

**TITLE 252. OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY  
CHAPTER 100. AIR POLLUTION CONTROL  
SUBCHAPTER 31. CONTROL OF EMISSION OF SULFUR COMPOUNDS**

**PART 1. GENERAL PROVISIONS [REVOKED]**

**252:100-31-1. Purpose [AMENDED AND RENUMBERED TO 252:100-31-28]**

~~—————~~ 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 [AMENDED AND RENUMBERED TO 252:100-31-29]**

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

~~—————~~ **"Black liquor solids"** means the dry weight of the solids, which enter the recovery furnaces 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 facility," "existing source," or "existing equipment"** means any facility, source, or equipment that emits sulfur compounds and which is in being prior to July 1, 1972, except that for facilities, sources, or equipment subject to:

~~—————~~ (A) OAC 252:100-31-7(b) and/or OAC 252:100-31-26(a)(1), the date is prior to December 31, 1974, and

~~—————~~ (B) OAC 252:100-31-13, the date is 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 facility," "new installation," "new source," or "new equipment"** means any facility, installation, source, or equipment that emits sulfur compounds and which is not in being on, or which is modified after, July 1, 1972, except that for:

~~—————~~ (A) facilities, installations, sources, or equipment subject to OAC 252:100-31-7(b) and/or OAC 252:100-31-26(a)(1) the date is December 31, 1974;

~~—————~~ (B) petroleum refining facilities, sources, or equipment subject to OAC 252:100-31-26 (a)(2), the date is December 31, 1974; and

~~—————~~ (C) facilities, sources or equipment subject to OAC 252:100-31-13, the date is August 17, 1971.

~~—————~~ **"Petroleum and natural gas process"** means processes used in the processing of crude petroleum and/or natural gas into refined products including, but not limited to, distillation columns, treating columns, catalytic cracking units, catalytic reforming units, sulfur removal equipment, petroleum coke units, flares, heat exchangers, reboilers, jet ejectors, compressors, recompressors and other auxiliary equipment pertinent to the process.

~~—————~~ **"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 H<sub>2</sub>S and CO<sub>2</sub> 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:

## **PART 2. AMBIENT AIR CONCENTRATION LIMITS OR IMPACTS FOR NEW AND EXISTING EQUIPMENT, SOURCES, OR FACILITIES [REVOKED]**

### **252:100-31-7. Ambient air concentration limits or impacts [AMENDED AND RENUMBERED TO 252:100-31-30]**

(a) — **Sulfur oxides.** Emissions of sulfur dioxide from any existing facility or any new petroleum and natural gas process facility with equipment subject to OAC 252:100-31-26(a)(1) shall not impact existing ambient air concentrations of sulfur dioxide by more than:

- (1) 1300 µg/m<sup>3</sup> (0.50 ppm) in a five (5) minute period of any hour;
- (2) 1200 µg/m<sup>3</sup> (0.46 ppm), one hour average;
- (3) 650 µg/m<sup>3</sup> (0.25 ppm), 3-hour average;
- (4) 130 µg/m<sup>3</sup> (0.05 ppm), 24-hour average; or,
- (5) 80 µg/m<sup>3</sup> (0.03 ppm), annual arithmetic mean.

(b) — **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:

(c) — **Exceptions.** The standards set in subsections (a) and (b) of this Section shall not apply to ambient air concentrations or impacts 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:

(d) — **Compliance assurance.** Upon approval of the Director, facility 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 or impact in lieu of ambient air monitoring as proof of compliance with limits set in OAC 252:100-31-7(a) and (b):

## **PART 3. EXISTING EQUIPMENT STANDARDS [REVOKED]**

### **252:100-31-13. Sulfuric acid plants [AMENDED AND RENUMBERED TO 252:100-31-32]**

(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 (H<sub>2</sub>SO<sub>4</sub>).

(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.

(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.

#### **252:100-31-15. Kraft pulp mills [AMENDED AND RENUMBERED TO 252:100-31-33]**

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.

#### **252:100-31-16. Fossil fuel-fired steam generators [AMENDED AND RENUMBERED TO 252:100-31-34]**

(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.

(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.

### **PART 5. NEW EQUIPMENT STANDARDS [REVOKED]**

#### **252:100-31-25. Fuel-burning equipment [AMENDED AND RENUMBERED TO 252:100-31-35]**

(a) — ~~**Emission limits.**~~

(1) ~~**Gas-fired fuel-burning equipment.**~~ 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).

