

SUBCHAPTER 31. CONTROL OF EMISSION OF SULFUR COMPOUNDS

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PART 1. GENERAL PROVISIONS

252:100-31-1. Purpose

The purpose of this Subchapter is to control emissions of sulfur compounds from stationary sources in order to prevent the Oklahoma Air Quality Standard from being exceeded and insure that degradation of the present level of air quality in Oklahoma does not occur.

252:100-31-2. Definitions

The following words or terms, when used in this ~~subchapter~~ Subchapter, shall have the following meaning, unless the context clearly indicates otherwise:

"Black liquor solids" means the dry weight of the ~~solids~~ solids ~~which~~ solids, which enter the recovery furnace in the black liquor.

"Digester system" means each continuous digester or each batch digester used for the cooking of wood in white liquor, and associated flash tank(s), below tank(s), chip steamer(s), and condenser(s).

"Existing source" or "existing equipment" means ~~any~~ any air contaminant source which is in being ~~on the effective date of the applicable section~~ prior to July 1, 1972, except that for sources subject to OAC 252:100-31-7(a) and OAC 252:100-31-26(a)(1), the term means any source in being prior to December 31, 1974, and for sources subject to OAC 252:100-31-13, the term means any source in being on or before August 17, 1971.

"Lime kiln" means a unit used to calcine lime mud, which consists primarily of calcium carbonate, into quicklime, which is calcium oxide.

"Multiple-effect evaporator system" means the multiple-effect evaporators and associated condenser(s) and hotwell(s) used to concentrate the spent cooking liquid that is separated from the pulp (black liquor).

"New installation," ~~(source or equipment)~~ "new source," or "new equipment" means an air contaminant source which is not in being on, ~~the effective date of the applicable section and any existing source which is altered, replaced, or rebuilt after the effective date of the rules such that the amount of air contaminant emissions is increased or which is modified after, July 1, 1972, except that for all sources subject to OAC 252:100-31-7(a) and OAC 252:100-31-26(a)(1) and for petroleum refining sources subject to OAC 252:100-31-26(a)(2), the date is December 31, 1974, and for sources subject to OAC 252:100-31-13 the date is August 17, 1971.~~

"Pulp mill" means the process equipment used in production of pulp from wood chips or bolts which may include but are not limited to, debarker, chipper, digester, blow tank, washers, condensers, evaporators, recovery furnace, lime kiln, smelt-dissolving tank, mixers, heat exchangers, gas scrubbers, and other auxiliaries pertinent to the process.

"Recovery furnace" means either a straight kraft recovery furnace or a cross recovery furnace, and includes the direct-contact evaporator for a direct contact furnace.

"Smelt dissolving tank" means a vessel used for dissolving the smelt collected from the recovery furnace.

"Sulfur recovery plant" means a process device that recovers elemental sulfur from acid gas.

"Sweetening plant" means a process device that separates the H₂S and CO₂ contents from the gas stream.

"Three-hour average" or "3-hour average" means the arithmetic average of sampling results or continuous emission monitoring data from three contiguous one-hour periods.

"Total reduced sulfur" or "TRS" is the sum of the compounds hydrogen sulfide, methyl mercaptan, dimethyl sulfide, and dimethyl disulfide.

252:100-31-3. Performance testing [REVOKED]

~~—Testing to determine whether emission standards set in this Subchapter are met shall be conducted by the source following 40 CFR Part 60, Appendix A, Test Methods. [NOTE: Performance testing requirements are covered in Subchapter 43.]~~

PART 2. AMBOENT AIR CONCENTRATION LIMITS FOR NEW AND EXISTING EQUIPMENT

252:100-31-7. Ambient air concentration limits.

(a) Hydrogen sulfide. Emissions of hydrogen sulfide from any new or existing source shall not result in a 24-hour average ambient air concentration of hydrogen sulfide at any given point of 0.2 ppm or greater. [Note: This requirement was contained in 252:100-31-14(a) and 252:100-31-26(b)(1). The previous limit of 0.1 ppm has been replaced by 0.2 ppm (a health based standard) and the averaging times have been changed from 30-minute and one-hour to 24-hour.]

(b) Exceptions. The standards set in subsection (a) of this Section shall not apply to ambient air concentrations occurring on the property from which such emission occurs, providing such property, from the emission point to the point of any such concentration, is controlled by the person responsible for such emission. [NOTE: This was in 252:100-31-14(a) and 252:100-31-26(b)(1).]

