

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Part 63**

[FRL-6919-9]

RIN 2060-A134

**National Emission Standards for Hazardous Air Pollutants for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** This action promulgates national emission standards for hazardous air pollutants (NESHAP) for new and existing sources used in chemical recovery processes at kraft, soda, sulfite, and stand-alone semichemical pulp mills. Hazardous air pollutants (HAP) that are regulated by this final rule include gaseous organic HAP and HAP metals. The adverse health effects of exposure to these HAP can include cancer, reproductive and developmental effects, gastrointestinal effects, damage to the nervous system, and irritation to the eyes, skin, and respiratory system. Emissions of other pollutants from these sources include particulate matter (PM), volatile organic compounds (VOC), carbon monoxide

(CO), sulfur dioxide (SO<sub>2</sub>), and nitrogen oxides (NO<sub>x</sub>).

This final rule implements section 112(d) of the Clean Air Act (CAA) and is based on the Administrator's determination that chemical recovery combustion sources at kraft, soda, sulfite, and stand-alone semichemical pulp mills are major sources of HAP emissions. The final rule is intended to protect public health by requiring chemical recovery combustion sources to meet standards reflecting the application of the maximum achievable control technology (MACT) to control HAP emissions from these sources. Implementation of this rule will reduce emissions of HAP by approximately 2,500 megagrams per year (Mg/yr) (2,700 tons per year (tpy)) and emissions of other pollutants by approximately 107,900 Mg/yr (118,900 tpy).

**EFFECTIVE DATE:** March 13, 2001.

**ADDRESSES:** Docket No. A-94-67, containing information considered by EPA in developing the promulgated standards, is available for public inspection between 8:00 a.m. and 5:30 p.m., Monday through Friday, excluding Federal holidays, at the following address: U.S. EPA, Air and Radiation Docket and Information Center (6102), 401 M Street SW, Washington, DC 20460, telephone (202) 260-7548. The docket is located at the above address in

room M-1500, Waterside Mall (ground floor). A reasonable fee may be charged for copying docket materials.

**FOR FURTHER INFORMATION CONTACT:** For further information concerning applicability and rule determinations, contact the appropriate State or local agency representative. If no State or local representative is available, contact the EPA Regional Office staff listed in the **SUPPLEMENTARY INFORMATION** section of this preamble. For information concerning the analyses performed in developing this rule, contact Mr. Jeff Telander, Minerals and Inorganic Chemicals Group, Emission Standards Division (MD-13), Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5427, facsimile number (919) 541-5600, electronic mail address telander.jeff@epa.gov.

**SUPPLEMENTARY INFORMATION:**

*Regulated Entities*

Categories and entities potentially regulated by this action are those kraft, soda, sulfite, and stand-alone semichemical pulp mills with chemical recovery processes that involve the combustion of spent pulping liquor. Categories and entities potentially regulated by this action include:

Category	SIC code	NAICS code	Examples of regulated entities
Industry .....	2611, 2621, 2631 .....	32211, 32212, 32213 .....	Kraft, soda, sulfite, and stand-alone semichemical pulp mills.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. To determine whether your facility is regulated by this action, you should examine the applicability criteria in § 63.860 of the final rule. If you have questions regarding the applicability of this action to a particular entity, consult the appropriate EPA Regional Office representative listed below:

U.S. EPA Region I—Director, Air Compliance Program; 1 Congress Street; Suite 1100 (SEA); Boston, MA 02114-2023; Phone: (617) 918-1650; Fax: (617) 918-1505.

U.S. EPA Region II—Air Compliance Branch; 290 Broadway; New York, NY 10007; Phone: (212) 637-4080; Fax: (212) 637-3998.

U.S. EPA Region III—Chief, Air Enforcement Branch (3AP12); 1650 Arch Street; Philadelphia, PA 19103-2029; Phone: (215) 814-3438; Fax: (215) 814-2134; Region III Office Website: <http://www.epa.gov/reg3artd/hazpollut/hazairpol.htm>.

U.S. EPA Region IV—Air and Radiation Technology Branch; Atlanta Federal Center;

61 Forsyth Street; Atlanta, Georgia 30303-3104; Phone: (404) 562-9105; Fax: (404) 562-9095.

U.S. EPA Region V—Air Enforcement and Compliance Assurance Branch (AE-17); 77 West Jackson Boulevard; Chicago, IL 60604-3590; Phone: (312) 353-2088; Fax: (312) 353-8289.

U.S. EPA Region VI—Chief, Toxics Enforcement Section (6EN-AT); 1445 Ross Avenue; Dallas, TX 75202-2733; Phone: (214) 665-7224; Fax: (214) 665-7446; Region VI Office Website: [www.epa.gov/region6](http://www.epa.gov/region6).

U.S. EPA Region VII—901 N. 5th Street; Kansas City, KS 66101; Phone: (913) 551-7020; Fax: (913) 551-7844; <http://www.epa.gov/region07/programs/artd/air/toxics/airtox1.htm>.

U.S. EPA Region VIII—Air Enforcement Program (8ENF-T); 999 18th Street Suite 500; Denver, CO 80202; Phone: (303) 312-6312; Fax: (303) 312-6409.

U.S. EPA Region IX—Air Division; 75 Hawthorne Street; San Francisco, CA 94105; Phone: (415) 744-1219; Fax: (415) 744-1076.

U.S. EPA Region X—Office of Air Quality (OAO-107); 1200 Sixth Avenue; Seattle, WA 98101; Phone: (206) 553-4273; Fax: (206) 553-0110.

*Judicial Review*

The NESHAP for chemical recovery combustion sources at kraft, soda, sulfite, and semichemical pulp mills was proposed on April 15, 1998 (63 FR 18783). Today's action announces EPA's final decisions on the rule. Under section 307(b)(1) of the CAA, judicial review of the final rule is available by filing a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit by March 13, 2001. Only those objections to this rule which were raised with reasonable specificity during the period for public comment may be raised during judicial review. Under section 307(b)(2) of the CAA, the requirements that are the subject of today's final rule may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

### World Wide Web (WWW)

In addition to being available in the docket, an electronic copy of today's final rule will also be available on the WWW through the Technology Transfer Network (TTN). Following the Administrator's signature, a copy of the rule will be posted on the TTN's policy and guidance page for newly proposed or final rules at <http://www.epa.gov/ttn/oarpg/t3pfpr.html>. The TTN provides information and technology exchange in various areas of air pollution control. If more information regarding the TTN is needed, call the TTN HELP line at (919) 541-5384.

### Outline

The following outline is provided to aid in reading this preamble to the final rule.

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  - H. National Technology Transfer and Advancement Act of 1995
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### I. Background and Public Participation

Section 112 of the CAA requires EPA to list categories and subcategories of major sources and area sources of HAP and to establish NESHAP for the listed source categories and subcategories.

Major sources of HAP are those that have the potential to emit greater than 9.07 Mg/yr (10 tpy) of any one HAP or 22.68 Mg/yr (25 tpy) of any combination of HAP.

Section 112 of the CAA requires that we establish NESHAP for the control of HAP from both new and existing major sources. The CAA requires the NESHAP to reflect the maximum degree of reduction in emissions of HAP that is achievable. This level of control is commonly referred to as MACT.

The MACT floor is the minimum control level allowed for NESHAP and is defined under section 112(d)(3) of the CAA. In essence, the MACT floor ensures that the standard is set at a level that assures that all major sources achieve the level of control at least as stringent as that already achieved by the better-controlled and lower-emitting sources in each source category or subcategory. For new sources, the MACT floor cannot be less stringent than the emission control that is achieved in practice by the best-controlled similar source. The MACT standards for existing sources can be less stringent than standards for new sources, but they cannot be less stringent than the average emission limitation achieved by the best-performing 12 percent of existing sources in the category or subcategory (or the best-performing 5 sources for categories or subcategories with fewer than 30 sources) (CAA section 112(d)(3)).

In developing MACT, we also consider control options that are more stringent than the floor. We may establish standards more stringent than the floor based on the consideration of the cost of achieving the emissions reductions, any non-air quality health and environmental impacts, and energy requirements (CAA section 112(d)(2)).

On July 16, 1992 (57 FR 31576), we published a list of source categories slated for regulation under section 112(c). That list included the pulp and paper production source category regulated by the standards being promulgated today. We proposed standards for chemical recovery combustion sources at kraft, soda, sulfite, and stand-alone semichemical pulp mills covered by this rule on April 15, 1998 (63 FR 18783).

As in the proposal, the final standards give existing sources 3 years from the date of promulgation to comply. Sources that begin construction or reconstruction after April 15, 1998 must comply with the standards for new sources by March 13, 2001 or upon startup, whichever is later. We believe these standards to be achievable by

affected sources within the time provided.

Emissions limits, as well as monitoring, performance testing, recordkeeping, and reporting requirements are included in the final rule. All of these components are necessary to ensure that sources comply with the standards both initially and over time. However, we have made every effort to simplify the requirements in the rule.

