

COMMONWEALTH OF VIRGINIA
STATE AIR POLLUTION CONTROL BOARD
REGULATIONS FOR THE CONTROL AND ABATEMENT OF AIR POLLUTION

9VAC5 CHAPTER 40.
EXISTING STATIONARY SOURCES.

PART II.
EMISSION STANDARDS.

ARTICLE 13.
EMISSION STANDARDS FOR PULP AND PAPER MILLS (RULE 4-13).

- 9VAC5-40-1660. Applicability and designation of affected facilities.
- 9VAC5-40-1670. Definitions.
- 9VAC5-40-1680. Standard for particulate matter.
- 9VAC5-40-1690. Standard for total reduced sulfur.
- 9VAC5-40-1700. Control technology guidelines.
- 9VAC5-40-1710. Standard for visible emissions.
- 9VAC5-40-1720. Standard for fugitive dust/emissions.
- 9VAC5-40-1730. Standard for odor.
- 9VAC5-40-1740. Standard for toxic pollutants.
- 9VAC5-40-1750. Compliance.
- 9VAC5-40-1760. Test methods and procedures.
- 9VAC5-40-1770. Monitoring.
- 9VAC5-40-1780. Notification, records, and reporting.
- 9VAC5-40-1790. Registration.
- 9VAC5-40-1800. Facility and control equipment maintenance or malfunction.
- 9VAC5-40-1810. Permits.

9VAC5-40-1660. Applicability and designation of affected facilities.

A. The affected facilities in pulp and paper mills to which the provisions of this article apply are: each recovery furnace, each smelt dissolving tank, each lime kiln, each slaker tank, and each kraft wood pulping operation. For the purpose of this article, a kraft wood pulping operation is comprised only of any combination of the following units: recovery furnaces, lime kilns, digester systems, multiple-effect evaporator systems, condensate stripper systems and smelt dissolving tanks.

B. The provisions of this article apply throughout the Commonwealth of Virginia.

C. The provisions of this article do not apply to affected facilities subject to Article 5 (9VAC5-50-400 et seq.) of 9VAC5 Chapter 50, except to the extent such pollutants are emitted which are not subject to standards of performance in Article 5 (9VAC5-50-400 et seq.) of 9VAC5 Chapter 50.

9VAC5-40-1670. Definitions.

A. For the purpose of these regulations and subsequent amendments or any orders issued by the board, the words or terms shall have the meaning given them in subsection C of this section.

B. As used in this article, all terms not defined here shall have the meaning given them in 9VAC5 Chapter 10 (9VAC5-10-10 et seq.), unless otherwise required by context.

C. Terms defined.

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

"Condensate stripper system" means a column, and associated condensers, used to strip, with air or steam, total reduced sulfur compounds from condensate streams from various processes within a kraft pulp mill.

"Cross recovery furnace" means a furnace used to recover chemicals consisting primarily of sodium and sulfur compounds by burning black liquor which on a quarterly basis contains more than 7.0% by weight of the total pulp solids from the neutral sulfite or other semichemical process and has a green liquor sulfidity of more than 28%.

"Digester system" means each continuous digester or each batch digester used for the cooking of wood in white liquor, and associated flash tanks, below tanks, chip steamers, and condensers.

"Green liquor sulfidity" means the sulfidity of the liquor which leaves the smelt dissolving tank.

"Kraft pulp mill" means any facility which 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.

"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 condensers and hotwells used to concentrate the spent cooking liquid that is separated from the pulp (black liquor).

"Neutral sulfite semichemical pulping operation" means any operation in which pulp is produced from wood by cooking (digesting) wood chips in a solution of sodium sulfite and sodium bicarbonate, followed by mechanical defibrating (grinding).

"New design recovery furnace" means a straight kraft recovery furnace that has both membrane wall or welded wall construction and emission control designed air systems. A new design furnace shall have stated in its contract a TRS performance guarantee or that it was designed with air pollution control as an objective.

"Old design recovery furnace" means a straight kraft recovery furnace that does not have membrane wall or welded wall construction or emission control designed air systems.

"Pulp and paper mill" means any kraft pulp mill or any paper mill using a semichemical pulping 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.

"Semichemical pulping process" means any pulp manufacturing process in which the active chemicals of the liquor used in cooking (digesting) wood chips to their component parts in a pressurized vessel (digester) are primarily a liquor of sodium hydroxide and sodium carbonate. The major difference between all semichemical techniques and those of kraft and acid sulfite processes is that only a portion of the lignin is removed during the cooking (digesting), after which the pulp is further reduced by mechanical disintegration.

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

"Straight kraft recovery furnace" means a furnace used to recover chemicals consisting primarily of sodium and sulfur compounds by burning black liquor which on a quarterly basis contains 7.0% by weight or less of the total pulp solids from the neutral sulfite or other semichemical process or has green liquor sulfidity of 28% or less.

