

TEXAS AIR CONTROL BOARD PLAN FOR THE CONTROL
OF SULFURIC ACID MIST, TOTAL REDUCED SULFUR, AND
FLUORIDE EMISSIONS FROM EXISTING FACILITIES

I. INTRODUCTION

The Environmental Protection Agency (EPA) has published New Source Performance Standards (NSPS) for several types of facilities, including sulfuric acid plants, kraft pulp mills, primary aluminum plants, and phosphate fertilizer plants. The following facilities, however, are not required to meet NSPS control requirements:

1. Sulfuric acid plants built or modified before August 17, 1971;
2. Kraft pulp mills built or modified before September 24, 1976;
3. Primary aluminum plants built or modified before October 23, 1974; and
4. Phosphate fertilizer plants built or modified before October 22, 1974.

These existing facilities are addressed in Section 111(d) of the Federal Clean Air Act (FCAA).

Section 111(d) requires that the states set emissions limits for existing facilities for which NSPS would apply if the facility were new. Section 111(d) emission limits are set for pollutants not controlled as criteria pollutants under Section 108(a) of the FCAA or as hazardous air pollutants under Section 112(b)(A).

In Subpart B of 40 CFR 60, EPA requires states to develop and implement a control plan for 111(d) facilities once a guideline document has been published. EPA has published the following guidelines:

1. Control of Sulfuric Acid Mist Emissions from Existing Sulfuric Acid Production Units, EPA-450/2-77-019;
2. Kraft Pulping-Control of TRS Emissions from Existing Mills, EPA-450/2-78-003b;
3. Primary Aluminum: Guidelines for Control of Fluoride Emissions from Existing Primary Aluminum Plants, EPA-450/2-78-0496; and
4. Control of Fluoride Emissions from Existing Phosphate Fertilizer Plants, EPA-450/2-77-005.

The following plans contain strategies for controlling emissions from sulfuric acid production units and kraft pulp mills. Future amendments will address primary aluminum plants and phosphate fertilizer plants.

II. CONTROL STRATEGY

A. Plan for Control of Sulfuric Acid Mist Emissions from Sulfuric Acid Plants

1. Emission Standards

Texas Air Control Board (TACB) Regulation II, Control of Air Pollution from Sulfur Compounds, has been revised to require sulfuric acid plants in the State of Texas to limit emissions of sulfuric acid mist to no more than 0.50 pound per ton of 100 percent sulfuric acid produced. The term sulfuric acid mist includes sulfur trioxide and sulfuric acid vapor, and sulfuric acid liquid mist, as measured by Reference Method 8 (40 CFR 60, Appendix A).

2. Available Control Techniques

EPA guidelines state effective control of stack gas acid mist emissions can be achieved with electrostatic precipitators or fiber mist eliminators.

3. 111(d) Facilities Emitting Sulfuric Acid Mist

There are ten sulfuric acid plants in Texas affected by the requirements of 111(d). Eight are operating, two are inactive. Data concerning each of the following facilities have previously been entered into the National Emissions Data System (NEDS). Sulfuric acid (H_2SO_4) emissions based on a 1985 emissions inventory are summarized in Table 1.

4. Compliance Schedules

Sulfuric acid production units shall be in compliance with Regulation II emissions limits by July 31, 1990. All 111(d)

TABLE 1
Sulfuric Acid Mist Emissions
from 111(d) Sulfuric Acid Plants

| Facility/TACB Acct. # | Rated Capacity (tons/day) | H ₂ SO ₄ Emissions (lb/ton of H ₂ SO ₄ produced) |
|--|---------------------------------|--|
| 1. Diamond-Shamrock Corp., Sunray/MR0008T | 100 | 0.28 |
| 2. Amoco Oil Co., Texas City/GB0004L | 400 | 0.29 |
| 3. E.I. duPont de Nemours & Co., Inc., La Porte/HG0218K | 770 | 0.05 |
| 4. Mobil Mining and Minerals, Pasadena/HG0534U | 1660 | 0.02 |
| 5. Rohm and Haas, Texas Inc., Deer Park/HG0632T | 2625 | 0.51 |
| 6. Stauffer Chemical Co., Baytown/HG0696Q | 1100 | 0.35 |
| 7. Stauffer Chemical Co., Houston/HG06970 | 3895 | 0.04 |
| 8. Olin Corporation, Beaumont/JG0073N | 900 | 0.02 |
| 9. Stauffer Chemical Co., Pasadena/HG0240R | inactive since 1984 | 0.00 |
| 10. Stauffer Chemical Co., Fort Worth/TA0325L | inactive since 1982 | 0.00 |

sulfuric acid plants shall submit by December 31, 1989, a 1988 emissions inventory demonstrating compliance with these limits or a compliance plan and schedule for achieving compliance. All compliance schedules must contain legally enforceable increments of progress towards compliance as described at 40 CFR 60.21(h).