The preamble for the proposed standards described the rationale for the proposed standards. Public comments were solicited at the time of proposal. The public comment period lasted from April 15, 1998 to June 15, 1998. Industry representatives, regulatory agencies, environmental groups, and the general public were given the opportunity to comment on the proposed rule and to provide additional information during and after the public comment period. Although we offered at proposal the opportunity for oral presentation of data, views, or arguments concerning the proposed rule, no one requested a hearing, and a hearing was not held.

We received a total of 35 letters containing comments on the proposed rule during and after the public comment period. Commenters included individual pulp and paper companies, an industry trade association, an environmental group, a local regulatory agency, an association of State and local regulatory agencies, and an association of air pollution control vendors. Today's final rule reflects our full consideration of all of the comments received. Major public comments on the proposed rule, along with our responses to those comments, are summarized in this preamble. See the Summary of Public Comments and Responses memorandum for a more detailed discussion of public comments and our responses (docket No. A-94-67).

### II. Summary of Final Rule

#### A. Applicability

The final rule applies to all existing and new kraft, soda, sulfite, and stand-alone semichemical pulp mills with chemical recovery processes that involve the combustion of spent pulping liquor. Specifically, the affected sources that are regulated by today's final rule are each new nondirect contact evaporator (NDCE) recovery furnace and associated smelt dissolving tank (SDT) located at a kraft or soda pulp mill, each new direct contact evaporator (DCE) recovery furnace system and associated SDT located at a kraft or soda pulp mill, each new lime kiln located at a kraft or

soda pulp mill, each new or existing sulfite combustion unit located at a sulfite pulp mill, each new or existing semichemical combustion unit located at a stand-alone semichemical pulp mill, and each existing chemical recovery system located at a kraft or soda pulp mill. The chemical recovery system is defined as all existing DCE and NDCE recovery furnaces, SDT, and lime kilns at a kraft or soda pulp mill.

All existing kraft and soda pulp mills have chemical recovery processes that

involve the combustion of spent pulping liquor. However, several existing sulfite and stand-alone semichemical pulp mills do not recover pulping chemicals by combusting spent liquor. Three of the 11 sulfite mills use a calcium-based sulfite process and do not have chemical recovery combustion units and, thus, are not impacted by this final rule. One of the 13 stand-alone semichemical pulp mills burns spent liquor in a power boiler and does not have chemical recovery; therefore, that

mill also is not impacted by this final rule.

#### *B. Standards*

Today's final rule regulates HAP metals emissions and/or gaseous organic HAP emissions for chemical recovery combustion sources in the pulp and paper production source category. The promulgated standards are summarized in Table 1.

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TABLE 1. SUMMARY OF PROMULGATED STANDARDS<sup>a</sup>

Subcategory	Emission point	HAP metals standard		Alternate HAP metals standard ("bubble")		Gaseous organic HAP standard	
		Existing	New	Existing	New	Existing	New
Kraft and soda	Recovery furnaces (NDCE and DCE)	PM ≤ 0.10	PM ≤ 0.034	Mill-specific PM emission limit (kg/Mg (lb/ton) BLS) based on calculated value of the sum of the individual emissions limits for recovery furnaces, SDT, and lime kilns. See equation 1 in §63.865(a)(1) of the final rule.	No "bubble" alternate standard for new sources	No standard	Gaseous organic HAP ≤ 0.012 kg/Mg (0.025 lb/ton) BLS (as measured by methanol)
		gr/dscm (0.044 gr/dscf) at 8% oxygen	g/dscm (0.015 gr/dscf) at 8% oxygen				
	SDT	PM ≤ 0.10 kg/Mg (0.20 lb/ton) BLS	PM ≤ 0.06 kg/Mg (0.12 lb/ton) BLS		No standard <sup>b</sup>	No standard <sup>b</sup>	
	Lime kilns	PM ≤ 0.15 g/dscm (0.064 gr/dscf) at 10% oxygen	PM ≤ 0.023 g/dscm (0.01 gr/dscf) at 10% oxygen		No standard <sup>b</sup>	No standard <sup>b</sup>	
Sulfite	Sulfite combustion units	PM ≤ 0.092 g/dscm (0.040 gr/dscf) at 8% oxygen	PM ≤ 0.046 g/dscm (0.020 gr/dscf) at 8% oxygen	Not applicable	Not applicable	No standard <sup>b</sup>	No standard <sup>b</sup>
Stand-alone semi-chemical	Semichemical combustion units	No standard	No standard	Not applicable	Not applicable	Gaseous organic HAP ≤ 1.49 kg/Mg (2.97 lb/ton) BLS (as measured by THC)	Gaseous organic HAP ≤ 1.49 kg/Mg (2.97 lb/ton) BLS (as measured by THC)

<sup>a</sup> g/dscm = grams per dry standard cubic meter, gr/dscf = grains per dry standard cubic foot, kg/Mg = kilograms per megagram, lb/ton = pounds per ton, BLS = black liquor solids, and THC = total hydrocarbons.  
<sup>b</sup> Emissions of gaseous organic HAP from these sources are regulated as part of the NESHAP for noncombustion sources at pulp and paper mills.

The standards for each subcategory are discussed in the following sections by the pollutant regulated.

### 1. HAP Metals Standards for Kraft and Soda Pulp Mills

Today's rule promulgates PM emissions limits as a surrogate for HAP metals for new and existing recovery furnaces, SDT, and lime kilns at kraft and soda pulp mills. The PM emissions limits are established at the MACT floor level. For existing kraft and soda recovery furnaces and SDT, the MACT floor level corresponds (coincidentally) to the promulgated PM emissions limits in the new source performance standards (NSPS) for kraft pulp mills (43 FR 7568, February 23, 1978). We believe this level best represents the level of performance achievable by the average of the best-performing 12 percent of sources, considering normal process and operating variability. For existing kraft and soda lime kilns, the MACT floor level is more stringent than the NSPS because data indicate that the average of the best-performing 12 percent of sources can achieve a more stringent level.

The final rule also allows the use of a "bubble compliance alternative" for determining compliance with the HAP metals standards for existing process units (*i.e.*, recovery furnaces, SDT, and lime kilns) in the chemical recovery system at kraft and soda pulp mills. The bubble compliance alternative allows mills to set PM emissions limits for each existing process unit in the chemical recovery system at the mill such that, if these limits are met, the total emissions from all existing process units are less than or equal to a mill-specific bubble limit. This mill-specific bubble limit is calculated based on the promulgated emissions standards (referred to in the rule as reference concentrations or reference emissions rates) for each process unit and mill-specific gas flow rates and process rates. Equation 1 in § 63.865(a)(1) of the final rule will be used to calculate the bubble limit based on PM emissions.

As in the proposed rule, the bubble compliance alternative is not applicable to new affected sources under this rulemaking. Thus, all new affected sources at kraft and soda pulp mills are required to meet the individual emissions limitations set for those sources. Also, owners or operators of existing process units subject to the NSPS for kraft pulp mills are required to continue to meet the PM emissions standards of that rule, regardless of which option they choose for complying with today's HAP metals standards (because that standard is a separate

regulatory requirement which remains in place).

Owners or operators that choose to comply with the HAP metals standards using the bubble compliance alternative are required to submit PM emissions limits to the Administrator for approval for each existing kraft or soda recovery furnace, SDT, and lime kiln at the mill. Before the PM emissions limits are approved, the owner or operator must submit documentation demonstrating that if the PM emissions limits for each emission source are met, the entire group of process units in the chemical recovery system are in compliance with the millwide allowable PM emission level. The allowable PM emission level is determined from the applicable bubble equation using the reference PM concentrations and reference PM emissions rates for each process unit and source-specific factors for exhaust gas flow rates and process rates. Once approved by the Administrator, the PM emissions limits are incorporated in the operating permit for the mill. Thereafter, the owner or operator of the kraft or soda pulp mill demonstrates compliance with the standards by demonstrating that each recovery furnace, SDT, and lime kiln emits less than or equal to the approved PM emission limit for that process unit. In addition, the PM emissions limits for any existing recovery furnace, SDT, or lime kiln subject to the 1978 NSPS for kraft pulp mills must be at least as stringent as the PM emissions limits established in the NSPS. An example of how the bubble compliance alternative can be used to establish PM emissions limits for process units in a chemical recovery system at an example mill is provided in the administrative record (Docket No. A-94-67).

With one exception, owners or operators that choose to comply with the HAP metals standards using the bubble compliance alternative must include all existing process units in a chemical recovery system in the bubble. Any existing process unit that can be classified as a stand-by unit (*i.e.*, a process unit that operates for less than 6,300 hours during any calendar year) cannot be included as part of a bubble. Owners or operators of stand-by units must accept the promulgated PM emissions limits shown in Table 1 for those units.

