

MINUTE ORDER NO. 90-5A

Addition to SIP Regulation
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FINDINGS:

Section 111(d) of the Clean Air Act, as amended, requires states to develop plans to control emission from any existing source for any air pollutant for which air quality criteria have not been issued, or which pollutant is not otherwise controlled under the Clean Air Act, but to which a standard of performance would apply if such existing source were a new source.

In May of 1979, such a plan entitled, "Plan for the Control of Designated Pollutants" (111(d) plan), was developed by the Department to meet these requirements. In the plan were provisions for the amendment of the regulations of the Arkansas Plan of Implementation for Air Pollution Control to add a new subsection 8.1 (Designated Facilities) which is to be amended whenever designated facilities and pollutants are identified by the Environmental Protection Agency (EPA).

The EPA has identified kraft paper mills as a category of facilities which are to be regulated as required by Section 111(d) of the Clean Air Act. Therefore, revision of Subsection 8.1 of the regulations of the Arkansas Plan of Implementation is necessary to control total reduced sulfur emission from kraft pulp mills.

All applicable public participation requirements, if any, with respect to these revisions have been complied with.

ORDER:

Section 8.1 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control is amended by adding a subsection iii for the purpose of controlling total reduced sulfur emission from kraft pulp mills.

COMMISSIONERS

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CHAIRMAN

SUBMITTED BY Wilson Tolefree DATE PASSED 9-26-80

AMENDMENT TO THE REGULATIONS OF THE ARKANSAS PLAN
OF IMPLEMENTATION FOR AIR POLLUTION CONTROL

Section 8.1 of the Regulations is amended as follows by adding a subsection iii for the purpose of controlling total reduced sulfur emissions from Kraft Pulp Mills:

(iii) Kraft Pulp Mills

CSN 520013 International Paper Company of Camden, Arkansas

On and after February 1, 1986, the Kraft Pulp Mill operated by International Paper Company of Camden, Arkansas shall efficiently incinerate all non-condensable gases from all evaporators and digesters and shall have total reduced sulfur emissions to the atmosphere no greater than -

- (1) 40 parts per million (ppm) measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 8 volume percent oxygen from any recovery furnace.
- (2) 40 parts per million measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 10 volume percent oxygen from any lime kiln, and
- (3) 0.0084 grams per kilogram of black liquor solids for a 12 hour average from any smelt dissolving tank.

CSN 350016 International Paper Company of Pine Bluff, Arkansas

On and after February 1, 1986, the Kraft Pulp Mill operated by International Paper Mill of Pine Bluff, Arkansas shall efficiently incinerate all non-condensable gases from all evaporators and

digesters and shall have total reduced sulfur emissions to the atmosphere no greater than -

- (1) 40 parts per million (ppm) measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 8 volume percent oxygen from any recovery furnace.
- (2) 40 parts per million measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 10 volume percent oxygen from any lime kiln, and
- (3) 0.0084 grams per kilogram of black liquor solids for a 12 hour average from any smelt dissolving tank.

CSN 150001 Arkansas Kraft Corporation of Morrilton, Arkansas
On and after February 1, 1986, the Kraft Pulp Mill operated by Arkansas Kraft Corporation of Morrilton, Arkansas shall efficiently incinerate all non-condensable gases from all evaporators and digesters and shall have total reduced sulfur emissions to the atmosphere no greater than -

- (1) 40 parts per million (ppm) measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 8 volume percent oxygen from any recovery furnace.
- (2) 40 parts per million measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 10 volume percent oxygen from any lime kiln, and
- (3) 0.0084 grams per kilogram of black liquor solids for a 12 hour average from any smelt dissolving tank.

CSN 350017 Weyerhaeuser Company of Pine Bluff, Arkansas

On and after February 1, 1986, the Kraft Pulp Mill operated by Weyerhaeuser Company of Pine Bluff, Arkansas shall efficiently incinerate all non-condensable gases from all evaporators and digesters and shall have total reduced sulfur emissions to the atmosphere no greater than -

- (1) 200 parts per million (ppm) measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 8 volume percent oxygen from any recovery furnace.
- (2) 40 parts per million measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 10 volume percent oxygen from any lime kiln, and
- (3) 0.0084 grams per kilogram of black liquor solids for a 12 hour average from any smelt dissolving tank.

