is not subject to 40 C.F.R. Parts 60 or 63 as amended up to July 1, 2018, the COMS shall record opacity on a six (6) minute block average basis.

**C. Fugitive Emission Sources**

Visible emissions from a fugitive emission source shall not exceed an opacity of 20 percent, on a five (5) minute block average basis.

**D. Combined Stack Emissions**

Except as provided for in subsection 3(E)(2), visible emissions from two or more of any combination of sources subject to this Chapter which are operating concurrently and emitting air contaminants through one common stack or vent shall comply with either (1) or (2) below. Sources which emit through a common stack subject to this section are subject to the standards applicable to individual sources elsewhere in this Chapter when only one of the sources is in operation.

(1) Visible emissions from a common stack not monitored by a COMS shall not exceed an opacity of 30 percent on a six (6) minute block average basis, except for periods of startup, shutdown, malfunction, or certain equipment maintenance, during which times the unit operator may elect to comply with the work practice standards of Sections 4(A) or 4(C) of this Chapter in lieu of this visible emission standard. Eligible equipment maintenance must be specifically identified in the facility’s air emission license as subject to work practice standards in this rule.

(2) Visible emissions from a common stack monitored by a COMS shall not exceed an opacity of 20 percent on a six (6) minute block average basis for 95 percent of all six (6) minute block averages on a quarterly basis. The remaining 5 percent of all six (6) minute block averages on a quarterly basis shall be no greater than 45 percent opacity. Periods of start-up, shutdown and malfunctions are included for the purpose of calculating block averages under this subsection. Periods when the unit is not operating are not included for the purpose of calculating block averages under this subsection. Quarterly basis is the period of time from January 1 to March 31, April 1 to June 30, etc.

**E.** **Boilers Restricted to Less than 20 Percent Capacity on an Annual Basis**

Boilers with a licensed annual capacity limit of 20 percent or less shall comply with either (1), (2), or (3) below:

1. Visible emissions shall not exceed an opacity of 30 percent on a six (6) minute block average basis, except for periods of startup, shutdown, malfunction, or certain equipment maintenance, during which times the unit operator may elect to comply with the work practice standards of Sections 4(A) or 4(C) of this Chapter in lieu of this visible emission standard. Eligible equipment maintenance must be specifically identified in the facility’s air emission license as subject to work practice standards in this rule.
2. Visible emissions from any source comprised of two or more units emitted through a common stack or vent shall not exceed an opacity of 40 percent on a six (6) minute block average basis, except for periods of startup, shutdown, malfunction, or certain equipment maintenance, during which times the unit operator may elect to comply with the work practice standards of Sections 4(A) or 4(C) of this Chapter in lieu of this visible emission standard. Eligible equipment maintenance must be specifically identified in the facility’s air emission license as subject to work practice standards in this Chapter. In order to be subject to this subsection, all units which emit through the common stack must be subject to a 20 percent annual capacity limit.
3. Visible emissions from any stack monitored by a COMS shall not exceed an opacity of 30 percent on a six (6) minute block average basis for 95 percent of all six (6) minute block averages on a quarterly basis. The remaining 5 percent of all six (6) minute block averages on a quarterly basis shall be no greater than 50 percent opacity. Periods of start-up, shutdown and malfunctions are included for the purpose of calculating block averages under this subsection. Periods when the unit is not operating are not included for the purpose of calculating block averages under this subsection. Quarterly basis is the period of time from January 1 to March 31, April 1 to June 30, etc. If two or more units emit through a common stack monitored by a COMS, in order to be subject to this subsection, all units which emit through the common stack must be subject to a 20 percent annual capacity limit.

**4. Work Practice Standards for Periods of Startup, Shutdown, Malfunction, and Equipment Maintenance**

1. **Fuel Burning Equipment Other than Reciprocating Engines**

The unit operator may elect to comply with the following work practice standards during periods of startup, shutdown, malfunction, and certain equipment maintenance in lieu of the visible emission standards in Sections 3(A)(1)(a), (1)(b), (4)(b), (5)(a), and (6); Section 3(B)(1); Section 3(D)(1); and Sections 3(E)(1) and (2). If multiple units exhaust to a common stack, the following work practice standards shall apply to all units that exhaust to the common stack.

1. The unit operator shall maintain a log (written or electronic) of the date, time, and duration of all startups, shutdowns, malfunctions, or equipment maintenance of any unit or its associated air pollution control equipment which result in the operator electing to comply with this section.
2. The unit operator shall develop and implement a written startup and shutdown plan.
3. The duration of unit startups, shutdowns, malfunctions, or equipment maintenance shall each not exceed one hour per occurrence, unless otherwise defined and provided for in the facility’s air emission license.
4. The unit, including any associated air pollution control equipment, shall be operated at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.
5. **Stationary Reciprocating Engines**

The unit operator may elect to comply with the following work practice standards during periods of startup in lieu of the visible emission standards in Sections 3(A)(4)(a).

1. The unit operator shall maintain a log (written or electronic) of the date, time, and duration of all unit startups which result in the operator electing to comply with this section.
2. The unit shall be operated in accordance with the manufacturer’s emission-related operating instructions.
3. The unit operator shall minimize the engine’s time spent at idle and minimize the engine’s startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations shall apply.
4. The unit, including any associated air pollution control equipment, shall be operated at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.
5. **Alternative Work Practice Standards**

As an alternative to the work practice standards in section 4(A) above, sources may amend their air emission license to establish specific work practice standards for startup, shutdown, malfunction, and equipment maintenance.

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