### 2. Gaseous Organic HAP Standards for Kraft and Soda Pulp Mills

Today's rule promulgates a gaseous organic HAP standard for new recovery furnaces using methanol as a surrogate for gaseous organic HAP. All new recovery furnaces at kraft and soda pulp

mills must meet a gaseous organic HAP limit, as measured by methanol, of 0.012 kilogram per megagram (kg/Mg) (0.025 pound per ton (lb/ton)) of black liquor solids (BLS) fired. There are no gaseous organic HAP standards under today's rule for existing NDCE recovery furnaces or DCE recovery furnace systems.

### 3. HAP Metals Standards for Sulfite Pulp Mills

Today's rule promulgates PM emissions limits as a surrogate for HAP metals for new and existing sulfite combustion units. Existing sulfite combustion units must meet a PM emission limit of 0.092 gram per dry standard cubic meter (g/dscm) (0.040 grain per dry standard cubic foot (gr/dscf)) corrected to 8 percent oxygen. New sulfite combustion units must meet a PM emission limit of 0.046 g/dscm (0.020 gr/dscf) corrected to 8 percent oxygen.

### 4. Gaseous Organic HAP Standards for Stand-Alone Semichemical Pulp Mills

Today's rule promulgates gaseous organic HAP standards for existing and new semichemical combustion units using total hydrocarbon (THC) as a surrogate for gaseous organic HAP. All stand-alone semichemical pulp mills with existing or new chemical recovery combustion units must reduce gaseous organic HAP emissions (as measured by THC reported as carbon) from these units by 90 percent, or meet a gaseous organic HAP emission limit (as measured by THC reported as carbon) of 1.49 kg/Mg (2.97 lb/ton) of BLS fired.

#### C. Performance Test Requirements

The following discussion identifies the test methods to be used for compliance determinations.

Test Method 5, "Determination of Particulate Emissions from Stationary Sources" (40 CFR part 60, appendix A)—in conjunction with a measurement of oxygen concentration in the stack gas using either Test Method 3A, "Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)" (40 CFR part 60, appendix A) or Test Method 3B, "Gas Analysis for the Determination of Emission Rate Correction Factor or Excess Air" (40 CFR part 60, appendix A)—is the test method for determining compliance with the PM emissions limits for new and existing kraft and soda recovery furnaces, SDT, and lime kilns and for new and existing sulfite combustion units. Test Method 29, "Determination of Metals Emissions from Stationary Sources" (40 CFR part

60, appendix A) may be used as an alternative to Test Method 5 for measuring PM emissions. Test Method 17, "Determination of Particulate Emissions from Stationary Sources (In-Stack Filtration Method)" (40 CFR part 60, appendix A) may also be used as an alternative to Test Method 5 if a constant value of 0.009 g/dscm (0.004 gr/dscf) is added to the results of Test Method 17, and the stack temperature is no greater than 205 degrees Centigrade (°C) (400 degrees Fahrenheit (°F)).

Test Method 308, "Procedure for Determination of Methanol Emissions from Stationary Sources" (40 CFR part 63, appendix A) is the test method for determining compliance with the gaseous organic HAP emission limit for new kraft and soda NDCE recovery furnaces that are not equipped with dry electrostatic precipitator (ESP) systems and for DCE recovery furnace systems.

Test Method 25A, "Determination of Total Gaseous Organic Concentration using a Flame Ionization Analyzer" (40 CFR part 60, appendix A) is the test method for determining compliance with the gaseous organic HAP emission limit for new and existing combustion units at stand-alone semichemical pulp mills.

#### *D. Monitoring Requirements*

Each owner or operator of an affected source or process unit must install, operate, calibrate, and maintain a continuous monitoring system for each affected source or process unit. The owner or operator also must establish a range of values for each operating parameter (associated with a process operation or with an emission control device) to be monitored based upon values recorded during the initial performance test or during qualifying previous performance tests using the required test methods. If values from previous performance tests are used to establish the operating parameter range, the owner or operator must certify that the control devices and processes had not been modified subsequent to the testing upon which the data used to establish the operating ranges were obtained. The owner or operator may conduct multiple performance tests to establish ranges of operating parameters. The owner or operator also may establish expanded or replacement ranges during subsequent performance tests. An exceedance of the operating parameters occurs when the measured operating parameter levels, averaged over a specified time period, are outside the established range for a predetermined duration. However, with the exception of opacity exceedances, no more than one exceedance would be

attributed to an affected source or process unit during any given 24-hour period. The following paragraphs describe the operating parameters to be monitored, the averaging periods and frequency with which these parameters should be monitored, when corrective action is required to return operating parameters to levels that are within the established range, and when operating parameter exceedances constitute a violation of the emissions standards.

Owners or operators of existing kraft or soda recovery furnaces that are equipped with an ESP for PM control must install, calibrate, maintain, and operate continuous opacity monitoring systems (COMS). The COMS must perform at least one cycle of sampling and analysis for each successive 10-second period and one cycle of data recording for each successive 6-minute period. If the average of ten consecutive 6-minute average values of opacity exceeds 20 percent, the owner or operator must initiate the corrective actions contained in the mill's startup, shutdown, and malfunction (SSM) plan. A violation of the applicable emissions standards would occur when opacity is greater than 35 percent for 6 percent or more of the operating time during any quarterly period.

Owners or operators of new kraft or soda recovery furnaces and new or existing kraft or soda lime kilns that are equipped with ESP for PM control must also install, calibrate, maintain, and operate COMS. The COMS must perform at least one cycle of sampling and analysis for each successive 10-second period and one cycle of data recording for each successive 6-minute period. If the average of ten consecutive 6-minute average values of opacity exceeds 20 percent, the owner or operator must initiate the corrective actions contained in the facility's SSM plan. A violation of the applicable emissions standards would occur when opacity is greater than 20 percent for 6 percent or more of the operating time during any quarterly period.

Owners or operators using wet scrubbers to meet the PM emissions limits for any kraft or soda recovery furnace, SDT, or lime kiln or any sulfite combustion unit must install, calibrate, maintain, and operate a continuous monitoring system capable of determining and recording the pressure drop and scrubbing liquid flow rate at least once for each successive 15-minute period. If any 3-hour average of the pressure drop or scrubbing liquid flow rate falls outside the established range, the owner or operator must initiate the corrective actions included in the facility's SSM plan. A violation of the

applicable emissions standards occurs when six or more 3-hour average values of either parameter are outside the established range during any 6-month reporting period.

Owners or operators using regenerative thermal oxidizers (RTO) to comply with the gaseous organic HAP emission standard for chemical recovery combustion units at stand-alone semichemical mills must establish a minimum RTO operating temperature that indicates at least a 90 percent reduction in HAP emissions (as measured by THC reported as carbon), or outlet HAP emissions (as measured by THC reported as carbon) of less than or equal to 1.49 kg/Mg (2.97 lb/ton) of BLS fired. To ensure ongoing compliance, the owner or operator must install, calibrate, maintain, and operate a monitoring system to measure and record the RTO operating temperature for each successive 15-minute period. If any 1-hour average of the operating temperature falls below the minimum established temperature, the owner or operator must initiate the corrective actions contained in the facility's SSM plan. A violation of the applicable emissions standards occurs when any 3-hour average of the RTO operating temperature falls below the minimum established temperature.

The owner or operator of an affected source or process unit that uses a wet scrubber, ESP, or RTO to comply with today's standards may monitor alternative operating parameters subject to prior written approval by the Administrator, as specified in § 63.8(f).

The owner or operator of an affected source or process unit that is complying with today's standards through operational changes or by a control device other than those described above must submit a plan proposing parameters to be monitored, parameter ranges, and monitoring frequencies to be used to determine ongoing compliance, subject to approval by the Administrator. If any 3-hour average value of a monitored parameter falls outside the established range, the owner or operator must initiate the corrective actions included in the facility's SSM plan. A violation of the emissions standards occurs when six or more 3-hour average values of a monitored parameter are outside the established range during any 6-month reporting period.

Owners or operators complying with the gaseous organic HAP standard for new kraft and soda recovery furnaces through the use of an NDCE recovery furnace equipped with a dry ESP system are not required to perform any continuous parameter monitoring for

gaseous organic HAP. However, each owner or operator must maintain onsite a certification statement signed by a responsible mill official that an NDCE recovery furnace equipped with a dry ESP system is in use.

#### *E. Recordkeeping and Reporting Requirements*

In addition to all of the recordkeeping and reporting requirements outlined in § 63.10, owners or operators of kraft, soda, sulfite, and stand-alone semichemical pulp mills must maintain the following records for each affected source or process unit: Records of the BLS firing rates for all recovery furnaces at kraft and soda pulp mills and spent liquor solids firing rates for all chemical recovery combustion units at sulfite and stand-alone semichemical pulp mills, records of the lime production rates (calculated as calcium oxide) for all kraft and soda lime kilns, records of all parameter monitoring data, records and documentation of supporting calculations for compliance determinations, records of the established monitoring parameter ranges for each affected source or process unit, and records of all certifications made in order to determine compliance with the gaseous organic HAP standards. Consistent with requirements in the NESHAP General Provisions in subpart A of 40 CFR part 63 and the operating permit program in 40 CFR part 70, all records must be maintained for a minimum of 5 years.