(c) Compliance assurance. Upon approval of the Director, source operators may use appropriate material balances, performance test data, and/or emission factors to determine stack emissions combined, when necessary, with the appropriate EPA approved atmospheric dispersion models to determine ambient air concentration in lieu of ambient air monitoring as proof of compliance with limits set in OAC 252:100-31-7(a). [NOTE: This was in 252:100-31-14-(b), 252:100-31-26(a)(2)(B), and 252:100-31-26(b)(2). Determination of violation is covered in Subchapter 45 at 252:100-45-5.]

PART 3. EXISTING EQUIPMENT STANDARDS

252:100-31-12. Sulfur oxides [REVOKED]

~~(a) **Standard.** No person shall cause, let, suffer or allow any emission of sulfur dioxide from existing equipment which results in an ambient air concentration of sulfur dioxide at any given point in excess of 1300 ug/m³ (0.50 ppm) in a five (5) minute period of any hour, a one (1) hour average exposure of 1200 ug/m³ (0.46 ppm), a three (3) hour average exposure of 650 ug/m³ (0.25 ppm), or a 24 hour average exposure of 130 ug/m³ (0.05 ppm) of sulfur dioxide contributed from any one source or an annual arithmetic mean of 80 ug/m³ (0.03 ppm). These limitations shall not apply to ambient air concentrations occurring on the property from which such emission occurs, providing such property, from the emission point to the point of any such concentration is controlled by the person responsible for such emission.~~

~~(b) **Determination of violation.** Violations of 252:100 31-12(a) may be determined by the Executive Director by use of appropriate material balances and/or emission factors, and on the basis of the ambient air concentration by the use of appropriate atmospheric dispersion models approved by EPA. Determinations made by the Executive Director using these procedures indicating that the limits set in 252:100 31-12(a) have been exceeded shall constitute prime evidence that the standard has been violated. Source operators may use these same procedures in lieu of ambient air monitoring as proof of compliance with limits set in 252:100 31-12(a).~~

252:100-31-13. Sulfuric acid mistplants

~~—After January 10, 1979, no person shall cause, let, or allow emissions of sulfuric acid mist from any existing sulfuric acid plant in an amount greater than 0.5 pound of sulfuric acid mist per ton of acid produced (250 grams per metric ton) the production being expressed as 100 percent sulfuric acid (H₂SO₄).~~

~~(a) **Sulfuric acid mist standard.** After January 10, 1979, emissions of sulfuric acid mist from any existing sulfuric acid plant shall not exceed 0.5 lb/T of acid produced (250 g/MT). The acid production shall be expressed as 100% sulfuric acid (H₂SO₄).~~

~~(b) **Continuous emission monitoring.** Continuous monitoring of sulfur dioxide is required for existing sulfuric acid plants where the production capacity is greater than 300 TPD expressed as 100% acid, except where the conversion of sulfuric acid is utilized to prevent emissions of sulfur dioxide or other sulfur compounds. [NOTE: This was 252:100-31-15(c)(1)(B).]~~

~~(c) **Installation, calibration, and maintenance of emission monitoring systems.** Required monitoring systems shall be installed, calibrated, maintained, and operated in accordance with 40 CFR 60, Appendix B and 40 CFR 51, Appendix P.~~

Appendix P is hereby incorporated by reference. [NOTE: This was 252:100-31-15(c)(2) and (3).]

252:100-31-14. Hydrogen sulfide [renumbered and moved to OAC 252:100-31-7]

~~(a) **Standard.** No person shall cause, let, suffer, or allow any emission of hydrogen sulfide from any source which results in an ambient air concentration of hydrogen sulfide at any given point of 0.1 ppm for a 30 minute period. This standard shall not apply to ambient air concentrations occurring on the property from which such emission occurs, providing such property, from the point of any such concentration is controlled by the person responsible for such emission. [NOTE: The hydrogen sulfide limit was changed to 0.2 ppm, 24-hour basis (a health based standard) and this subsection was moved to 252:100-31-7(a) and (b).]~~

~~(b) **Determination of violation.** Violation of 252:100-31-14(a) may be determined by the Executive Director by use of appropriate material balances and/or emission factors, and on the basis of the ambient air concentration by the use of appropriate atmospheric dispersion models approved by EPA. Determinations made by the Executive Director using these procedures indicating that the limits set in 252:100-31-14(a) have been exceeded shall constitute prime evidence that the standard has been violated. Source operators may use these same procedures in lieu of ambient air monitoring as proof of compliance with limits set in 252:100-31-14(a). [NOTE: Moved to 252:100-31-7(c).]~~