CSN 020013 Georgia-Pacific Corporation of Crossett, Arkansas

On and after February 1, 1986, the Kraft Pulp Mill operated by Georgia-Pacific Corporation of Crossett, Arkansas shall efficiently incinerate all non-condensable gases from all evaporators and digesters and shall have total reduced sulfur emissions to the atmosphere no greater than -

- (1) 40 parts per million (ppm) measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 8 volume percent oxygen from any recovery furnace.

- (2) 40 parts per million measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 10 volume percent oxygen from any lime kiln, and
- (3) 0.0084 grams per kilograms of black liquor solids for a 12 hour average from any smelt dissolving tank.

CSN 210036 Potlatch Corporation of McGehee, Arkansas

On and after February 1, 1986, the Kraft Pulp Mill operated by Potlatch Corporation of McGehee, Arkansas shall efficiently incinerate all non-condensable gases from all evaporators and digesters and shall have total reduced sulfur emissions to the atmosphere no greater than -

- (1) 5 parts per million (ppm) measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 8 volume percent oxygen from any recovery furnace.
- (2) 20 parts per million measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 10 volume percent from any lime kiln, and
- (3) 0.0084 grams per kilogram of black liquor solids for a 12 hour average from any smelt dissolving tank.

CSN 410002 Nekoosa Paper Company of Ashdown, Arkansas

On and after February 1, 1986, the Kraft Pulp Mill operated by Nekoosa Paper Company of Ashdown, Arkansas shall efficiently incinerate all non-condensable gases from all evaporators and digesters and shall have total reduced sulfur emissions to the atmosphere no greater than -

- (1) 40 parts per million (ppm) measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 8 volume percent oxygen from #1 recovery furnace;
- (2) 5 parts per million (ppm) measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to a 8 volume percent oxygen from #2 recovery furnace;
- (3) 20 parts per million measured as hydrogen sulfide on a dry basis and on a 12 hour average, corrected to 10 volume percent oxygen from any lime kiln, and
- (4) 0.0084 grams per kilogram of black liquor solids for a 12 hour average from any smelt dissolving tank.

(A) Compliance testing, which may be required as provided by Section 7(a) of these regulations, shall be performed using EPA methods, testing procedures and data reduction as set forth in 40 CFR 60.8. Testing shall be done as required by EPA Reference Method 16 as published in the Federal Register or by such alternative methods and procedures as may be approved by the Director.

(B) All Kraft Paper Mills specified in this Subsection 8.1(c)(iii) shall meet the following increments of progress as such increments relate to the installation of equipment which

will enable the attainment of the emission standard by the final compliance date.

<u>Action</u>	<u>Date</u>
(1) Submit to the Department of Pollution Control and Ecology the control plan for the facility.	August 1, 1981
(2) Let contracts for emission control systems or process modifications or issue purchase orders for the component parts to accomplish emission control or process modification.	February 1, 1982
(3) Initiate on-site construction or installation of emission control equipment or process change.	February 1, 1985
(4) Complete installation or construction and commence operation of the facility with emission control system in place and functioning.	November 1, 1985
(5) Submit to the Department of Pollution Control and Ecology, certification of compliance based upon a sampling program approved by the Director.	February 1, 1986

(C) All affected kraft pulp mills shall submit on a semi-annual basis, reports related to progress in attaining

compliance with these regulations; additionally,
Weyerhaeuser Company (CSN 350017) shall submit reports
relating to research and engineering efforts directed to
achieving lower TRS emission levels from their recovery
boiler.

PLAN FOR THE CONTROL OF DESIGNATED POLLUTANTS
(111(d) PLAN)

SEPTEMBER 26, 1980

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
8001 NATIONAL DRIVE
LITTLE ROCK, ARKANSAS 72209

PLAN FOR THE CONTROL OF DESIGNATED POLLUTANTS
(111(d) PLAN)

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PLAN FOR THE CONTROL OF DESIGNATED POLLUTANTS

(111(d) PLANS)

I. INTRODUCTION

(a) Purpose of Plan:

Section 111(d) of the Clean Air Act as amended in 1977, requires the states to develop plans to control emissions from any existing source for any air pollutant for which air quality criteria have not been issued, or which is not otherwise controlled under the Act, but to which a standard of performance would apply if such existing source were a new source.