### **III. Summary of Changes Since Proposal**

#### *A. Applicability*

At proposal, we defined affected source as each kraft and soda NDCE recovery furnace and associated SDT, each kraft and soda DCE recovery furnace and associated SDT, each kraft and soda lime kiln, each sulfite combustion unit, and each semichemical combustion unit. However, this definition would have prevented mills from averaging emissions of HAP metals or the PM surrogate for HAP metals across their existing recovery furnaces, SDT, and lime kilns (a bubble compliance alternative which we proposed). To allow averaging across these existing emission points, we have revised the definition of affected source to include existing NDCE recovery furnaces, DCE recovery furnaces, SDT, and lime kilns as process units within a chemical recovery system affected source.

As in the proposed rule, new sources are not eligible for the bubble compliance alternative under this

rulemaking, given that state-of-the-art equipment design and add-on controls can be integrated and installed most cost-effectively during construction of new sources. New sources can be designed and constructed with maximized compliance in mind. Also, sources classified as new by virtue of being reconstructed can be reconstructed with maximized compliance in mind. Therefore, we have not revised the definition of affected source for new sources. Each new kraft and soda recovery furnace and associated SDT, and each new kraft and soda lime kiln will continue to be defined as an affected source by itself.

#### *B. Definitions*

Because of the changes in definition of affected source in the final rule, we have added definitions for "chemical recovery system" and "process unit" to § 63.861 in the final rule. Chemical recovery system is defined as all existing DCE and NDCE recovery furnaces, SDT, and lime kilns at a kraft or soda pulp mill. Process unit is defined as an existing DCE or NDCE recovery furnace, SDT, or lime kiln in a chemical recovery system at a kraft or soda pulp mill.

To take into account the development of gasification technology as a replacement for conventional recovery furnace systems, we have added a definition for "black liquor gasification" to § 63.861 in the final rule. Black liquor gasification is defined as the thermochemical conversion of black liquor into a combustible gaseous product. For the same reason, we also have revised the definitions for "recovery furnace," "kraft recovery furnace," "semichemical combustion unit," and "soda recovery furnace" to include black liquor gasification.

In order to eliminate any confusion with the term "PM," we have replaced the term "PM HAP" with "HAP metals" throughout the final rule. Therefore, the definition for "HAP metals" in § 63.861 of today's rule replaces the definition for "PM HAP."

#### *C. Standards*

In the proposed rule, we included a standard whereby existing kraft and soda lime kilns must ensure that the concentration of PM in the exhaust gases discharged to the atmosphere is less than or equal to 0.15 g/dscm (0.067 gr/dscf) corrected to 10 percent oxygen. We have decided not to promulgate this PM standard because this proposed standard does not reflect the performance of MACT (*i.e.*, the surrogate PM emissions levels achievable by the best-performing lime

kilns, which are controlled by ESP). We have revised the PM standard for existing lime kilns in the final rule to be equivalent to the revised HAP metals MACT floor PM level of 0.15 g/dscm (0.064 gr/dscf) corrected to 10 percent oxygen. (There is also a bubble compliance alternative, whereby, as explained earlier, PM emissions from the recovery furnace, SDT, and lime kiln could in essence be summed so long as the summed emissions are no greater than the sum of the otherwise-applicable MACT emission standard for each unit.)

The proposed rule included a compliance option whereby existing kraft and soda recovery furnaces, SDT, and lime kilns could meet a standard for individual HAP metals, rather than for the PM surrogate for HAP metals (63 FR 18758, 18765, and 18769, April 15, 1998; proposed § 63.862). We have decided not to promulgate this alternative HAP metals standard because this proposed standard does not reflect the performance of MACT (*i.e.*, the HAP metals emissions levels achievable by the best-performing sources) and also because it would have other significant technical deficiencies. (See docket No. A-94-67.) (Necessarily, we also are not promulgating the bubble compliance alternative associated with this HAP metals option.)

#### *D. Performance Test Requirements*

To correct an oversight in the proposed rule, we have added an oxygen correction equation for volumetric gas flow rates to the final rule under new § 63.865(b)(4). The equation will be used to correct gas streams to the same oxygen content as the associated emission limit (*e.g.*, 8 percent oxygen for recovery furnaces, 10 percent oxygen for lime kilns). For the same reason, we also revised the PM emission limit equations for the bubble compliance alternative in paragraphs (a)(1), (2)(i), and (2)(iii) of § 63.865 for the final rule to reflect the oxygen correction for volumetric gas flow rates. Because SDT exhaust conditions already approximate ambient air conditions, we have removed the oxygen correction in the PM emission limit equation for SDT in § 63.865(a)(2)(ii) from the final rule. We have also clarified the oxygen correction equation in § 63.865(b)(2), which is used to correct PM concentrations, for the final rule.

#### *E. Monitoring Requirements*

In order to account for any recovery furnaces that might use a wet scrubber, we have revised the wet scrubber monitoring provisions in § 63.864(a)(2), (c)(1)(ii), and (c)(2)(ii) for the final rule

to include kraft or soda recovery furnaces. We have clarified the opacity corrective action provisions in § 63.864(c)(1)(i) of the final rule to state that affected sources or process units are required to implement corrective action when the average of ten consecutive 6-minute averages results in a measurement greater than 20 percent opacity. We also have revised the opacity violation provisions in § 63.864(c)(2)(i) and (ii) to clarify in the final rule that a violation of the applicable emission standard would occur when the opacity is greater than the specified level for 6 percent or more of the operating time in any quarterly period.

#### F. Reporting Requirements

We have revised the excess emissions reporting provisions of § 63.867(c) for the final rule to clarify that reporting excess emissions below the violation thresholds of § 63.864(c) does not constitute a violation of the applicable standard.

#### G. Delegation of Authority

We have revised the delegation of authority provisions in § 63.868 for the final rule to include the following authorities which will be retained by the Administrator and not transferred to a State: Approval of alternatives to standards in § 63.862 under § 63.6(g), approval of major alternatives to test methods under § 63.7(e)(2)(ii) and (f) and as defined in § 63.90, approval of major alternatives to monitoring under § 63.8(f) and as defined in § 63.90, and approval of major alternatives to recordkeeping and reporting under § 63.10(f) and as defined in § 63.90. These authorities are retained because any requests by sources for alternative standards must be considered by EPA and acted upon in a notice and comment rulemaking. We cannot delegate authorities that may alter the stringency of the standard, that require Federal oversight for national consistency, or that may require Federal rulemaking. Requests to revise standards for the source category (or portions thereof) must be addressed through the subpart E rulemaking process for alternative standards.

#### IV. Summary of Responses to Major Comments

This section summarizes the major comments we received on the proposed rule and our responses to those comments. A more comprehensive summary of comments and responses can be found in docket No. A-94-67.

*Comment:* Commenters questioned the proposed MACT floor of “no

control” for gaseous organic HAP emissions from existing NDCE recovery furnaces and stated that the performance of dry ESP systems should be the basis of the MACT floor for gaseous organic HAP emissions from existing NDCE recovery furnaces. One commenter provided a list of 13 NDCE recovery furnaces equipped with dry ESP systems, which is a sufficient number of recovery furnaces to define the MACT floor. A commenter also noted that wet to dry ESP system conversion is a cost-effective control option.

*Response:* We are not basing the MACT floor for existing NDCE recovery furnaces on this technology for the following reasons. We have concluded that existing NDCE recovery furnaces do not represent the “best” or “maximum achievable” technology. It is possible that black liquor gasification is a means of reducing gaseous organic HAP emissions from chemical recovery operations that provides environmental benefits (notably energy savings) which are superior to those provided by NDCE recovery furnaces (whether equipped with wet or dry ESP systems). Compared with NDCE recovery furnace performance, development of the proposed gasification technology promises reduced consumption of fossil fuel, increased efficiency in energy conversion and chemical recovery, elimination of the smelt-water explosion hazard (inherent to the operation of conventional recovery furnaces), reduced maintenance costs, and significantly lower environmental emissions of criteria pollutants (PM, SO<sub>2</sub>, NO<sub>x</sub>, VOC precursors to ozone, and CO) and greenhouse gases (63 FR 26607, May 8, 2000, Proposed Final Project Agreement for Georgia-Pacific XL Project).