B. Plan for Control of Total Reduced Sulfur (TRS)
Emissions from Kraft Pulp Mills

1. Emission Standards

TACB Regulation II has been revised to require kraft pulp mills to reduce emissions of TRS compounds in accordance with the following limits. The term TRS refers to the sum of emissions of hydrogen sulfide (H_2S), methyl mercaptan, dimethyl sulfide, and dimethyl disulfide as measured in accordance with Section B.4. of this plan, relating to Monitoring.

a. Recovery furnaces

1) Old design (furnaces without membrane wall or welded wall construction or emission-control designed air systems): 20 parts per million (ppm) TRS, as H_2S on a dry basis, corrected to 8% oxygen;

2) New design (furnaces with both membrane wall or welded wall construction and emission-control designed air systems): 5 ppm TRS, as H_2S on a dry basis, corrected to 8% oxygen;

3) Cross recovery (furnaces with green liquor sulfidities in excess of 28% and liquor mixtures of more than 7 weight percent solids from the neutral sulfite semichemical

process): 25 ppm TRS, as H₂S on a dry basis, corrected to 10% oxygen;

b. Digester system, multiple-effect evaporator system, or condensate stripper system: 5 ppm TRS, as H₂S on a dry basis, corrected to 8% oxygen, unless gases are burned in a combustion device, such as an incinerator or power boiler, for at least 0.5 second at 1200°F, a lime kiln, or a recovery furnace;

c. Lime kiln: 20 ppm TRS, as H₂S on a dry basis, corrected to 10% oxygen; and

d. Smelt dissolving tank: 0.033 lb/ton black liquor solids as H₂S (0.016 grams per kilogram black liquor solids as H₂S).

These emissions limits are consistent with the EPA guideline document except for the smelt dissolving tank limit. The smelt tank emissions limit of 0.033 lb/ton black liquor solids as H₂S has been adjusted to be consistent with current NSPS limitations established since publication of the applicable 111(d) guidelines.

2. Available Control Technologies

Control technologies for TRS emissions from kraft pulp mills are listed in Table 2.

3. 111(d) Kraft Pulp Mills

There are six kraft pulp mills affected by 111(d) in Texas. Data concerning each of the facilities have previously been entered into NEDS. TRS emissions based on a 1985 emissions inventory are summarized in Table 3. Emissions information is

TABLE 2
Techniques for Controlling TRS Emissions
from Kraft Pulp Mills

| <u>Source</u> | <u>Control Technologies</u> |
|-----------------------------------|--|
| Recovery furnace | Process controls and black liquor oxidation or Process controls and conversion to non-contact evaporator |
| Digester system | Incineration |
| Multiple-effect evaporator system | Incineration |
| Lime Kiln | Process controls and mud washing |
| Brown stock washer system | No control required |
| Black liquor oxidation system | No control required |
| Smelt dissolving tank | Fresh water usage |
| Condensate stripper system | Incineration |

TABLE 3
 TRS Emissions from 111(d) Kraft Pulp Mills
 Tons/Year

| Facility and TACB Account Number | | | | | | |
|----------------------------------|--------------------------------------|--|---------------------------------------|---|--|--------------------------------------|
| Emissions Source | Simpson Paper Co. Pasadena (HG0129K) | Champion International Sheldon (HG0674D) | Temple-Eastex, Inc. Evadale (JC0003K) | Champion International Lufkin (AC0017B) | International Paper Co. Domino (CG0010G) | Inland-Orange, Inc. Orange (OC0019C) |
| Recovery Furnace | #6 7.86 #7 3.67 | 90.90 | #2 70.10 #3 - #4 110.00 | NSPS | #1 647.40 #2 43.80 | #1 159.00 #2 215.00 |
| Digester System | b | a | 12.50 | 48.2 | a | 1.08 |
| Multiple-Effect Evaporator | 11.42 | a | a | 0.44 | NSPS | 0.61 |
| Lime Kiln | 9.51 | 2.00 | #1 9.50 #2 4.50 #3 8.60 | NSPS | 68.10 | 24.70 |
| Smelt Dissolving Tank | 0.48 | 16.10 | 0.40 | NSPS | 12.26 | #1 27.40 #2 37.10 |
| Condensate Stripper System | b | a | a | - | 7.00 | a |

a Emissions Incinerated in Lime Kiln
 b Emissions Incinerated in Thermal Oxidation Plant

provided in tons/year to reflect the most complete and accurate data available to the TACB at this time. However, all affected facilities will submit current emission data as a portion of the required compliance demonstration or compliance plan and schedule specified in Section 5 of this plan.