~~(c) **Testing procedures.** Testing procedures for ambient air concentration of hydrogen sulfide shall use either of the following:~~

- ~~— (1) Paper Tape Method, American Iron and Steel Institute (A.I.S.I.) type sampler with lead acetate impregnated paper tape;~~
- ~~— (2) Methylene Blue Calorimetric Method; or,~~
- ~~— (3) other methods acceptable to the Executive Director.~~

~~[NOTE: Testing procedures are covered in 252:100-43.]~~

252:100-31-15. Total reduced sulfurKraft pulp mills

~~(a) **Standard.** After November 15, 1985, all affected facilities shall limit emissions of total reduced sulfur released during the Kraft pulping operation, to those listed in this Section or have an approved plan which is to be submitted to the Director by May 15, 1984. Approval of all such plans shall reside with the Air Quality Council and in no case shall the time frame for compliance exceed May 9, 1989.~~

~~(1) The applicable limits are:~~

- ~~— (A) forty (40) parts per million (ppm) of total reduced sulfur measured as hydrogen sulfide on a dry basis and on a 12 hour average, converted to eight (8) volume percent oxygen from any recovery furnace;~~
- ~~— (B) forty (40) parts per million of total reduced sulfur measured as hydrogen sulfide on a dry basis and~~

- ~~on a 12 hour average, corrected to ten (10) volume percent oxygen from any lime kiln; and,~~
- ~~(C) 0.016 gram of total reduced sulfur measured as hydrogen sulfide per kilogram of black liquor solids for a 12 hour average from any smelt dissolving tank.~~
- ~~(2) Non condensable gases from all evaporators and digesters shall be efficiently incinerated or otherwise treated to limit emissions to less than five (5) ppm by volume on a dry basis.~~
- (a) **Standard.** After May 8, 1989, all existing kraft pulp mills shall meet the following standards.
- (1) **TRS.** Emissions of TRS shall not exceed:
- (A) 40 ppm TRS measured as hydrogen sulfide on a dry basis and on a 12-hour average, converted to 8% by volume oxygen from any recovery furnace;
- (B) 40 ppm TRS measured as hydrogen sulfide on a dry basis and on a 12-hour average, corrected to 10% by volume oxygen from any lime kiln; and,
- (C) 0.033 lb TRS/T black liquor solids as hydrogen sulfide (0.016 g TRS/kg of black liquor solids as hydrogen sulfide) for a 12-hour average from any smelt dissolving tank.
- (2) **Non-condensable gases.** Non-condensable gases from all evaporators and digester systems shall be efficiently incinerated or otherwise treated to limit emissions of TRS measured as hydrogen sulfide to less than 5 ppm by volume on a dry basis. [Added "or TRS measured as hydrogen sulfide" to make clear what was to be measured.]
- ~~(b) **Determination of violation.** Violation of 252:100-31-15(a) may be determined by the Executive Director by use of appropriate material balances, continuous emission monitoring data, and/or emission factors. Stack sampling conducted by the source will be required to demonstrate compliance, following 40 CFR Part 60, Appendix A, Test Methods. [NOTE: Determination of violation is covered in Subchapter 45 at 252:100-45-5.]~~
- ~~(c) **Continuous emission monitoring.**~~
- ~~(1) Existing sources listed below are required to monitor emissions as described.~~
- ~~(A) **Fossil fuel-fired steam generators.** Continuous monitoring of sulfur dioxide emissions is required for fossil fuel fired steam generators where the source utilizes an air pollution abatement operation to make a significant reduction in the emissions of sulfur dioxide. Continuous monitoring of oxygen or carbon dioxide is required where it is necessary to convert sulfur dioxide monitoring results. [NOTE: Moved to 252:100-31-16(a).]~~
- ~~(B) **Sulfuric acid plants.** Continuous monitoring of sulfur dioxide is required for sulfuric acid plants required to limit emissions by the applicable requirements of this Subchapter where the production capacity is greater than 300 tons per day expressed as~~

~~100% acid except where the conversion of sulfuric acid is utilized as a means of preventing emissions to the atmosphere of sulfur dioxide or other sulfur compounds.~~

~~[NOTE: Moved to 252:100-31-13(b).]~~

~~(2) Required monitoring systems will be installed, calibrated, maintained, and operated in accordance with 40 CFR 60, Appendix B. [NOTE: Moved to 252:100-31-13(c) and 252:100-31-16(b).]~~