Because gasification systems do not require the use of an ESP, the costs that would be incurred by converting a wet ESP system to a dry ESP system are not recoverable if the NDCE recovery furnace is replaced with a gasification system. Therefore, if we require existing NDCE recovery furnaces with wet ESP systems by virtue of a MACT floor to retrofit to dry ESP systems, we would tend to eliminate the incentive for the industry to replace the NDCE recovery furnaces with gasification systems before the end of the useful life of the dry ESP systems. Thus, it is our view that a MACT floor requirement which results in retrofitting to dry ESP systems would create disincentives that would discourage possible conversion to the even more promising gasification technology, so that such a requirement need not be considered to be “MACT.”

See *Portland Cement Ass'n v. EPA*, 486 F.2d 375, 385 (D.C. Cir. 1973); *Essex Chemical Corp. v. Ruckelshaus*, 486 F.2d 427, 439 (D.C. Cir. 1973) (in establishing technology-based standards, EPA must consider counter-productive effects of a control technology in determining whether it is a “best” technology).

In a related matter, there is a further question as to whether existing DCE recovery furnaces should be subject to MACT floor or beyond-the-floor standards for gaseous organic HAP. We considered whether to require conversion of DCE recovery furnace systems to NDCE recovery furnaces with dry ESP systems as a beyond-the-floor standard. The capital costs of this retrofitting would be in the billions of dollars and would not be justified by the amount of HAP removed. Moreover, we do not view NDCE recovery furnaces with dry ESP systems as MACT for existing DCE recovery furnaces because it would create the same disincentives for conversion to gasification just discussed, including potentially foregoing significant energy-saving opportunities. (See CAA section 112(d)(2), which includes energy impacts as a relevant consideration in beyond-the-floor determinations.) Consequently, we are not adopting a beyond-the-floor standard for DCE recovery furnaces.

It would also be highly anomalous to adopt a MACT floor based on the performance of NDCE recovery furnaces with dry ESP systems, for the following reason. As explained above, we are not adopting a beyond-the-floor standard for existing DCE recovery furnaces, and the MACT floor for existing DCE recovery furnaces is “no control.” This would yield the result that a MACT floor determination would apply only to NDCE recovery furnaces—the better-performing furnace type. Hence the anomaly—the only type of existing recovery furnace to incur regulatory costs would be the better-performing NDCE recovery furnaces. Although, as also explained above, we currently do not view gaseous organic HAP control of existing NDCE or DCE recovery furnaces as MACT in order to preserve incentives for conversion of the furnaces to gasification systems, in determining that there should be no further control of these units under CAA section 112(d) at the present time, we are also swayed by avoiding the anomaly of controlling only NDCE recovery furnaces.

We also note that the new source standard for recovery furnaces reflects the performance of NDCE recovery furnaces equipped with dry ESP systems. We could not base the standard

on the performance of gasification at this time because accurate data documenting performance on pulp and paper combustion sources do not yet exist. Obtaining accurate performance data on gasification systems is one of the purposes of the proposed Final Project Agreement for the Georgia-Pacific XL Project (63 FR 26607, May 8, 2000). In any case, we also do not believe that this standard poses the same potential to discourage use of gasification. First, we expect that sources using gasification technology will be able to meet the standard. Second, we are prepared to exercise flexibility as to compliance dates for any new source basing its compliance on use of gasification technology, consistent with the statute (63 FR 26607, May 8, 2000).

*Comment:* Several commenters objected to the proposed beyond-the-floor MACT standard for gaseous organic HAP emissions from existing semichemical combustion units that are not fluidized-bed reactors. Commenters also claimed that the proposed emission limit is not supportable for some types of chemical recovery combustion units, such as recovery furnaces.

*Response:* We disagree with the commenters. Based on available emissions data and our RTO cost estimates, RTO represent a cost-effective control strategy for meeting the proposed gaseous organic HAP emissions limits. (See docket No. A-94-67.)

*Comment:* A commenter provided data for kraft and soda recovery furnaces, SDT, and lime kilns which the commenter believes show a lack of correlation between outlet emissions of PM and outlet emissions of HAP metals. According to the commenter, variations in raw materials and processes have a greater effect on uncontrolled HAP metals emissions, and, therefore, controlled emissions, than the type of control device used. According to the commenter, there is not a straight correlation between reducing PM and reducing HAP metals.

*Response:* Regarding the commenter's suggestion that there is a lack of statistical correlation between HAP metals emissions and PM emissions, we agree that the ratio of the mass of HAP metals to the total mass of PM emitted varies from source to source.

Additionally, the amount of HAP metals in PM at each source varies. We do not agree with the commenters' assertion that PM is an inappropriate surrogate for particulate HAP metals emissions. Hazardous air pollutant metals are a component of PM, and control devices designed for PM removal also remove

particulate HAP metals at a similar rate. Therefore, emission control efficiencies, determined by measuring emissions at both the inlet and the outlet of the control device, are similar for both PM and particulate HAP metals. Outlet PM emissions are a good indicator of the performance of the control device, and there is no doubt that PM is an appropriate surrogate for particulate HAP metals.

Also, after reviewing available HAP metals emissions data, we conclude that there are insufficient data to establish numerical HAP metals emissions limits that reflect MACT. Consequently, we have chosen not to promulgate the proposed numerical HAP metals emissions limits and the associated HAP metals bubble compliance alternative.

*Comment:* A number of commenters objected to the proposed emissions limits for PM (as a surrogate for HAP metals) for existing sources. Commenters suggested that the PM emissions limits be recalculated using additional PM emissions data because they believe that many units operate well below the emissions levels selected for the proposed MACT floors. Commenters also took issue with our using the PM standards in the NSPS for Kraft Pulp Mills as the basis for the HAP metals MACT floors for existing kraft and soda combustion sources and noted that we failed to account for the fact that the technology reflected in the NSPS for Kraft Pulp Mills is an old technology and that numerous sources are achieving emissions reductions well beyond the NSPS.

*Response:* We disagree with the commenters regarding their objections to the proposed PM emissions limits for existing kraft and soda recovery furnaces and SDT. We believe that the MACT floor PM emissions limits for recovery furnaces and SDT are justified due to the variability in PM emissions from these sources and the uncertainties about why the same types of control equipment perform at different levels under comparable circumstances. Therefore, we believe that the standards in the final rule reasonably reflect the level of performance achievable in practice by the average of the best-performing 12 percent of sources.

For existing lime kilns, the control devices that we thought were representative of the HAP metals MACT floor were ESP, high-efficiency venturi scrubbers, and ESP and scrubbers in combination. However, lime kilns equipped with ESP consistently show lower PM emissions than lime kilns equipped with scrubbers, and it is apparent that there are a sufficient number of lime kilns equipped with

ESP to be representative of the HAP metals MACT floor. (That is, sufficient numbers of sources are equipped with ESP such that the level of performance of a lime kiln equipped with an ESP represents the level of performance achievable by the average of the best-performing 12 percent of existing kraft and soda lime kilns.) Therefore, today's action corrects that error and recalculates the PM emission limitation achievable by the technology that represents the MACT floor for existing lime kilns based on the performance of a lime kiln equipped with a properly designed and operated ESP.

Based on available data from monthly and annual compliance tests, lime kilns equipped with ESP can achieve PM emissions as low as 0.0023 g/dscm (0.001 gr/dscf) and as high as 0.15 g/dscm (0.064 gr/dscf) at 10 percent oxygen. To account for this variability in PM emissions from lime kiln ESP, we are setting the HAP metals MACT floor for existing lime kilns at 0.15 g/dscm (0.064 gr/dscf) at 10 percent oxygen, which is slightly less than the proposed HAP metals MACT floor of 0.15 g/dscm (0.067 gr/dscf) at 10 percent oxygen.

The best-performing lime kiln ESP (which represents MACT for HAP metals for new lime kilns) is more than twice the size (*i.e.*, has twice the specific collecting area) of typical lime kiln ESP, and its performance remains the basis for the new source MACT standard. Therefore, today's action does not differ from the proposed standard for HAP metals for new lime kilns.

## V. Summary of Impacts

### A. Air Quality Impacts

At the current level of control, emissions of HAP (HAP metals and gaseous organic HAP) are approximately 20,400 Mg/yr (22,500 tpy), and emissions of other pollutants (PM, VOC, CO, SO<sub>2</sub>, NO<sub>x</sub>) are approximately 507,100 Mg/yr (559,000 tpy). Implementation of today's final rule is expected to reduce emissions of HAP, PM, VOC, CO, and SO<sub>2</sub>, and slightly increase emissions of NO<sub>x</sub>. The EPA estimates that emissions of HAP will be reduced by approximately 2,500 Mg/yr (2,700 tpy) and emissions of other pollutants by approximately 107,900 Mg/yr (118,900 tpy).

### B. Cost Impacts

The estimated capital cost of control for today's final rule is \$241 million (1997\$) and includes the cost to purchase and install both the control equipment and monitoring equipment. Most (89 percent) of the capital cost can be attributed to the PM controls for

kraft, soda, and sulfite combustion units.