Emission standards for designated facilities are legally enforceable regulations setting forth allowable emission rates into the atmosphere or the requirement that specific equipment be used to limit emissions. Ambient standards for designated pollutants are not the goal of the 111(d) process.

(b) Affected Facilities:

The following are categories of facilities which are to be regulated as required by 111(d) of the Clean Air Act and their identification as to emitting health or welfare related pollutants. The date of adoption of regulations to control the affected facilities within the state is also listed.

<u>Date Regulations Were Adopted</u>	<u>Type Facility</u>	<u>Health-Welfare Related</u>	<u>Pollutant</u>
July 1, 1980	Kraft Paper Mill	Welfare	Total Reduced Sulfur

(c) Plan Modifications:

As more designated facilities and pollutants are identified, appropriate sections of this Plan shall be revised as follows:

(1) Section I(b) shall be revised to list the added facilities and the dates of regulation adoption.

(2) Attachments shall be added to Exhibit II to show that the requirements of public participation are met.

(3) Section IV(b) shall be revised to indicate the appropriate part of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control which contains the regulations for any designated facility.

(4) An attachment shall be added to Exhibit IV containing the specific emission standard or equipment specification for a designated facility. This attachment shall include any required compliance schedule.

(5) Section IV(c) shall be revised to justify any exception to the emission rate specified in the guidelines for any designated facility.

(6) Section IV(d) shall be revised to show the final compliance dates of added designated facilities.

(7) Section V(c) shall be revised to show the correlation between the emission rates of a designated facility at the time of regulation adoption and at the rate at the time of final compliance.

(8) An attachment shall be added to Exhibit V to list the emissions inventory for the source containing the designated facility. Such inventory shall be compiled according to the directions of Appendix D (40 CFR 53349 November 17, 1975).

II. PUBLIC PARTICIPATION

Public hearings concerning the control of designated facilities shall be

conducted in the manner directed by 40 CFR 60.23 and records of such hearings shall be available for public inspection for a period of two years following the dates of such hearings.

After adoption of standards for a designated facility, attachments will be added to Exhibit II to show that the required hearing was held in accordance with the above referenced directions as well as a list of witnesses appearing at the hearing and their affiliations. Additionally, a brief summary of each presentation or written submission relevant to the Plan shall be submitted as part of Exhibit II.

III. LEGAL AUTHORITY

The Arkansas Commission on Pollution Control and Ecology is authorized under Part II of the Arkansas Water and Air Pollution Control Act (Ark. Stat. Ann. § 82-1901, et. seq.) to promulgate regulations for the control of any air contaminant which has the potential to adversely affect the health or welfare of the citizens of the State or any area of the State.

Legal authority has been established by promulgation of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control, the provisions of which, in part, are also applicable to the control of designated pollutants.

All legal authority for the purpose of making inspections, adopting emission limitations, requiring compliance schedules, seeking injunctive relief, requiring emissions data submittal, requiring record keeping, conducting tests, requiring emissions monitoring and making emission data available to the public, are provided for in the above mentioned statute. The long standing existence of the Arkansas Air Pollution Control Code and

Regulations of the Arkansas Plan of Implementation for Air Pollution Control are a demonstration of this authority. Emission data is also available to the public under the Arkansas Freedom of Information Act (Act 93 of 1967, amended by Act 1201 of 1976 and Act 652 of 1977). A copy of this Act is submitted under Exhibit III.

No additional legal authority is necessary for the adoption of emission limitations for designated pollutants and no delegation of authority for administering regulations adopted for designated pollutants shall be granted by the Commission on Pollution Control and Ecology to any agency other than the Department of Pollution Control and Ecology. A copy of the Arkansas Statute is submitted under Exhibit III.

IV. EMISSION STANDARDS AND COMPLIANCE SCHEDULES

(a) Emission Standards:

Designated pollutants are identified as either potentially harmful to health or potentially harmful to the public's welfare. Emission limitations suggested in EPA's guideline documents are intended to maintain concentrations of the pollutants well below that which would be harmful.

Emission standards shall be adopted by the Commission which are in keeping with guidance issued pursuant to Section 111(d) of the Clean Air Act.