~~(3) Required monitoring systems will be installed, calibrated, maintained, and operated in accordance with 40 CFR 51, Appendix P, hereby incorporated by reference. [NOTE: moved to 252:100-31-13(c) and 252:100-31-16(b).]~~

252:100-31-16. Fossil fuel-fired steam generators

~~(a) **Continuous emission monitoring.** Continuous monitoring of sulfur dioxide emissions is required for existing fossil fuel-fired steam generators where the source utilizes an air pollution abatement operation to reduce the sulfur dioxide emissions. Continuous monitoring of oxygen or carbon dioxide is required where it is necessary to convert sulfur dioxide monitoring results. [NOTE: This was 252:100-31-15(c)(1)(A).]~~

~~(b) **Installation, calibration, and maintenance of emission monitoring systems.** Required monitoring systems shall be installed, calibrated, maintained, and operated in accordance with 40 CFR 60, Appendix B and 40 CFR 51, Appendix P. [NOTE: This was 252:100-31-15(C)(2) and (3).]~~

PART 5. NEW EQUIPMENT STANDARDS

252:100-31-25. Sulfur oxides Fuel-burning equipment

~~(a) **Sulfuric acid plants.**~~

~~(1) **Emission limit.**~~

~~(A) A person operating a new sulfuric acid plant shall not cause, suffer, or allow the discharge into the atmosphere of:~~

~~(i) sulfur dioxide in the effluent in excess of four (4) pounds per ton of 100 percent sulfuric acid produced (2 kg per metric ton), maximum two hour average;~~

~~(ii) sulfuric acid mist which is in excess of 0.15 pound per ton of 100 percent sulfuric acid produced (75 grams per metric ton), maximum two hour average, expressed in H₂SO₄; or~~

~~(iii) a visible emission equivalent to an opacity of five (5) percent.~~

~~(B) These emission limits shall apply to only those sulfuric acid plants producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans or acid sludge.~~

~~(2) **Emission monitoring.**~~

~~(A) All sulfuric acid plants regulated under this subsection shall have installed, calibrated, maintained and operated, an instrument for continuously monitoring~~

~~and recording emissions of sulfur dioxide. The instrument installed and used pursuant to this subsection shall be calibrated following the Oklahoma test procedure requirements using the performance specifications 2 and 3 of 40 CFR Part 60, Appendix B.~~

~~(B) The owner or operator of any sulfuric acid plant subject to provisions of this paragraph shall maintain a file of all measurements required including compliance status records and excess emissions measurements. These records and measurements shall be retained for at least two years following the date of such measurement, and made available for inspection by the Air Quality Division or its representative during normal business hours. [NOTE: New sulfuric acid plants are covered in NSPS 40 CFR 60 Subpart H.]~~

~~(b) **Fuel-burning equipment.**~~

~~(a) **Emission limits.** The averaging time for the emission limits set in 252:100-31-25(a) is 3-hours unless a solid fuel sampling and analysis method is used to determine emission compliance. In that case the averaging time is 24 hours.~~

~~(1) **Emission limitGas-fired fuel-burning equipment.**~~

~~(A) No person shall cause, suffer or allow the discharge into the atmosphere of sulfur oxides measured as sulfur dioxide from new gas fuel burning equipment in excess of 0.2 pound per million BTU heat input (0.36 gram per million gram calories), maximum three hour average. Sulfur oxide emissions (measured as sulfur dioxide) from any new gas-fired fuel-burning equipment shall not exceed 0.2 lb/MMBtu heat input (86 ng/J).~~

~~(B)(2) **Liquid-fired fuel-burning equipment.** No person shall cause, suffer or allow the discharge into the atmosphere of sulfur oxides measured as sulfur dioxide from new liquid fuel burning equipment in excess of 0.8 pound per million BTU heat input (1.4 grams per million gram calories), maximum three hour average Sulfur oxide emissions (measured as sulfur dioxide) from any new liquid-fired fuel-burning equipment shall not exceed 0.8 lb/MMBtu heat input (340 ng/J).~~

~~(C)(3) **Solid fuel-burning equipment.** No person shall cause, suffer or allow the discharge into the atmosphere of sulfur oxides measured as sulfur dioxide from new solid fuel burning equipment in excess of 1.2 pounds per million BTU heat input (2.20 grams per million gram calories), maximum three hour average Sulfur oxide emissions (measured as sulfur dioxide) from any new solid fuel-burning equipment shall not exceed 1.2 lb/MMBtu heat input (520 ng/J).~~