The estimated annual cost of the rule is \$32.2 million/yr (1997\$) and accounts for the year-to-year operating expenses associated with the control equipment and the monitoring equipment, in addition to the capital recovery expense associated with the equipment purchases. Most (79 percent) of the annual cost can be attributed to the PM controls for kraft, soda, and sulfite combustion units.

The total average costs for annual recordkeeping and reporting activities required by the final rule are estimated to be \$962,600/yr (1997\$) through the third year after the effective date and \$5.4 million/yr (1997\$) through the third year after the compliance date.

These capital and annualized cost estimates are intended to represent the maximum expected costs of the NESHAP and do not account for the potential cost savings achieved by mills that will successfully use the bubble compliance alternative.

### C. Economic Impacts

This section presents a summary of EPA's evaluation of the economic impacts of today's final rule. A more detailed analysis of the economic impacts of this rule, as well as the recently promulgated NESHAP for noncombustion pulp and paper sources (*i.e.*, MACT I and MACT III) and promulgated effluent limitation guidelines, is discussed in the Economic Analysis for the National Emission Standards for Hazardous Air Pollutants for Source Category: Pulp and Paper Production; Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards—Pulp, Paper, and Paperboard Category—Phase 1 (DCN 14649; hereafter, the Economic Analysis, or EA). The EPA estimates that the pulp and paper industry will incur total capital costs of \$240 million (1997\$) under the final rule. Overall, EPA projects total annualized compliance expenditures of \$30 million (1997\$).

Price increases of less than 0.5 percent are anticipated for bleached papergrade kraft and soda, dissolving kraft, dissolving sulfite, papergrade sulfite, and semichemical pulps and products. A price increase of 1.4 percent is expected for unbleached kraft pulps. Based on our economic modeling of the impacts of such changes, we do not anticipate any facility closures nor firm failures as a result of compliance with this final rule. In addition, we expect that production decreases, employment changes, and impacts on international trade will be minimal.

### D. Benefits Analysis

Implementation of today's final rule is expected to reduce emissions of HAP, PM, VOC, CO, and SO<sub>2</sub>, while it is expected to slightly increase emissions of NO<sub>x</sub>. Such pollutants can potentially cause adverse health effects and can have welfare effects, such as impaired visibility and reduced crop yields. In the benefits analysis, we have not conducted detailed air quality modeling to evaluate the magnitude and extent of the potential impacts from individual pulp and paper facilities. Nevertheless, to the extent that emissions from these facilities cause adverse effects, this final rule would mitigate such impacts.

#### 1. Qualitative Description of Pollutant Effects

This final rule is designed to reduce the emissions of HAP, as defined in section 112 of the CAA. Several of these HAP are classified as known, probable, or possible human carcinogens. They have also been shown to cause other adverse health effects, such as damage to the eye, central nervous system, liver, kidney, and respiratory system depending upon the exposures to these emissions. The types of studies in which these various effects have been reported include: (1) Epidemiological studies of health effects occurring in human populations (*e.g.*, the general population, or workers exposed in the workplace), (2) case reports that document human exposure incidents (*e.g.*, accidental releases or poisonings), (3) carefully controlled laboratory exposures of volunteer human subjects, and (4) laboratory studies on animals.

Emissions of VOC and NO<sub>x</sub> interact in the presence of sunlight to create ground-level ozone. Recent scientific evidence shows an association between elevated ozone concentrations and increases in hospital admissions for a variety of respiratory illnesses and indicates that ground-level ozone not only affects people with impaired respiratory systems (such as asthmatics), but healthy adults and children as well. Adverse welfare effects of ozone exposure include damage to crops, tree seedlings, ornamentals (shrubs, grass, *etc.*), and forested ecosystems.

The reactions between VOC and NO<sub>x</sub> to form ozone depend on the balance in concentrations of each pollutant found in the ambient air. For example, when the concentration of NO<sub>x</sub> is high relative to the concentration of VOC, VOC reductions are effective in limiting ozone formation, while NO<sub>x</sub> reductions in that situation are ineffective. This rule is expected to increase NO<sub>x</sub> emissions slightly, but also decrease

VOC emissions. The increase in NO<sub>x</sub> under this rule is not expected to cause significant adverse health or welfare impacts because the magnitude of the NO<sub>x</sub> increase (less than 500 Mg/yr) is very small relative to the total NO<sub>x</sub> inventory.

The VOC emission reductions from this rule occur primarily in rural attainment areas. These areas tend to be NO<sub>x</sub> limited; therefore, VOC reductions are not expected to affect ozone concentrations. The low-end estimate of VOC benefits relates to emissions reductions (3,400 Mg/yr) occurring in ozone nonattainment areas. Since ozone nonattainment areas are typically urban areas that are VOC limited, these emissions reductions are likely to be effective in limiting ozone formation. The high-end of the range of VOC benefits includes all VOC emissions reductions (31,000 Mg/yr) expected to occur for this rule. This estimate is included to account for the uncertainty as to whether specific rural areas are NO<sub>x</sub> limited.

Exposure to PM has been associated with the following adverse human health effects: Premature mortality, aggravation of respiratory and cardiovascular disease, changes in lung function and increased respiratory symptoms, alterations in lung tissue and structure, and altered respiratory tract defense mechanisms. In general, exposed populations at greater risk from these effects are the following: individuals with respiratory disease and cardiovascular disease, individuals with infectious disease, elderly individuals, asthmatic individuals, and children. Reduced welfare is associated with elevated concentrations of fine particles, which reduce visibility, damage materials, and cause soiling. The reductions in PM emissions under this rule (approximately 21,000 Mg/yr) are intended to decrease the adverse effects of PM, to the extent that populations or scenic destinations are located within pollutant transport distance of pulp and paper facilities.

Carbon monoxide is a colorless, odorless gas that is toxic to mammals. When inhaled, it combines with hemoglobin, which reduces the oxygen-carrying capacity of blood and results in less oxygen being transported to vital organs of the body. This can have detrimental effects on the cardiovascular and central nervous systems. There are numerous studies that support the association between ambient CO levels and adverse health effects which have been cited in the Air Quality Criteria Document for Carbon Monoxide (EPA Document No. 600/P-99/001F, June 2000). The reduction of

CO emissions under this rule is intended to diminish these potential effects.

Sulfur dioxide oxidizes in water to form both sulfurous and sulfuric acids. When SO<sub>2</sub> dissolves in the atmosphere in rain, fog, or snow, the acidity of the deposition can corrode various materials and cause damage to both aquatic and terrestrial ecosystems. Sulfur dioxide can also transform into PM<sub>2.5</sub>, (*i.e.*, particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers). Emissions of SO<sub>2</sub> are reduced slightly (20 Mg/yr) under this rule.

## 2. Monetized Air Quality Benefits

We used a benefit transfer method to value a subset of the emissions reductions for the MACT II rule.

Monetized benefit values are estimated for only VOC, SO<sub>2</sub>, and PM emissions reductions expected to result from this rule. This method relies on a benefits analysis conducted for the Ozone and PM national ambient air quality standards (NAAQS). The benefits analysis conducted for the NAAQS involves the same pollutants that are impacted by this pulp and paper rulemaking, and we assume the values from the NAAQS analysis are applicable to this final rule. The NAAQS analysis valued the national-level benefits achieved from a single, "representative" year under a new set of standards. The benefits (in dollars) per ton of reduction of each pollutant were then applied to the projected reductions of the same pollutants under this final rule.

We assume that the relationship of emission changes with the health and welfare effects associated with the NAAQS-estimated ozone and PM concentrations correspond to the projected changes in emissions from pulp and paper mills. No air quality modeling was conducted to evaluate potential changes in human exposure under the rule, so the actual magnitude and timing of human health benefits are unknown.

In some cases, we did consider the location of mills when applying the NAAQS benefits per ton figures. For VOC monetized benefits, a low-end estimate included emissions only in ozone nonattainment areas, which was compared to a high-end estimate that used all VOC emissions. For SO<sub>2</sub>, the benefit transfer values differed between mills located in the eastern and western portions of the United States. Some benefit categories were not monetized at all, due to a lack of sufficient data. Nevertheless, the largest monetized benefits are derived from PM reductions, for which we used

national emission estimates and assume that the distributions of exposed populations from the ozone and PM studies are similar to those exposed to pulp and paper mill emissions.

The EPA estimates that the rule would reduce HAP emissions by approximately 2,500 Mg/yr; VOC emissions by approximately 31,000 Mg/yr (3,400 Mg/yr in ozone nonattainment areas); CO emissions by 56,000 Mg/yr; PM emissions by approximately 21,000 Mg/yr; and SO<sub>2</sub> emissions by 20 Mg/yr; and increase NO<sub>x</sub> emissions by approximately 500 Mg/yr. Based upon the previously discussed emissions reductions, we estimate that the monetary benefits of the rule range between \$280 million and \$370 million (1997\$) for a representative year.