(b) Regulations for Designated Facilities:

The regulations and compliance schedules limiting emissions from designated facilities are part of Section 8 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control.

The regulations are identified by subsection below:

8.1(c)(iii) Kraft Pulp Mills

The regulations and compliance schedules for facilities regulated by Subsection 8.1 are submitted as part of Exhibit IV.

(c) Exception to Guidelines Emission Rate Recommendation:

An exception to the guideline limits for total reduced sulfur emissions from kraft mills in the state with the exception of Potlatch Corporation of McGehee, Arkansas and Nekoosa Edwards #2 recovery boiler at Ashdown, Arkansas. These two mills have the newest equipment in terms of age, and being "new design" as defined in the guideline document can readily achieve the standards as published. The Arkansas emission standards do not set a numerical value for evaporators and digesters. Rather, the Plan calls for efficient incineration of all non-condensable gases from evaporators and digesters. Since most mills within the State will choose to incinerate these gases in a lime kiln, emissions from their evaporators and digesters would effectively be zero. With this realization, however, the emission standard for the lime kilns was set at 40 parts per million instead of the 20 parts per million suggested guideline standard. Because of an increased load upon the lime kiln, it is not possible for most mills to attain 20 parts per million on a constant basis. This is due to the fact that most mills have batch digesters which vary greatly in the volume and concentration of gases emitted during their cycle.

However, if a mill feels that its lime kiln is at capacity and cannot incinerate the non-condensable gases in the kiln, a separate incineration system will have to be installed. If this becomes a reality,

the affected facility and the Department would negotiate a standard that could be readily achieved. At this time, it is not known whether any mill will have to install an incinerator, hence it would be premature to set a standard until that time.

The guideline standard for recovery boilers is 20 parts per million. The Department has set the standard for all mills with the exceptions as listed previously at 40 and 200 parts per million. This has been done since all recovery boilers in use are "old design". Due to the age of most of these boilers, it is felt that a 20 parts per million standard could not be met for all periods of time without the expenditures of large amounts of capital outlay on black liquor oxidation systems. It should be noted that many of these boilers will be phased out within the next 5 - 10 years. When this happens, the new recovery boilers will have to meet New Source Performance Standards.

The guideline standards as published are essentially the same as the standards of performance for new kraft pulp mills. These standards do not adequately address the age of plants and associated equipment or replacement costs based on real dollars.

This Department considers the guideline standards presented in this Plan to be more realistic and easier to attain and maintain.

(d) Compliance Schedules for Designated Facilities

The industries listed hereafter shall be in full compliance by the dates shown. Detailed compliance schedules for industries which are allowed more than 12 months from the effective date of the applicable regulations are included in the regulations and submitted with the 111(d) Plan under

Exhibit IV.

<u>Industry</u>	<u>Final Compliance Date</u>
Kraft Pulp Mills	
(CSN 520013) International Paper Company Camden, Arkansas	February 1, 1986
(CSN 150001) Arkansas Kraft Corporation Morrilton, Arkansas	February 1, 1986
(CSN 350017) Weyerhaeuser Company Pine Bluff, Arkansas	February 1, 1986
(CSN 020013) Georgia-Pacific Corporation Crossett, Arkansas	February 1, 1986
(CSN 350016) International Paper Company Pine Bluff, Arkansas	February 1, 1986
(CSN 210036) Potlatch Corporation McGehee, Arkansas	February 1, 1986
(CSN 410002) Nekoosa Paper Company Ashdown, Arkansas	February 1, 1986

(e) Upsets, Scheduled Maintenance, Shutdowns

The rules and regulations of Section 6 of the Arkansas Plan of Implementations for Air Pollution Control shall apply to all cases of upsets, scheduled maintenance and shutdowns of both process and control equipment.

V. EMISSION INVENTORIES, SOURCE SURVEILLANCE AND REPORTS

(a) 40 CFR 60.25(d) Requirements:

The requirements of 40 CFR 60.25(d) are provided by Section 7 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control. Although Section 82-1937 of the Arkansas Water and Air Pollution Control

Act has been disapproved by EPA as limiting emissions disclosure to the public, an Attorney General's opinion, No. 75-37, states that Section 82-1937 cannot be interpreted to deny the public access to emissions information and that the Department must make emissions information available under the Arkansas Freedom of Information Act.