(2) ~~**Liquid-fired fuel-burning equipment.**~~ 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).

~~(3) **Solid fuel-burning equipment.** 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).~~

~~(4) **Combination of fuels burned.** When 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 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:~~

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

~~(b) **Averaging time.** The averaging time for the emission limits set in OAC 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.~~

~~(c) **Emission monitoring, 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.~~

~~(1) **Emission monitoring.** The instruments in OAC 252:100-31-25(c)(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.** A photoelectric or other type smoke detector and recorder shall be used to monitor opacity, except where gaseous fuel is the only fuel burned.~~

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

~~(i) An instrument for continuously monitoring and recording sulfur dioxide emissions shall be used, except where gaseous fuel containing less than 0.1% by weight sulfur is the only fuel burned; or~~

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

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

~~(3) **Recordkeeping.** The owner or operator of any fuel-burning equipment with a rated heat input of 250 MMBtu/hr or greater shall maintain a file of all measurements required in 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 Division or its representatives during normal business hours.~~

## **252:100-31-26. Petroleum and natural gas processes [AMENDED AND RENUMBERED TO 252:100-31-36]**

~~(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.~~

~~(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).~~

~~\_\_\_\_\_ (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).~~

~~\_\_\_\_\_ (C) **Greater than 0.54 LT/D but less than or equal to 5.0 LT/D.** When the sulfur content of the acid gas stream from a new gas sweetening unit or refinery process is greater than 0.54 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%.~~

~~\_\_\_\_\_ (D) **Greater than 5.0 LT/D but less than or equal to 150.0 LT/D.** When the sulfur content of the acid gas stream from a new gas sweetening unit or refinery process 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:  $Z = 92.34 (X^{0.00774})$~~

~~\_\_\_\_\_ (E) **Greater than 150.0 LT/D but less than or equal to 1500.0 LT/D.** When the sulfur content of the acid gas stream from a new gas sweetening unit or refinery process 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:  $Z = 88.78 (X^{0.0156})$~~

~~\_\_\_\_\_ (F) **Greater than 1500.0 LT/D.** When the sulfur content of the acid gas stream from a new gas sweetening unit or refinery process is greater than 1500.0 LT/D, a minimum sulfur dioxide reduction efficiency of 99.5% shall be met.~~

~~(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.~~

~~(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. The requirements of paragraph (2) of subsection (a) of this Section can be met alternatively by establishing that the sulfur content of the acid gas stream from any gas sweetening plant or refinery process is 0.54 LT/D or less.~~

~~(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.~~

### **252:100-31-27. Pulp mills [AMENDED AND RENUMBERED TO 252:100-31-37]**

~~(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.

(e) — **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.

### **252:100-31-28. Purpose**

The purpose of this subchapter is to control emissions of sulfur compounds from stationary sources.

### **252:100-31-29. Definitions**

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

**"Alternative fuel"** means fuel derived from any source other than petroleum, natural gas or coal. Alternative fuel includes, but is not limited to, biogas, waste-derived fuel, recycled tires, tire-derived fuel, and wood-fuel as defined in OAC 252:100-19-1.

**"Black liquor solids"** means the dry weight of the solids that 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).

**"Kraft pulp mill"** means any facility that produces pulp from wood by cooking (digesting) wood chips in a water solution of sodium hydroxide and sodium sulfide (white liquor) at high temperature and pressure. Regeneration of the cooking chemicals through a recovery process is also considered part of the kraft pulp mill.

**"Petroleum and natural gas process equipment"** means the process equipment used to convert crude petroleum and/or natural gas into refined products including, but not limited to, distillation columns, treating columns, catalytic cracking units, catalytic reforming units, sulfur removal equipment, petroleum coke units, flares, heat exchangers, reboilers, jet ejectors, compressors, recompressors, and any other auxiliary equipment pertinent to the process.

**"Petroleum and natural gas process facility"** means a facility that is engaged in converting crude petroleum and/or natural gas into refined products. Such facilities include petroleum refineries and natural gas processing plants, but does not include petroleum and natural gas production and transportation facilities.