~~(D) If a solid fuel sampling and analysis method is used to determine emission compliance, averaging time will be determined on a 24 hour basis.~~

~~(E)(4) **Combination of fuels burned.**WhereWhen different types of fuels are burned simultaneously in any~~

combination, the applicable standard (in lb/MMBtu) shall be determined by proration unless a secondary fuel is used in de minimis quantities (less than 5% of total BTU input annually). Compliance shall be determined using the following formula (effective July 1, 1972), where X is the percent of total heat input derived from gas fuel, Y is the percent of total heat input derived from liquid fuel, and Z is the percent of total heat input derived from solid fuel.

$$\text{SO}_2 \text{ limit} = \frac{(y(.80) + z(1.2)) / y + z}{[X(0.2) + Y(0.8) + Z(1.2)] / (X + Y + Z)}$$

~~where y is the percent of total heat input derived from liquid fuel and z is the percent of total heat input derived from solid fuel.~~

~~(2)(b) **Emission monitoring, and fuel monitoring, and recordkeeping for sources with heat input of 250 MMBtu/hr or more.** The requirements contained in this Subsection apply to any new fuel-burning equipment with a rated heat input of 250 MMBtu or greater.~~

~~(A)(1) **Emission monitoring.** There shall be installed, calibrated, maintained, and operated, in any new fuel burning equipment with a rated heat input of 250 million BTU/hr. or more emission monitoring instruments as follows: The instruments in 252:100-31-25(b)(1)(A) and (B)(i) shall be installed, calibrated, maintained, and operated in any new fuel-burning equipment with a rated heat input of 250 MMBtu/hr or greater. These instruments shall be calibrated following performance specifications 2 and 3 of 40 CFR Part 60, Appendix B.~~

~~(A) **Opacity.**~~

~~(i) aA photoelectric or other type smoke detector and recorder shall be used to monitor opacity, except where gaseous fuel is the only fuel burned; and,~~

~~(B) **Sulfur dioxide.**~~

~~(ii)(i) anAn instrument for continuously monitoring and recording sulfur dioxide emissions shall be used, except where gaseous fuel containing less than 0.1% percent sulfur is the only fuel burned; or a solid fuel sampling and analysis method is used to determine emission compliance.~~

~~(ii) A solid fuel sampling and analysis method may be used to determine emission compliance.~~

~~(B) Instruments installed and used for monitoring shall be calibrated following performance specifications 2 and 3 of 40 CFR Part 60, Appendix B.~~

~~(C)(2) **Fuel monitoring.** The sulfur content of solid fuels as burned shall be determined in accordance with previous methods as approved by the Executive Director or in accordance with Method 19 of 40 CFR Part 60, Appendix A.~~

~~(D)(3) **Recordkeeping.** The owner or operator of any fuel-burning equipment with a rated heat input of 250~~

~~million BTU/hr. or over shall maintain a file of all measurements required in subparagraphs (A), (B), or (C) of this paragraph paragraphs (1) and (2) of this subsection, including compliance status records and excess emissions measurements. These records and measurements shall be retained for at least two (2) years following the date of such measurements, and made available for inspection by the Air Quality Division or its representatives during normal business hours.~~

~~(c) Gas sweetening and sulfur recovery plants.~~

~~(1) Natural gas processing.~~

~~(A) As specified in 252:100-31-26(a)(1)(B), a new gas sweetening plant is allowed direct oxidation of hydrogen sulfide to sulfur dioxide without a prior sulfur removal step when the exhaust gas contains no more than 100 pounds per hour of sulfur dioxide. When the sulfur content of an acid gas stream from a new gas sweetening unit is greater than this allowed emission but less than or equal to 5.0 long tons per day (LT/D) of sulfur, a sulfur dioxide emission reduction efficiency of at least 75.0 percent shall be achieved by means of a sulfur recovery facility prior to the discharge of gases from the system. [NOTE: Moved to 252:100-31-26(a)(2)(A), 252:100-31-26(a)(2)(C), and 252:100-31-26(b)(2).]~~