This rule is expected to result in reductions in PM emissions for particles of varying sizes. We expect most PM reductions to be in the size range of PM<sub>10</sub> and below. This assumption is based upon the fact that existing chemical recovery process sources typically have PM controls in place which have removed most of the large particles associated with uncontrolled emissions. However, it is likely that a small fraction of emissions reductions will be for particles above PM<sub>10</sub>. Reductions in emissions of particle sizes greater than 10 micrometers may not result in the same benefits as particles of sizes less than 10 micrometers. As such, PM-related benefits reported for this rule represent an upper-bound estimate on the applicable PM emissions reductions.

These figures suggest that the benefits of today's final rule may be significantly greater than the projected costs. Chapter 4 of the EA presents a detailed description of the methodology used to monetize the benefits of the rule.

## E. Non-Air Environmental Impacts

The quantity of PM collected will increase when recovery furnace PM control devices are upgraded or replaced to comply with today's final HAP metals standards. However, no increases in solid waste disposal are expected because existing mills have sufficient capacity within the chemical recovery process to recycle the additional PM collected.

If owners or operators choose to replace wet scrubbers with ESP to comply with the HAP metals standard for lime kilns, the generation of wastewater will be reduced. The significance of the reduction in wastewater will depend on whether the scrubber discharge had previously been recycled and reused. If wet scrubbers are replaced by ESP (and there was no

prior recycle or reuse of scrubber discharge), EPA estimates that wastewater discharge will decrease nationwide by about 35 billion liters per year (9.3 billion gallons per year) following implementation of the rule.

## F. Energy Impacts

The overall energy demand (*i.e.*, electricity plus natural gas) is expected to decrease by about 13,700 megawatt-hours per year (MWh/yr) nationwide under today's final rule. Electricity requirements are expected to decrease by about 17,800 MWh/yr under the final rule. This net decrease in electricity requirements includes an expected increase of about 39,600 MWh/yr when PM control devices on kraft and soda recovery furnaces and SDT and sulfite combustion units are upgraded or replaced, an expected increase of 18,400 MWh/yr when gaseous organic HAP controls (*i.e.*, RTO) are added to semichemical combustion units, and an expected decrease of about 75,900 MWh/yr if wet scrubbers are replaced by ESP to provide increased control of PM emissions from kraft and soda lime kilns. Natural gas requirements are expected to increase by about 4,100 MWh/yr when gaseous organic HAP controls are added to semichemical combustion units. This estimate is based on an increase of 0.4 million cubic meters per year (14 million cubic feet per year) of natural gas, assuming 1,024 British thermal units per cubic foot of natural gas.

## VI. Administrative Requirements

### A. Executive Order 12866, Regulatory Planning and Review

Under Executive Order 12866 (58 FR 51736, October 4, 1993), EPA must determine whether the regulatory action is "significant" and, therefore, subject to review by the Office of Management and Budget (OMB) and the requirements of the Executive Order. The Executive Order defines "significant regulatory action" as one that is likely to result in a rule that may:

- (1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- (3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, OMB has notified EPA that this action is a "significant regulatory action" because it will have an annual effect on the economy of \$100 million or more. Consequently, this action was submitted to OMB for review under Executive Order 12866. Any written comments from OMB and written EPA responses are available in the docket (see ADDRESSES section of this preamble).

#### *B. Executive Order 13132, Federalism*

Executive Order 13132, entitled "Federalism" (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Under Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, or EPA consults with State and local officials early in the process of developing the regulation. The EPA also may not issue a regulation that has federalism implications and that preempts State law unless EPA consults with State and local officials early in the process of developing the regulation.

This final rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Thus, the requirements of section 6 of the Executive Order do not apply to this rule.

#### *C. Executive Order 13084, Consultation and Coordination With Indian Tribal Governments*

Under Executive Order 13084, EPA may not issue a regulation that is not

required by statute, that significantly or uniquely affects the communities of Indian tribal governments, and that imposes substantial direct compliance costs on those communities, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by the tribal governments, or EPA consults with those governments. If EPA complies by consulting, Executive Order 13084 requires EPA to provide to OMB, in a separately identified section of the preamble to the rule, a description of the extent of EPA's prior consultation with representatives of affected tribal governments, a summary of the nature of their concerns, and a statement supporting the need to issue the regulation. In addition, Executive Order 13084 requires EPA to develop an effective process permitting elected officials and other representatives of Indian tribal governments to "provide meaningful and timely input in the development of regulatory policies on matters that significantly or uniquely affect their communities." Today's final rule does not significantly or uniquely affect the communities of Indian tribal governments. No tribal governments own or operate kraft, soda, sulfite, or stand-alone semichemical pulp mills. Accordingly, the requirements of section 3(b) of Executive Order 13084 do not apply to this rule.

#### *D. Executive Order 13045, Protection of Children From Environmental Health Risks and Safety Risks*

Executive Order 13045 (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, EPA must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned rule is preferable to other potentially effective and reasonably feasible alternatives that EPA considered.

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that are based on health or safety risks, such that the analysis required under section 5-501 of the Executive Order has the potential to influence the rule. This final rule is not subject to Executive Order 13045 because it is based on technology performance and not on health or safety risks.

#### *E. Unfunded Mandates Reform Act of 1995*

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Pub. L. 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "Federal mandates" that may result in expenditures by State, local, and tribal governments, in the aggregate, or by the private sector, of \$100 million or more in any 1 year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost effective, or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

The EPA has determined that this rule (in conjunction with the MACT I and MACT III rules and the effluent guidelines recently promulgated for the pulp and paper industry) contains a Federal mandate that may result in estimated costs of \$100 million or more to either State, local, or tribal governments, in the aggregate, or to the private sector in any 1 year. According, EPA has prepared under section 202 of the UMRA a written statement, which is summarized below.

##### 1. Statutory Authority

The statutory authority for this rulemaking is section 112 of the CAA.

Title III of the CAA Amendments was enacted to reduce the amount of nationwide air toxic emissions. Section 112(b) lists the 189 chemicals, compounds, or groups of chemicals deemed by Congress to be HAP. These toxic air pollutants are to be regulated by NESHAP. Hazardous air pollutant emissions from the pulp and paper production source category are being regulated under section 112(d) of the CAA. The NESHAP requires existing and new major sources to control emissions of HAP using MACT.

The pulp and paper production source category includes all mills that produce pulp and/or paper. The NESHAP for the source category are being developed in phases. This final NESHAP, referred to as MACT II, regulates chemical recovery combustion sources at kraft, soda, sulfite, and stand-alone semichemical pulp mills. The final NESHAP for noncombustion sources (*i.e.*, MACT I and MACT III) regulates noncombustion processes at mills that (1) chemically pulp wood fiber (using kraft, sulfite, soda, and semi-chemical methods) (MACT I), and (2) mechanically pulp wood fiber (*e.g.*, groundwood, thermomechanical, pressurized), pulp secondary fibers (deinked and nondeinked), and pulp nonwood (MACT III).

Regarding EPA's compliance with section 205(a), EPA did identify and consider a reasonable number of alternatives. A summary of these alternatives and their costs and environmental impacts is provided in the preamble to the proposed rule (63 FR 18773, April 15, 1998). Additional information on the costs and environmental impacts of the regulatory alternatives is presented in the Revised Nationwide Costs, Environmental Impacts, and Cost Effectiveness of Regulatory Alternatives for Kraft, Soda, Sulfite, and Semicheical Combustion Sources Memo (docket No. A-94-67).

The chosen alternative represents the MACT floor for chemical recovery combustion sources at kraft, soda, and sulfite pulp mills and is the least costly and least burdensome alternative for those sources. The chosen alternative also includes an option more stringent than the MACT floor for chemical recovery combustion sources at stand-alone semichemical pulp mills. However, EPA considers the cost effectiveness of the more stringent option for semichemical chemical recovery combustion sources (less than \$2,900/Mg of HAP reduced) acceptable, especially when measured against the environmental benefits of reducing emissions of both HAP and non-HAP. Therefore, EPA concludes that the

chosen alternative is the least costly and least burdensome alternative that achieves the objectives of section 112, as called for in section 205(a).

## 2. Social Costs and Benefits

The regulatory impact analysis prepared for MACT I, including the EPA's assessment of costs and environmental benefits, is detailed in the "Regulatory Impacts Assessment of Proposed Effluent Guidelines and NESHAP for the Pulp, Paper, and Paperboard Industry," (EPA-821/R-93-020). The regulatory impacts assessment document was updated for the final rule for MACT I and III and the proposed rule for MACT II and is referred to as the Economic Analysis Document (docket No. A-94-67).

## 3. Future and Disproportionate Costs

The EPA does not believe that there will be any disproportionate budgetary effects of the rule on any particular areas of the country, particular governments or types of communities (*e.g.*, urban, rural), or particular industry segments.