4. Monitoring

All kraft pulp mills are required by TACB Regulation II to monitor and record the concentration of TRS emissions from any lime kiln, recovery furnace, digester system, multi-effect evaporator system, or condensate stripper system by use of a continuous monitor to determine compliance with specified emissions limits. Monitoring will begin no later than December 31, 1990. TRS concentrations from the continuous emissions monitoring data must be calculated on a 12-hour average basis and recorded daily. Monitors used for continuous emission monitoring shall be certified and shall be operated in accordance with quality control measures specified in Regulation II.

TRS emissions measured during continuous monitoring in any calendar quarter may not be considered a violation if no more than one percent of all 12-hour averages for recovery boilers and two percent of all 12-hour averages for lime kilns exceed the specified emissions limits. The Executive Director must also determine that the facility is maintained and operated in a manner consistent with good air pollution control practices.

Noncontinuous testing also may be required to determine compliance with applicable emission limitations. EPA test methods 16, 16A, 16B (40 CFR 60, Appendix A), or an equivalent test method approved by the Executive Director shall be used for these tests.

5. Compliance Plan and Schedule

Kraft pulp mills shall be in compliance with Regulation II recovery furnace emissions limits by July 31, 1992 and all other applicable emission limits by July 31, 1991. All 111(d) kraft pulp mills shall submit by July 31, 1990, a 1988 emissions inventory demonstrating compliance with these limits or a compliance plan and schedule for achieving compliance. All compliance schedules must contain legally enforceable increments of progress toward compliance as described at 40 CFR 60.21(h).

6. Alternate Emission Limitations

TACB Regulation II provides alternate emission limitations for owners or operators of any kraft pulp mill who are unable to meet the new TRS emission limitations with technically available and economically reasonable control technology. Alternate emissions limitation applications, related technical information, and notification of action by the Executive Director will be forwarded to EPA as documentation of the specific emissions limits an individual facility is expected to meet pursuant to §111(d). Administrative procedures outlined in 40 CFR 60, Subpart B, regarding formal 111(d) control plan revisions will be followed by the TACB. An application for alternate emissions limits will be approved if:

a. The applicant can demonstrate that emissions resulting from the alternate emission limit will not result in an exceedance of any other limitation established by the TACB and will not cause or contribute to a nuisance;

b. The facility has failed to meet the applicable emission limitation during performance tests which were conducted with both the affected facility and the technically

available and economically reasonable control equipment operating in a manner consistent with good engineering practice for minimizing the emissions; and

c. It is technically impractical or economically unreasonable for the facility to comply with the established emission limits.

C. Fluorides from Primary Aluminum Plants
(to be added)

D. Fluorides from Phosphate Fertilizer Plants
(to be added)

III. SOURCE SURVEILLANCE AND REPORTING

A. Source Surveillance

Monitoring compliance of emission limits for 111(d) pollutants will be accomplished through the existing source surveillance procedures of the TACB. The Source Surveillance System established in Section XI of the Texas State Implementation Plan allows for the periodic inspection of all sources with the potential for emitting in excess of 100 tons per year of any regulated pollutant.

B. Reporting

Owners or operators of 111(d) facilities are required by TACB regulations to inspect control equipment, maintain records, and report to the TACB, upon request, emissions of 111(d) pollutants and any other information necessary to determine compliance with this plan. Emissions information must be presented in such a manner as to show the relationship between the measured or estimated amount of emissions and the applicable standard. The TACB Point Source Data Base will be updated with information received in these reports.

The emissions data obtained from 111(d) facilities will be made available to the general public at the TACB central office.

IV. LEGAL AUTHORITY

The Texas Clean Air Act (TCAA) states that the TACB is the state air pollution agency and is the principal authority in the state on matters relating to the quality of air resources and for setting standards, criteria levels, and emission limits. The powers and duties of the TACB are summarized in Subchapter C, Sections 3.01 to 3.28. The TCAA gives the TACB the legal authority to:

1. adopt emission standards and limitations;
2. enforce applicable laws, regulations, and standards, and to seek injunctive relief;
3. obtain information necessary to determine compliance;
4. require recordkeeping and inspections and conduct tests;
5. require owners or operators of stationary sources to install, maintain, and use emissions monitoring devices, and to make periodic reports to the state; and
6. make emissions data available to the public.