~~(B) When the sulfur content of an acid gas stream from a new gas sweetening unit is greater than 5.0 LT/D but less than or equal to 150 LT/D, a sulfur dioxide emission reduction efficiency shall be achieved by means of a sulfur recovery facility such that~~

$$~~Z = 92.34 (X^{0.00774})~~$$

~~where Z is the minimum emission reduction efficiency required at all times and X is the sulfur feed rate, i.e., the hydrogen sulfide in the acid gas from the sweetening unit, expressed as long tons per day of sulfur rounded to one decimal place. [NOTE: Moved to 252:100-31-26(a)(2)(D).]~~

~~(C) When the sulfur content of an acid gas stream from a new gas sweetening unit is greater than 150 LT/D but less than or equal to 1500 LT/D, a sulfur dioxide emission reduction efficiency shall be achieved by means of a sulfur recovery facility such that~~

$$~~Z = 88.78 (X^{0.0156})~~$$

~~where Z and X are defined as in (B) of this subsection. [NOTE: Moved to 252:100-31-26(a)(2)(E).]~~

~~(D) When the sulfur content of an acid gas stream from a new gas sweetening unit is greater than 1500 LT/D, a minimum sulfur dioxide reduction efficiency of 99.5 percent shall be required. [NOTE: Moved to 252:100-31-26(a)(2)(F).]~~

~~(2) **Other processes.** The emission of sulfur oxides, calculated as sulfur dioxide, from a new sulfur recovery plant operating in conjunction with other processes is limited to rates consistent with the emission reduction efficiencies calculated based on equivalent sulfur feed rate in long tons per day (LT/D) in the same manner as for natural gas processing in (c) (1) of this section. [NOTE: 252:100-31-25(c)(1) and (2) have been combined and moved to 252:100-31-26(a)(2).]~~

~~(3) **Emission monitoring.** For facilities regulated under this subsection emission monitoring may be required as determined by the Executive Director in accordance with Subchapter 45 of this Chapter. [NOTE: Monitoring is covered in Subchapter 45.]~~

~~(d) **Nonferrous smelters.**~~

~~(1) **Emission limit.** The emission of sulfur oxides, calculated as sulfur dioxide, from new nonferrous smelters is restricted according to the following equations as a maximum two hour average, where X equals total sulfur fed to smelter (lb/hr) and Y equals sulfur dioxide emissions (lb/hr).:~~

~~(A) Copper Smelters: $Y = 0.2 (X)$~~

~~(B) Zinc Smelters: $Y = 0.564 (X^{0.85})$~~

~~(C) Lead Smelters: $Y = 0.98 (X^{0.77})$~~

~~(2) **Emission monitoring.**~~

~~(A) All new nonferrous smelters regulated under this subsection shall have installed, calibrated, maintained and operated an instrument for continuously monitoring and recording emissions of sulfur dioxide following performance specifications 2 and 3 of 40 CFR Part 60, Appendix B and following the quality assurance procedure in 40 CFR Part 60, Appendix F.~~

~~(B) The owner or operator of any new nonferrous smelter subject to provisions of this subparagraph shall maintain a file of all measurements required, including compliance status records and excess emissions measurements. These records and measurements shall be retained for at least two years following the date of such measurements, and made available for inspection by the Air Quality Division or its representative during normal business hours.~~

~~[NOTE: Subsection (d) has been deleted since there are currently no such facilities in the State. NSPS 40 CFR 60 Subparts P, Q, and R set standards for primary copper, zinc and lead smelters respectively. In the event such a facility locates in the State, the appropriate NSPS subpart should be sufficient.]~~

~~(e) **Paper pulp mill.** [Renamed and moved to 252:100-31-27]~~

~~(1) **Emission limit.** The emission of sulfur oxides, calculated as sulfur dioxide, from the blow pits, washer vents, storage tanks, digester relief, and recovery furnace of any new paper pulp mill shall not exceed~~

~~eighteen pounds per air dried ton of pulp produced, maximum two hour average.~~

~~(2) **Emission monitoring.**~~

~~(A) All new paper pulp mills shall have installed, calibrated, maintained and operated instruments for continuously monitoring and recording emissions of sulfur dioxide from the recovery system gas cleaning equipment and other locations as required by the Executive Director. The instruments installed and used pursuant to this Section shall have a confidence level of at least 95 percent and be accurate within +20 percent and shall be calibrated following performance specifications 2 and 3 of 40 CFR Part 60, Appendix B and following the quality assurance procedure in 40 CFR Part 60, Appendix F.~~

~~(B) The owner or operator of any new paper pulp mill subject to provisions of this subparagraph shall maintain files of all measurements required, including compliance status records and excess emissions measurements. These records and measurements shall be retained for at least two years following the date of such measurements, and made available for inspection by the Air Quality Division or its representative during normal business hours.~~