(b) Reporting Requirements:

Section 7 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control requires sources to report all such information as the Director may reasonably require. The Department shall submit reports to EPA for the periods required by 40 CFR 60.25(e) and shall include the information required by 40 CFR 60.25(f).

(c) Emission Inventory:

A detailed emissions inventory prepared according to Appendix D is attached under Exhibit V. Summaries listed below show each designated facility with emissions at adoption date for the designated pollutant correlated with the adopted standard as the maximum allowable emission rate.

Kraft Paper Mills

Adoption Date - October 1, 1980

Effective Date - February 1, 1981

Compliance Date - February 1, 1986

<u>Industry</u>	<u>Emission Rate - 1980</u>	<u>Maximum Allowable at Compliance Date</u>
(CSN 520013) International Paper Company Camden, Arkansas	133.7 lb-TRS/hr	71.0 lb-TRS/hr

(CSN 150001) Arkansas Kraft Corporation Morrilton, Arkansas	137.4	17.8
(CSN 350017) Weyerhaeuser Company Pine Bluff, Arkansas	315.2	39.0
(CSN 020013) Georgia-Pacific Corporation Crossett, Arkansas	1385.3	83.3
(CSN 350016) International Paper Company Pine Bluff, Arkansas	781.1	53.5
(CSN 210036) Potlatch Corporation McGehee, Arkansas	7.3	6.9
(CSN 410002) Nekoosa Paper Company Ashdown, Arkansas	86.1	19.9

Kraft Pulp Mills

Kraft pulping is the production of paper using sulfate chemicals to dissolve the lignin from the cellulose to make pulping fiber. Paper production can be considered as a two process operation - conversion of wood to pulp and recovery of chemicals used in the process for recycle.

Pulp wood is first debarked and chipped and placed in a digester. Sodium sulfide (Na_2S) and sodium hydroxide (NaOH) in a water solution are added and the chips are cooked at elevated temperature and pressure. This step is continued until the lignin in the wood is dissolved. The cooked pulp is then washed with water to remove the spent chemicals. The left over liquid is referred to as weak black liquor. Depending upon the type of paper desired, the pulp can be left as is, brown kraft paper, or it can be bleached with chlorine. This is known as bleached kraft and is white in color.

The weak black liquor is now sent to a multiple effect evaporator and concentrated to 55 percent solids. At this point it is called strong black liquor. The strong black liquor is then burned in a recovery furnace to provide process steam and to convert sodium sulfate (Na_2SO_4) to sodium sulfide (Na_2S). The solids that remain in the recovery furnace are collectively called smelt, a mixture of sodium carbonate (Na_2CO_3) and sodium sulfide (Na_2S) is dissolved in water in a receiving tank. This water mixture is called green liquor. The green liquor is sent to a causticizing tank where quicklime (CaO) is added to convert the sodium carbonate (Na_2CO_3) to sodium hydroxide (NaOH). The quicklime (CaO)

comes from the conversion of the calcium carbonate mud that remains after the reaction of sodium carbonate (Na_2CO_3) and lime (CaO) which is fired in a lime kiln. The formation of sodium hydroxide (NaOH) completes the cycle of transformation to white liquor which is fed back to the digester.

(ii) Plant Capacities

	Max. (Tons/hr)	Avg. (Tons/yr)
Arkansas Kraft	30	237,600
Georgia-Pacific	62.5	396,000
International Paper (C)	31.2	247,500
International Paper (PB)	56.8	429,000
Weyerhaeuser	14.5	99,000
Potlatch	18.7	148,500
Nekoosa	25	198,000

(iii) Raw Materials Handled Per Ton of Air Dried Pulp
Max (lbs. raw material/Ton air dried pulp-hr.)

	Ark. Kraft	Geo.-Pac.	Int. P. (C)	Int. P. (PB)	Wey.	Potlatch	Nek.
Salt Cake	3,000	6,250	3,120	5,680	1,450	1,870	2,500
Pulpwood	6,000	12,500	6,240	11,360	2,900	3,740	5,000

Avg. (lbs. raw material/Ton adp-yr.)