**"Pulp mill process"** means any mechanical, chemical, or combination mechanical/chemical pulping process.

**"Pulp mill process equipment"** means the process equipment used in production of pulp from wood chips or bolts which may include, but are not limited to, debarkers, chippers, digesters, blow tanks, washers, condensers, evaporators, recovery furnaces, lime kilns, smelt-dissolving tanks, mixers, heat exchangers, gas scrubbers, and any other auxiliary equipment 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.

"Steam-generator unit" means a boiler or other closed vessel in which water is heated to produce vaporized water for use in various processes or heating applications.

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

"Sweetening unit" means a process device that separates the hydrogen sulfide (H<sub>2</sub>S) and carbon dioxide (CO<sub>2</sub>) contents from the gas stream.

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

### **252:100-31-30. Allowable sulfur dioxide (SO<sub>2</sub>) and hydrogen sulfide (H<sub>2</sub>S) ambient air concentrations for new and existing sources**

(a) **Hydrogen sulfide.** Emissions of H<sub>2</sub>S from any facility shall not cause or contribute to an ambient air concentration of H<sub>2</sub>S greater than 280 µg/m<sup>3</sup> (0.2 ppm at standard conditions), 24-hour average.

(b) **Sulfur dioxide.** Emissions of SO<sub>2</sub> from any facility shall not cause or contribute to ambient air concentrations of SO<sub>2</sub> greater than:

(1) 1300 µg/m<sup>3</sup> (0.50 ppm at standard conditions) in any five-minute period of any hour.

(2) 1200 µg/m<sup>3</sup> (0.46 ppm at standard conditions), one-hour average.

(3) 650 µg/m<sup>3</sup> (0.25 ppm at standard conditions), three-hour average.

(4) 130 µg/m<sup>3</sup> (0.05 ppm at standard conditions), 24-hour average.

(5) 80 µg/m<sup>3</sup> (0.03 ppm at standard conditions), annual arithmetic mean.

### **252:100-31-31. Excess emission reporting**

Any excess emission resulting from a violation of any emission limit contained in this subchapter shall be reported in accordance with the requirements of OAC 252:100-9. In the event that the excess emission is also a violation of an applicable 40 CFR Part 60 emission limit, the owner or operator may report the excess emission as part of an alternative reporting schedule provided the following requirements are met.

(1) The excess emission occurs at the same emission unit at the same time.

(2) The Subchapter 31-based emission limit and the applicable 40 CFR Part 60 emission limit are for the same regulated air pollutant, have the same averaging time, and the same units of measure.

(3) The owner or operator of the facility has applied for or obtained an alternative reporting schedule for the applicable 40 CFR Part 60 emission standard in compliance with the requirements of OAC 252:100-9-7(d).

### **252:100-31-32. Requirements for sulfuric acid plants that were in being on or before August 17, 1971**

(a) **Sulfuric acid mist.** Emissions of sulfuric acid mist from any sulfuric acid plant subject to the requirements of this section shall not exceed 0.5 pounds per ton of acid produced (250 grams per metric ton). The acid production shall be expressed as 100% sulfuric acid (H<sub>2</sub>SO<sub>4</sub>).

(b) **Emission monitoring required.** Continuous monitoring of SO<sub>2</sub> emissions is required for sulfuric acid plants subject to the requirements of this section with a production capacity greater than 300 tons per day expressed as 100% acid, except where the conversion of sulfuric acid is utilized to prevent emissions of sulfur dioxide or other sulfur compounds.

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

**252:100-31-33. Requirements for kraft pulp mills that were in being on or before July 1, 1972**

Any kraft pulp mill subject to this section shall comply with the following requirements.

(1) TRS emissions from any recovery furnace, measured as H<sub>2</sub>S on a dry basis and on a 12-hour average, converted to eight percent (8%) by volume oxygen, shall not exceed 40 ppm.

(2) TRS emissions from any lime kiln, measured as H<sub>2</sub>S on a dry basis and on a 12-hour average, corrected to ten percent (10%) by volume oxygen, shall not exceed 40 ppm.

(3) TRS emissions from any smelt-dissolving tank shall not exceed 0.033 pounds TRS per ton of black liquor solids as H<sub>2</sub>S (0.016 g TRS/kg of black liquor solids as H<sub>2</sub>S) for a 12-hour average.