252:100-31-26. Hydrogen sulfide~~Petroleum and natural gas processes~~

~~(a) **Petroleum and natural gas processes.**~~

~~(1) **Emission limit.**~~

~~(A) No person shall cause, suffer, or allow the discharge into the atmosphere of hydrogen sulfide from any new petroleum or natural gas process equipment without removal of the hydrogen sulfide from the exhaust gas or oxidizing it to sulfur dioxide in a system which insures at all times complete combustion of the hydrogen sulfide, with the exhaust gas then being emitted from a stack at least 50 feet in height. Efficiency of these removal or oxidation systems shall not allow to be emitted more than 0.3 pound per hour of hydrogen sulfide as a two hour maximum, with a maximum efficiency required of 95 percent of the hydrogen sulfide in the exhaust gas. This subparagraph does not apply to pipeline quality sweetened gas. [NOTE: Subparagraph (A) is covered by 252:100-31-26(a)(1) and 252:100-31-26(b)(1).]~~

~~(B) Direct oxidation of hydrogen sulfide to sulfur oxides without a prior removal step meeting emission limits of 252:100-31-25(c)(1) is not allowed for any system which would allow discharge of more than 100 pounds per hour of sulfur oxides expressed as sulfur dioxide, maximum two hour average. [NOTE: Subparagraph (B) is covered in 252:100-31-26(b)(2).]~~

~~(2) **Emission monitoring.**~~

~~(A) All new petroleum and natural gas processing facilities regulated under this subsection shall have installed, calibrated, maintained and operated an alarm system which will signal noncombustion of the gas. [NOTE: Subparagraph (A) is covered in 252:100-31-26(c).]~~

~~(B) All new petroleum and natural gas processing facilities regulated under this Section shall demonstrate compliance with the ambient air limits of 252:100-31-12(a) using either dispersion modeling or ambient air measurements. [NOTE: Subparagraph (B) is deleted since the limits set in 252:100-31-12(a) are deleted.]~~

~~(b) **Other processes.**~~

~~(1) **Standard.** No person shall cause, let, suffer, or allow any emission of hydrogen sulfide from any source which results in an ambient air concentration of hydrogen sulfide at any given point of 0.1 ppm for a one hour period. This standard shall not apply to ambient air concentrations occurring on the property from which such emission occurs, providing such property, from the emission point to the point of any such concentration is controlled by the person responsible for such emission. [NOTE: Paragraph (1) is covered in 252:100-31-7(a) and (b).]~~

~~(2) **Determination of violation.** Violations of this Section may be determined by the Executive Director by use of appropriate material balances and/or emission factors, and on the basis of the ambient air concentration, or use of appropriate atmospheric dispersion models approved by EPA. Determinations made by the Executive Director using these procedures indicating that the limits set in 252:100-31-26(b)(1) have been exceeded shall constitute prime evidence that the standard has been violated. Source operators may use these procedures in lieu of ambient air monitoring as proof of compliance with limits set in 252:100-31-26(b)(1). [NOTE: Paragraph (2) is covered in 252:100-31-7(c).]~~

~~(a) **Standards**~~

~~(1) **Hydrogen sulfide standards.** Hydrogen sulfide from any new petroleum or natural gas process equipment shall be removed from the exhaust gas stream or it shall be oxidized to sulfur dioxide. Hydrogen sulfide emissions shall be reduced by 95% of the hydrogen sulfide in the exhaust gas. [NOTE: 252:100-31-26(a)(1) was in 252:100-31-26(a)(1)(A) and (B).]~~

~~(2) **Sulfur dioxide standards.**~~

~~(A) **Natural gas processing.** Sulfur oxide emissions, calculated as sulfur dioxide, from any new gas sweetening plant shall be reduced by use of a sulfur recovery plant prior to release of the exhaust gas to the atmosphere. The sulfur recovery plant shall have the sulfur reduction efficiencies required in~~

subparagraphs (C) through (F) of OAC 252:100-31-26(a)(2). [NOTE: This was in 252:100-31-25(c)(1)(A).]

(B) Petroleum refinery processing. Sulfur recovery plants operating in conjunction with any refinery process shall have the sulfur reduction efficiencies required in paragraphs (C) through (F) of OAC 252:100-31-26(a)(2). [NOTE: This was in 252:100-31-25(c)(2).]