	Ark. Kraft	Geo.-Pac.	Int. P. (C)	Int. P. (PB)	Wey.	Potlatch	Nek.
Salt Cake	23,760,000	39,600,000	24,750,000	42,900,000	9,900,000	14,850,000	19,800,000
Pulpwood	47,520,000	79,200,000	49,500,000	85,800,000	19,800,000	29,700,000	39,600,000

(iv) Fuels Burned

Arkansas Kraft at Morrilton

- 1) #1 power boiler
fuel - #6 oil, 2.5 percent sulfur content
maximum usage 450 gal/hr.
average usage 300 gal/hr.
average per year varies with adversity of weather
- 2) #1, 2 bark boilers
fuel - pine bark, 20 percent ash content
maximum usage 5 tons/hr.
average usage 4 tons/hr.
average per year 31,680 tons

Georgia-Pacific at Crossett

- 1) #1, 2, 3, 4-A boilers
fuel - #6 oil, 2.3 percent sulfur content
maximum usage 1,090 gal/hr.
average usage 1,000 gal/hr.
average per year 9,550,000 gal.
- 2) #5A boiler
fuel - #6 oil, 2.3 percent sulfur content
maximum usage 1,526 gal/hr.

	average usage	506 gal/hr.
	average per year	4,010,000 gal.
3)	#6A boiler	
	fuel - #6 oil, 2.3% sulfur content	
	maximum usage	1,526 gal/hr.
	average usage	506 gal/hr.
	average per year	4,010,000 gal.
4)	#8A boiler	
	fuel - natural gas	
	maximum usage	247,000 cf/hr.
	average usage	27,272 cf/hr.
	average per year	2,160,000,000 cf/gr.
5)	#9A boiler	
	fuel - #6 oil, 2.3 percent sulfur content	
	maximum usage	1,333 gal/hr.
	average usage	1,100 gal/hr.
	average per year	8,712,000 gal.

International Paper at Camden

1)	bark boiler	
	fuel - pine bark, 20 percent ash content	
	maximum usage	9 tons/hr.
	average usage	8 tons/hr.
	average per year	63,360 tons
2)	#1, 2 power boilers	
	fuel - #6 oil, 2.32 percent sulfur content	
	maximum usage	1,600 gal/hr.
	average usage	1,429 gal/hr.
	average per year	2,480,000 gal.

International Paper at Pine Bluff

1)	#1 bark boiler	
	fuel - pine bark, 20 percent ash content	
	maximum usage	42 tons/hr.
	average usage	36 tons/hr.
	average per year	292,000 tons
2)	#1 A-B power boilers	
	fuel - #6 oil, 2.7 percent sulfur content	
	maximum usage	3,640 gal/hr.
	average usage	3,277 gal/hr.
	average per year	25,984,000 gal.
3)	#2-A, B power boilers	
	fuel - #6 oil, 2.7 percent sulfur content	
	maximum usage	3,640 gal/hr.
	average usage	1,813 gal/hr.
	average per year	14,366,000 gal.

4) Keeler package boilers
fuel - natural gas
maximum usage 91 MCF/hr.
average usage 38.8 MCF/hr.
average per year 3.08x10³ MCF

5) CE boiler
fuel - #6 oil, 2.7 percent sulfur content
maximum usage 400 gal/hr.
average usage 34.8 gal/hr.
average per year 276,000 gal.

6) Wickes package boiler
fuel - natural gas
maximum usage 60 MCF/hr.
average usage 15.1 MCF/hr.
average per year 120,288 MCF

Weyerhaeuser at Pine Bluff

1) #1 bark boiler
fuel - pine bark, 20% ash content
maximum usage 7.7 tons/hr.
average usage 5.3 tons/hr.
average per year 42,000 tons

Potlatch at McGehee

1) #1 power boiler
fuel - #6 oil, 0.66 percent sulfur content
maximum usage 3,000 gal/hr.
average usage 2,083 gal/hr.
average per year 16,500,000 gal.