(4) Non-condensable gases from all evaporators and digester systems shall be efficiently incinerated or otherwise treated to limit emissions of TRS measured as H<sub>2</sub>S to less than five (5) ppmv at standard conditions on a dry basis.

**252:100-31-34. Requirements for fuel-fired steam generator units that were in being on or before July 1, 1972**

(a) Emission monitoring required. Continuous monitoring of SO<sub>2</sub> emissions is required for any fossil fuel-fired steam generator unit subject to the requirements of this section when the unit utilizes an air pollution abatement operation to reduce the emissions of sulfur oxides. Continuous monitoring of oxygen or carbon dioxide is required if it is necessary to convert SO<sub>2</sub> monitoring results.

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

**252:100-31-35. Requirements for fuel-burning equipment that was not in being on or before July 1, 1972 or that is modified after July 1, 1972**

(a) Emissions attributable to the burning of fuel. Emissions of SO<sub>x</sub> measured as SO<sub>2</sub> shall not exceed the limits specified herein.

(1) Gas fuel. Emissions of SO<sub>x</sub> from fuel-burning equipment using gas fuel shall not exceed 0.2 lb/MMBTU heat input (86 ng/J).

(2) Liquid fuel. Emissions of SO<sub>x</sub> from fuel-burning equipment using liquid fuel shall not exceed 0.8 lb/MMBTU heat input (340 ng/J).

(3) Solid fuel. Emissions of SO<sub>x</sub> from fuel-burning equipment using solid fuel shall not exceed 1.2 lb/MMBTU heat input (520 ng/J).

(4) Combination of fuels burned. When different types of fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration unless a secondary fuel is used in de minimis quantities (less than five percent (5%) of total BTU heat input annually). Compliance shall be determined using the following formula 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:  $SO_x \text{ limit} = (0.2X + 0.8Y + 1.2Z)/(X + Y + Z)$ .

(b) Averaging time. The averaging time for the emission limits set in OAC 252:100-31-35(a) is three (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.

**(c) Emission monitoring, fuel monitoring, and recordkeeping for fuel-burning equipment with design heat input values of 250 MMBTU/hr or more.**

**(1) Emission monitoring required.** Monitoring systems required in (A) and (B)(i) of this paragraph shall be installed, calibrated, maintained, and operated according to Performance Specifications 2 and 3 in Appendix B to Part 60 of 40 CFR.

**(A) Opacity.** A continuous opacity monitor (COM) system shall be used to monitor opacity, except where gaseous fuel is the only fuel burned.

**(B) Sulfur dioxide.**

**(i) A continuous emission monitor (CEM) system for SO<sub>x</sub> emissions shall be used, except where gaseous fuel containing less than 160 ppmv at standard conditions on a dry basis (0.1% by weight) sulfur is the only fuel burned; or**

**(ii) A solid or liquid fuel sampling and analysis method is used to determine SO<sub>x</sub> emission compliance.**

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

**(3) Recordkeeping.** The owner or operator shall maintain records of all measurements required in (1) and (2) of this subsection in accordance with the applicable requirements of OAC 252:100-43-7, including compliance status records and excess emissions measurements.

**(d) Alternative fuel.** An alternative fuel may be used in fuel-burning equipment provided the following criteria are met.

**(1) The use of an alternative fuel does not cause:**

**(A) The SO<sub>2</sub> emission limits in (a) of this section to be exceeded, or**

**(B) The ambient air concentration limits for H<sub>2</sub>S and SO<sub>x</sub> contained in OAC 252:100-31-30 to be exceeded.**

**(2) The use of an alternative fuel does not create a condition for violation of any TAC MAAC listed in Appendix O to this chapter. (See OAC 252:100-42)**

**(3) The use of an alternative fuel is not disallowed under any applicable 40 CFR Part 60, 61 or 63 rule or results in a violation of any applicable emission standard therein.**

**(4) The use of an alternative fuel does not create or contribute to a violation of any NAAQS or PSD increment.**

**(5) The use of an alternative fuel is allowed under an enforceable permit.**

**252:100-31-36. Requirements for petroleum and natural gas processes that were not in being on or before December 31, 1974 or are modified after December 31, 1974**

**(a) Emissions.**

**(1) Hydrogen sulfide.** H<sub>2</sub>S contained in the waste gas stream from any petroleum or natural gas process equipment shall be reduced by 95% by removal or by being oxidized to SO<sub>2</sub> prior to being emitted to the ambient air. This requirement shall not apply if a facility's emissions of H<sub>2</sub>S do not exceed 0.3 lb/hr, two-hour average.