"Total reduced sulfur" or "TRS" means the sum of the following sulfur compounds (hydrogen sulfide, methyl mercaptan, dimethyl sulfide and dimethyl disulfide, reported as hydrogen sulfide) that are released during any kraft wood pulping operation.

"Twenty-four hour average" means the average of data over a 24-hour period beginning at midnight.

9VAC5-40-1680. Standard for particulate matter.

No owner or other person shall cause or permit to be discharged into the atmosphere from any group of similar affected facilities specified below any particulate emissions in excess of the following limits:

Affected Facility	Maximum Allowable Emission of Particulate in Lb/Equivalent Ton of Air Dried Pulp
All Recovery Furnace Units	3.00
All Smelt Dissolving Tank Units	0.75
All Lime Kiln Units	1.00
All Slaker Tank Units	0.30

9VAC5-40-1690. Standard for total reduced sulfur.

A. No owner or other person shall cause or permit to be discharged into the atmosphere from any kraft wood pulping operation unit specified below any total reduced sulfur emissions in excess of the following limits:

1. Recovery furnaces.

a. Old design furnaces -- 20 ppm by volume on a dry basis, corrected to 8.0% oxygen.

b. New design furnaces -- 5 ppm by volume on a dry basis, corrected to 8.0% oxygen.

c. Cross recovery furnaces -- 25 ppm by volume on a dry basis, corrected to 8.0% oxygen.

2. Digester systems -- 5 ppm by volume on a dry basis, corrected to 10% oxygen.

3. Multiple-effect evaporator systems -- 5 ppm by volume on a dry basis, corrected to 10% oxygen.

4. Lime kilns -- 20 ppm by volume on a dry basis, corrected to 10% oxygen.

5. Condensate stripper systems -- 5 ppm by volume on a dry basis, corrected to 10% oxygen.

6. Smelt dissolving tanks -- 0.033 pounds per ton black liquor solids as H₂S.

B. Achievement of the emission standards in this section by use of methods in 9VAC5-40-1700 will be acceptable to the board.

9VAC5-40-1700. Control technology guidelines.

The control method should consist of one of the following:

1. Combustion of gases in a lime kiln or recovery furnace subject to the

provisions of this article.

2. Combustion of gases in equipment or a device which is not subject to the provisions of this article and which is subjected to a minimum temperature of 1200°F for at least 0.5 seconds.

3. Any control method of equal or greater efficiency to the method in subsection B of this section, provided such method is approved by the board.

9VAC5-40-1710. Standard for visible emissions.

A. The provisions of Article 1 (9VAC5-40-60 et seq.) of this chapter (Emission Standards for Visible Emissions and Fugitive Dust/Emissions, Rule 4-1) apply except with regard to recovery furnaces; for such facilities the provisions in subsection B of this section apply instead of 9VAC5-40-80 A.

B. No owner or other person shall cause or permit to be discharged into the atmosphere from any recovery furnace any visible emissions which exhibit greater than 35% opacity. Failure to meet the requirements of this section because of the presence of water vapor shall not be a violation of this section.

9VAC5-40-1720. Standard for fugitive dust/emissions.

The provisions of Article 1 (9VAC5-40-60 et seq.) of this chapter (Emission Standards for Visible Emissions and Fugitive Dust/Emissions, Rule 4-1) apply.

9VAC5-40-1730. Standard for odor.

The provisions of Article 2 (9VAC5-40-130 et seq.) of this chapter (Emission Standards for Odor, Rule 4-2) apply.

9VAC5-40-1740. Standard for toxic pollutants.

The provisions of Article 3 (9VAC5-40-160 et seq.) of this chapter (Emission Standards for Toxic Pollutants, Rule 4-3) apply.

9VAC5-40-1750. Compliance.

The provisions of 9VAC5-40-20 (Compliance) apply.

9VAC5-40-1760. Test methods and procedures.

The provisions of 9VAC5-40-30 (Emission Testing) apply.

9VAC5-40-1770. Monitoring.

A. The provisions of 9VAC5-40-40 (Monitoring) apply, with any addition or modification deemed appropriate to meet the needs of subsection B of this section.

B. The owner of a kraft pulp mill shall by October 1, 1990:

1. Install, certify, maintain and operate continuous monitoring equipment to monitor and record the concentration of TRS emissions on a dry basis and the percentage of oxygen by volume on a dry basis in the gases discharged into the atmosphere from any lime kiln or recovery furnace. The location of each monitoring system must be approved by the board.

2. Install, calibrate, maintain, and operate a monitoring device which measures the combustion temperature at the point of incineration of effluent gases which are emitted from any lime kiln, recovery furnace, digester system, multiple-effect evaporator system, or condensate stripper system. The monitoring device is to be certified by the manufacturer to be accurate within 1.0% of the temperature being measured.