(C) Greater than 2.0 LT/D but less than or equal to 5.0 LT/D. When the sulfur content of the exhaust gas stream is greater than 2.0 LT/D but less than or equal to 5.0 LT/D the sulfur dioxide emission reduction efficiency of the sulfur recovery plant shall be at least 75.0%. [NOTE: This was in 252:100-31-25(c)(1)(A). The 100 lb/hr was converted to 1.1 LT/D and upon the request of industry has been increased to 2.0 LT/D to match the NSPS.]

(D) Greater than 5.0 LT/D but less than or equal to 150.0 LT/D. When the sulfur content of the exhaust gas stream is greater than 5.0 LT/D but less than or equal to 150.0 LT/D, the required sulfur dioxide emission reduction efficiency of the sulfur recovery plant shall be calculated using the following formula where Z is the minimum emission reduction efficiency required at all times and X is the sulfur feed rate expressed in LT/D of sulfur rounded to one decimal place.

$$Z = 92.34 (X^{0.00774})$$

[NOTE: This was 252:100-31-25(c)(1)(B).]

(E) Greater than 150.0 LT/D but less than or equal to 1500.0 LT/D. When the sulfur content of the exhaust gas stream is greater than 150.0 LT/D but less than or equal to 1500.0 LT/D, the required sulfur dioxide emission reduction efficiency of the sulfur recovery plant shall be calculated using the following formula where Z is the minimum emission reduction efficiency required at all times and X is the sulfur feed rate expressed in LT/D of sulfur rounded to one decimal place.

$$Z = 88.78 (X^{0.00156})$$

[NOTE: This was in 252:100-31-25(c)(1)(C).]

(F) Greater than 1500.0 LT/D. When the sulfur content of the exhaust gas stream is greater than 1500.0 LT/D, a minimum sulfur dioxide reduction efficiency of 99.5% shall be met. [NOTE: This was in 252:100-31-25(c)(1)(D).]

(b) Exceptions.

(1) Hydrogen sulfide. The requirements of OAC 252:100-31-26(a)(1) shall not apply if hydrogen sulfide emissions do not exceed 0.3 lb/hr, two-hour average. [NOTE: This was in 252:100-31-26(c)(1).]

(2) Sulfur dioxide. The requirements of OAC 252:100-31-26(a)(2) shall not apply to any new petroleum or natural gas process which would emit 100 lb/hr or less of sulfur oxides expressed as sulfur dioxide, two-hour average.

[NOTE: This was in 252:100-31-25(c)(1) and 252:100-31-26(a)(1)(B).]

(c) Emission monitoring for hydrogen sulfide. All new thermal devices for petroleum and natural gas processing facilities regulated under OAC 252:100-31-26(a)(1) shall have installed, calibrated, maintained, and operated an alarm system that will signal noncombustion of the gas. **[NOTE: This was 252:100-31-26(a)(2)(A).]**

252:100-31-27. Pulp mill

(a) Emission limit. The emission of sulfur oxides, calculated as sulfur dioxide, from the blow pits, washer vents, storage tanks, digester relief, and recovery furnace of any new pulp mill shall not exceed 18 lb/T (air dried) of pulp produced, two-hour average.

(b) Emission monitoring. All new pulp mills shall install, calibrate, maintain and operate instruments for continuously monitoring and recording emissions of sulfur dioxide from the recovery system gas-cleaning equipment and other locations as required by the Director. The instruments installed and used pursuant to this Section shall have a confidence level of at least 95% and be accurate within $\pm 20\%$ and shall be calibrated following performance specifications 2 and 3 of 40 CFR Part 60, Appendix B, and following the quality assurance procedures in 40 CFR Part 60, Appendix F.

(c) Recordkeeping. The owner or operator of any new pulp mill subject to provisions of this Section shall maintain files of all measurements required, including compliance status records and excess emissions measurements. These records and measurements shall be retained for at least two years following the date of such measurements and made available for inspection by the Division during normal business hours. **[NOTE: The term "paper pulp mill" is not defined in the rules. Investigation indicates that paper mills (those that do not do make pulp from wood chips, but either use recycle paper or purchase pulp) do not have significant sulfur emissions; therefore, the term paper pulp mill is changed to pulp mill. Although there is an NSPS (Subpart BB) for kraft pulp mills that was promulgated after the limits in Subchapter 31 were set for paper pulp mills, it is difficult to difficult to compare the stringency since the federal rule sets limits primarily in ppm. Therefore, pulp mill standards have been left in the rule. It is possible they are redundant.]**