**(2) Oxides of sulfur.** The following requirements apply to any gas sweetening unit or petroleum refinery process equipment with the sulfur content of greater than 0.54 LT/D in the acid gas stream. Alternatively, any gas sweetening unit or petroleum refinery process equipment with an emission rate of 100 lb/hr or less of SO<sub>x</sub> expressed as SO<sub>2</sub>, two-hour average shall be considered to be below this threshold.

\_\_\_\_\_ (A) **Natural gas sweetening units.** The sulfur content of any acid gas stream from any gas sweetening unit shall be reduced by use of a sulfur recovery unit prior to release of the gas to the ambient air. The sulfur recovery unit shall have the sulfur recovery efficiencies required in (C) through (F) of this paragraph.

\_\_\_\_\_ (B) **Petroleum refinery processing.** Sulfur recovery units operating in conjunction with any refinery process shall have the sulfur recovery efficiencies required in (C) through (F) of this paragraph.

\_\_\_\_\_ (C) **Sulfur content greater than 0.54 LT/D but less than or equal to 5.0 LT/D.** When the sulfur content of the acid gas stream from a gas sweetening unit or refinery process is greater than 0.54 LT/D but less than or equal to 5.0 LT/D, the sulfur recovery efficiency of the sulfur recovery unit shall be at least 75%.

\_\_\_\_\_ (D) **Sulfur content greater than 5.0 LT/D but less than or equal to 150.0 LT/D.** When the sulfur content of the acid gas stream from a gas sweetening unit or refinery process is greater than 5.0 LT/D but less than or equal to 150.0 LT/D, the required sulfur recovery efficiency of the sulfur recovery unit shall be calculated using the following formula, where Z is the minimum sulfur recovery efficiency required and X is the sulfur feed rate expressed in LT/D of sulfur rounded up to one decimal place:  $Z = 92.34X^{0.00774}$ .

\_\_\_\_\_ (E) **Sulfur content greater than 150.0 LT/D but less than or equal to 1500.0 LT/D.** When the sulfur content of the acid gas stream from a gas sweetening unit or refinery process is greater than 150.0 LT/D but less than or equal to 1500.0 LT/D, the required sulfur recovery efficiency of the sulfur recovery plant shall be calculated using the following formula, where Z is the sulfur recovery efficiency required and X is the sulfur feed rate expressed in LT/D of sulfur rounded up to one decimal place:  $Z = 88.78X^{0.0156}$ .

\_\_\_\_\_ (F) **Sulfur content greater than 1500.0 LT/D.** When the sulfur content of the acid gas stream from a gas sweetening unit or refinery process is greater than 1500.0 LT/D, a minimum sulfur recovery efficiency shall be at least 99.5%.

(b) **Alarm systems required for hydrogen sulfide.** All thermal devices used to control H<sub>2</sub>S emissions from petroleum and natural gas processing facilities regulated under (a)(1) of this section shall install, calibrate, maintain, and operate an alarm system that will signal a malfunction.

**252:100-31-37. Requirements for pulp mill process equipment that was not in being before December 31, 1974 or is modified after December 31, 1974**

(a) **Emission limit.** The emission of SO<sub>x</sub>, calculated as SO<sub>2</sub>, from the pulp mill process equipment shall not exceed 18 pounds per ton (air dried) of pulp produced, two-hour average.

(b) **Emission monitoring required.** Any pulp mill process equipment subject to the requirements of this section shall continuously monitor and record SO<sub>2</sub> emissions from the recovery system gas-cleaning equipment and other locations as required by the Director.

(c) **Installation, calibration, and maintenance of emission monitoring systems.** Emission monitoring systems required in (b) of this section shall have a confidence level of at least 95% and be accurate within plus or minus 20%, and shall be calibrated following Performance Specification 2 and 3 in Appendix B to Part 60 of 40 CFR and the quality assurance procedures in Appendix F to Part 60 of 40 CFR.

(d) **Recordkeeping.** The owner or operator of any pulp mill process equipment subject to requirements of this section shall maintain records of all measurements required, including compliance status records and excess emissions measurements in accordance with the requirements of OAC 252:100-43-7.