C. The minimum data capture and validity requirements shall be as follows:

1. Valid TRS and oxygen data shall be obtained for no less than 75% of the operating hours of each quarter. Section 4 of Procedure 1 of Appendix F of 40 CFR 60 shall be used to determine valid data.

2. For TRS or oxygen concentrations, a valid data hour shall have at least 50% valid readings.

3. A 24-hour average TRS or oxygen concentration shall be considered valid if at least 50% of the operating hours in the 24-hour period are valid data hours.

4. Valid temperature data shall be obtained for no less than 90% of the operating time of each quarter.

9VAC5-40-1780. Notification, records, and reporting.

A. The provisions of 9VAC5-40-50 (Notification, Records and Reporting) apply.

B. Any owner subject to the provisions of 9VAC5-40-1770 B shall:

1. Calculate and record on a daily basis the 24-hour average TRS concentration for each operating day for each recovery furnace and lime kiln. Each 24-hour average shall be determined as the arithmetic mean of the appropriate 24 contiguous 1-hour average TRS concentrations provided by each continuous monitoring system installed under 9VAC5-40-1770 B 1.

2. Calculate and record on a daily basis the 24-hour average oxygen

concentration for each operating day for each recovery furnace and lime kiln. These 24-hour averages shall correspond to the 24-hour average TRS concentration under subsection B 1 of this section and shall be determined as an arithmetic mean of the appropriate 24 contiguous one-hour average oxygen concentrations provided by each continuous monitoring system installed under 9VAC5-40-1770 B 1.

3. Correct all 24-hour average TRS concentrations to 10 volume percent oxygen, except that all 24-hour average TRS concentrations from a recovery furnace shall be corrected to 8 volume percent using the following equation:

$$C_{corr} = C_{uncorr} \times (21 - X)/(21 - Y)$$

where:

C_{corr} = the concentration corrected for oxygen.

C_{uncorr} = the concentration uncorrected for oxygen.

X = the volumetric oxygen concentration in percentage to be corrected (8.0 for recovery furnaces and 10 for lime kilns, incinerators, or other devices).

Y = the measured 24-hour average volumetric oxygen concentration.

4. Record continuously on a daily basis the temperature of any applicable point of incineration.

5. Record on a daily basis the periods of operation for each operating day for each recovery furnace and lime kiln.

C. For the purpose of reports required under 9VAC5-40-50 C, the following information shall be reported:

1. For emissions from any recovery furnace, all 24-hour average TRS concentrations above the applicable emission standard in 9VAC5-40-1690.

2. For emissions from any lime kiln, all 24-hour average TRS concentrations above the applicable emission standard in 9VAC5-40-1690.

3. For emissions from any digester system, multiple-effect evaporator system, or condensate stripper system, all periods in excess of five minutes and their duration during which the combustion temperature is less than 1200°F if the gases are combusted in an incinerator or other device approved by the board which does not generate TRS.

4. For each recovery furnace or lime kiln, the periods of operation.

D. Each owner subject to the provisions of 9VAC5-40-1770 B 1 shall develop and implement a quality assurance plan. At a minimum the plan shall provide for daily calibration drift checks, periodic preventive maintenance, and annual audits. Section 3 of Procedure 1 of Appendix F of 40 CFR 60 may be used as a guide by which to pattern the plan.

9VAC5-40-1790. Registration.

The provisions of 9VAC5-20-160 (Registration) apply.

9VAC5-40-1800. Facility and control equipment maintenance or malfunction.

The provisions of 9VAC5-20-180 (Facility and Control Equipment Maintenance or Malfunction) apply.

9VAC5-40-1810. Permits.

A permit may be required prior to beginning any of the activities specified below if the provisions of 9VAC5 Chapter 50 (9VAC5-50-10 et seq.) and 9VAC5 Chapter 80 (9VAC5-80-10 et seq.) apply. Owners contemplating such action should review those provisions and contact the appropriate regional office for guidance on whether those provisions apply.

1. Construction of a facility.
2. Reconstruction (replacement of more than half) of a facility.
3. Modification (any physical change to equipment) of a facility.
4. Relocation of a facility.
5. Reactivation (restart-up) of a facility.
6. Operation of a facility.

HISTORICAL NOTES:

Derived from: Rule 4-13 of Part IV of VR 120-01 (§ 120-01-1301 through § 120-01-1316)

Effective Date: March 17, 1972

Promulgated: March 17, 1972

Amended: August 11, 1972

Amended: August 9, 1975

Amended: August 3, 1979

Amended: January 1, 1985

Amended: October 1, 1989

Amended: April 1, 1999

REG\VAC\413