Nekoosa Edwards at Ashdown

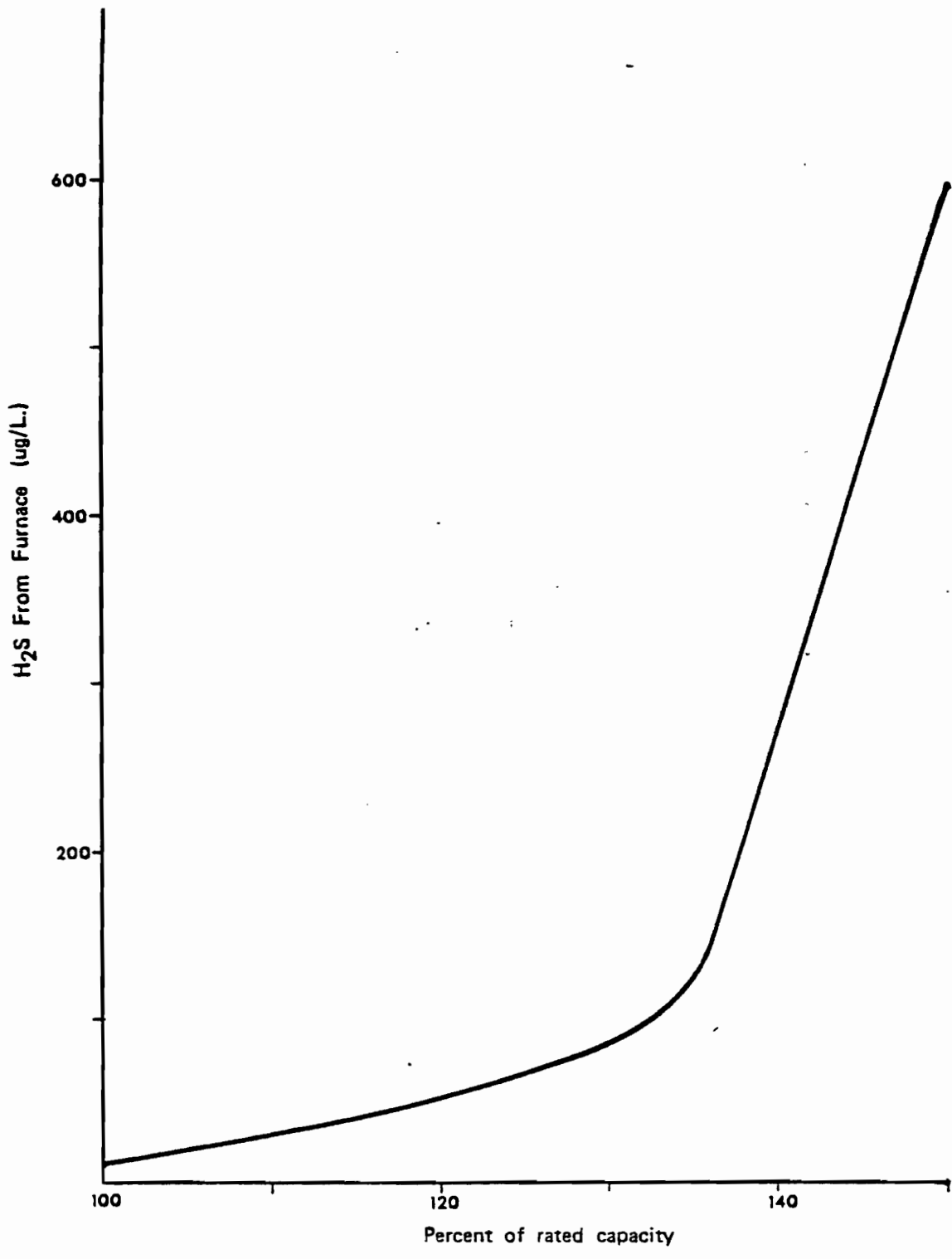
1) #1 power boiler
fuel - pme bark, 20 percent ash content
maximum usage 28 tons/hr.
average usage 22 tons/hr.
average per year 177,000 tons

2) Wickes package boilers
fuel - natural gas
maximum usage 60 MCF/hr.
average usage 14 MCF/hr.
average per year 114,274 MCF

3) In general, no new control equipment will need to be added to achieve control on total reduced sulfur at each paper mill. The greater part of control will be in incineration of non condensable gases from evaporators and digesters. Unless it is impossible due to design and load limits, these gases will be burned in a lime kiln. If this cannot be accomplished, a separate incinerator for these gases will have to be installed, the efficiency of which will be variable based upon load.

Perhaps the most significant factor to be considered in controlling TRS is the degree to which equipment is operated over design capacity. This is particularly true in the case of recovery boilers. It is an accepted fact in the pulp and paper industry that equipment is normally run at a much higher production rate than was originally planned. This is normally due to engineering improvements throughout the mill which remove bottlenecks and allow greater production. However, with an increase in production, the amount of TRS released into the atmosphere increases at an exponential rate. The attached plot (Figure 1) is graphic evidence that overrunning the recovery boiler leads to increased emissions of TRS. When the process equipment is run over design capacity, the associated control equipment cannot effectively control emissions to the guideline limit. In the case where black liquor oxidation is used to control TRS, major modifications will have to be instituted to achieve control. Where air is used to convert the sodium sulfide to sodium thiosulfate, molecular oxygen may have to be incorporated to raise the control efficiency to meet the guideline standard.

Figure 1: The Effect of overloading a Kraft Recovery Furnace upon Hydrogen Sulfide Emissions



Source: Hendricksun, E.R., et. al., "Control of Atmospheric Emissions in the Wood Pulping Industry," Volume 1 (U. S. EPA / J. E. Serrine Company, March 1970)

4) The following is an estimate of the TRS emissions per source at each affected facility. The emissions are based upon maximum pounds per hour and average pounds per year.

	<u>Max. (lb/hr.)</u>	<u>Avg. (lb/yr.)</u>
Arkansas Kraft		
Recovery Boiler	24.0	95,040
Lime Kiln	5.2	41,184
Digesters	0.6	4,752
Smelt Tank	0.0	0.0
International Paper (C)		
Recovery Boiler 1	25.5	201,960
Recovery Boiler 2, 3	37.2	294,624
Lime Kiln	5.3	41,976
Smelt Tank 1	0.9	7,128
Smelt Tank 2	0.5	3,960
Smelt Tank 3	0.5	3,960
Evaporators	1.1	8,712
International Paper (PB)		
Recovery Boiler 2	8.8	69,696
Recovery Boiler 3	8.8	69,696
Recovery Boiler 4	17.0	134,640
Lime Kiln 1	5.3	41,976
Lime Kiln 2	5.3	41,976
Digesters	1.9	15,048
Smelt Tank 2	2.5	19,800
Smelt Tank 3	1.7	13,464
Smelt Tank 4	1.7	13,464
Evaporators	0.5	3,960
Weyerhaeuser		
Recovery Boiler	38.6	38,086
Lime Kiln	0.2	10,296
Digester	0.0	0.0
Smelt Tank	0.2	7,128
Evaporators	0.0	0.0
Potlatch		
Recovery Boiler	3.1	24,552

	<u>Max. (lb/hr.)</u>	<u>Avg. (lb/yr.)</u>
Lime Kiln	2.8	22,176
Digester	0.0	0.0
Smelt Tank	1.0	7,920
Evaporators	0.0	0.0
Nekoosa	-	
Recovery Boiler 1	2.9	22,968
Recovery Boiler 2	7.4	58,608
Lime Kiln 1	0.0	0.0
Lime Kiln 2	3.2	25,344
Digester	0.0	0.0
Smelt Tank 1	4.3	34,056
Smelt Tank 2	2.1	16,632
Evaporator	0.0	0.0
Georgia-Pacific		
Recovery Boiler 7	47.0	372,240
Recovery Boiler 8	9.6	76,032
Lime Kiln 2	6.6	52,272
Lime Kiln 4	2.1	16,632
Digester 1	0.0	0.0
Digester 2	0.0	0.0
Smelt Tank 7	14.9	118,008
Smelt Tank 8	2.1	16,632
Evaporators 1, 2, 3, 4	0.0	0.0
Evaporators 5	1.0	7,920

Emissions from each source shall be determined using Reference Method 16 as published in the Federal Register or an alternate method approved by the Director of the Department of Pollution Control and Ecology.

This amendment to the Regulations of the Plan shall be in full force and effect as of the date of promulgation, September 26, 1980.

BY ORDER OF THE COMMISSION
ON POLLUTION CONTROL AND
ECOLOGY

By _____
Jim Brooks, Chairman

ATTEST:

Jarrell E. Southall, Director

APPROVED:

Bill Clinton, Governor
State of Arkansas