## 4. Effects on the National Economy

The estimated direct cost to the pulp and paper industry of compliance with this rule is approximately \$30 million (1997\$) annually. Indirect costs of the rule to industries other than the pulp and paper industry, governments, tribes, and other affected entities are expected to be minor. The estimated annual cost of this rule is minimal when compared to the nominal gross domestic product of \$8,318.4 billion reported for the Nation in 1997. This rule is expected to have little impact on domestic productivity, economic growth, full employment, creation of productive jobs, and on the international competitiveness of the U.S. goods and services.

## 5. Consultation With Government Officials

Although this rule does not affect any State, local, or tribal governments, EPA has consulted with State and local air pollution control officials. The EPA also has held numerous meetings on the proposed integrated rules with many of the stakeholders from the pulp and paper industry, including the AF&PA, the National Council of the Paper Industry for Air and Stream Improvement, numerous individual companies, vendors, and other interested parties. The EPA has added materials to the docket to document these meetings.

*F. Regulatory Flexibility Act (RFA), as Amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), 5 U.S.C. 601 et seq.*

The RFA generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today's rule on small entities, small entity is defined as: (1) A small business that has fewer than 750 employees for NAICS codes 32211, 32212, and 32213 (pulp, paper, and paperboard mills), (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000, and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of today's final rule on small entities, it has been determined that this action will not have a significant economic impact on a substantial number of small entities. The EPA has determined that three companies met the definition of small entity at the time of proposal. These three companies own only three of the 136 mills subject to today's final rule. The small business analysis reported in the EA shows that the affected mills have costs as a percentage of sales ratios of less than 1 percent, that these mills are not expected to close, nor are the owning companies expected to encounter financial distress as a result of this rule. An analysis of mergers and acquisitions subsequent to the baseline year of the analysis indicates that these three companies no longer meet the definition of small business.

## *G. Paperwork Reduction Act*

The information collection requirements in this final rule will be submitted for approval to OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* The EPA has prepared an Information Collection Request (ICR) document (ICR No. 1805.01), and a copy may be obtained from Sandy Farmer by mail at Office of Environmental Information, Collection Strategies Division (2822), U.S. EPA, 1200 Pennsylvania Avenue NW, Washington, DC 20460, by electronic mail at

farmer.sandy@epa.gov, or by calling (202) 260-2740. A copy may also be downloaded off the Internet at <http://www.epa.gov/icr>. The information requirements are not effective until OMB approves them.

The information requirements in the final rule include mandatory notifications, records, and reports required by the NESHAP General Provisions. These information requirements are needed to confirm the compliance status of major sources, to identify any non-major sources not subject to the standard and any new or reconstructed sources subject to the standards, to confirm that emission control devices are being properly operated and maintained, and to ensure that the standards are being achieved. Based on the recorded and reported information, EPA can decide which facilities, records, or processes should be inspected. These recordkeeping and reporting requirements are specifically authorized under section 114 of the CAA. All information submitted to EPA for which a claim of confidentiality is made is safeguarded according to EPA's policies in 40 CFR part 2, subpart B.

The annual public recordkeeping and reporting burden for this collection of information (averaged over the first 3 years after the effective date of this rule) is estimated to total 21,500 labor hours per year, at a total annual cost of \$958,300 (1997\$). This estimate includes initial notifications, one-time performance test and report (with repeat tests where needed), one-time purchase and installation of monitoring system, one-time preparation of a startup, shutdown, and malfunction plan with immediate reports for any event when the procedures in the plan were not followed, compliance reports, and recordkeeping. Total capital costs associated with these requirements over the 3-year period of the ICR are estimated at \$14,700, with annualized capital costs of \$1,600 (1997\$). Total operation and maintenance costs associated with these requirements are estimated at \$2,700 (1997\$).

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able

to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9 and 48 CFR chapter 15.

#### H. National Technology Transfer and Advancement Act of 1995

Section 12(d) of the National Technology Transfer and Advancement Act (NTTAA) of 1995 (Pub. L. 104-113; 15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory and procurement activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, business practices) developed or adopted by one or more voluntary consensus bodies. The NTTAA directs EPA to provide Congress, through annual reports to OMB, with explanations when an agency does not use available and applicable voluntary consensus standards.

This rulemaking involves the following technical standards: EPA Methods 1, 2, 3, 3A, 3B, 4, 5, 17, 25A, 29, and 308 (40 CFR part 60, appendix A; 40 CFR part 61, appendix B; 40 CFR part 63, appendix A). Consistent with the NTTAA, EPA conducted searches to identify voluntary consensus standards in addition to these EPA methods. For EPA Methods 3B and 308, no applicable voluntary consensus standards have been found at this time. The search and review results have been documented and are placed in the docket for this rule (Docket No. A-94-67).

The search for emissions testing procedures identified 19 voluntary consensus standards. The EPA determined that 15 of these 19 standards identified for measuring emissions of the HAP or surrogates subject to emissions limits in the rule would not be practical due to lack of equivalency, detail, and/or quality assurance/quality control requirements. Therefore, we did not use these voluntary consensus standards in this rulemaking. Four of the 19 consensus standards identified are under development or under EPA review. Therefore, we did not use these voluntary consensus standards in this rulemaking.

Section 63.865 of the rule lists the EPA test methods included in the rule.

Most of these methods have been used by States and industry for more than 10 years. Nevertheless, under § 63.7(e)(2)(ii) and (f), the rule also allows any State or source to apply to EPA for permission to use an alternative method in place of any of the EPA test methods listed in § 63.865.

#### I. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. The EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is a "major rule" as defined by 5 U.S.C. 804(2). This rule will be effective March 13, 2001.

#### List of Subjects in 40 CFR Part 63

Environmental protection, Administrative practice and procedure, Air pollution control, Hazardous substances, Intergovernmental relations, Pulp and paper mills, Reporting and recordkeeping requirements.

Dated: December 15, 2000.

**Carol M. Browner,**  
*Administrator.*

For the reasons set out in the preamble, title 40, chapter I, part 63 of the Code of Federal Regulations is amended as follows:

#### PART 63—[AMENDED]

1. The authority citation for part 63 continues to read as follows:

**Authority:** 42 U.S.C. 7401 *et seq.*

2. Part 63 is amended by adding subpart MM to read as follows:

#### Subpart MM—National Emission Standards for Hazardous Air Pollutants for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semicheical Pulp Mills

Sec.  
63.860 Applicability and designation of affected source.  
63.861 Definitions.  
63.862 Standards.  
63.863 Compliance dates.  
63.864 Monitoring requirements.

- 63.865 Performance test requirements and test methods.  
 63.866 Recordkeeping requirements.  
 63.867 Reporting requirements.  
 63.868 Delegation of authority.  
 Table 1 to Subpart MM—General Provisions  
 Applicability to Subpart MM

**§ 63.860 Applicability and designation of affected source.**

(a) The requirements of this subpart apply to the owner or operator of each kraft, soda, sulfite, or stand-alone semichemical pulp mill that is a major source of hazardous air pollutants (HAP) emissions as defined in § 63.2.

(b) *Affected sources.* The requirements of this subpart apply to each new or existing affected source listed in paragraphs (b)(1) through (6) of this section:

(1) Each existing chemical recovery system (as defined in § 63.861) located at a kraft or soda pulp mill.

(2) Each new nondirect contact evaporator (NDCE) recovery furnace and associated smelt dissolving tank(s) located at a kraft or soda pulp mill.

(3) Each new direct contact evaporator (DCE) recovery furnace system (as defined in § 63.861) and associated smelt dissolving tank(s) located at a kraft or soda pulp mill.

(4) Each new lime kiln located at a kraft or soda pulp mill.

(5) Each new or existing sulfite combustion unit located at a sulfite pulp mill.

(6) Each new or existing semichemical combustion unit located at a stand-alone semichemical pulp mill.

(c) The requirements of the General Provisions in subpart A of this part that apply to the owner or operator subject to the requirements of this subpart are identified in Table 1 to this subpart.

**§ 63.861 Definitions.**

All terms used in this subpart are defined in the Clean Air Act, in subpart A of this part, or in this section. For the purposes of this subpart, if the same term is defined in subpart A or any other subpart of this part and in this section, it must have the meaning given in this section.

*Black liquor* means spent cooking liquor that has been separated from the pulp produced by the kraft, soda, or semichemical pulping process.

*Black liquor gasification* means the thermochemical conversion of black liquor into a combustible gaseous product.

*Black liquor oxidation (BLO) system* means the vessels used to oxidize the black liquor, with air or oxygen, and the associated storage tank(s).

*Black liquor solids (BLS)* means the dry weight of the solids in the black

liquor that enters the recovery furnace or semichemical combustion unit.

*Black liquor solids firing rate* means the rate at which black liquor solids are fed to the recovery furnace or the semichemical combustion unit.

*Chemical recovery combustion source* means any source in the chemical recovery area of a kraft, soda, sulfite or stand-alone semichemical pulp mill that is an NDCE recovery furnace, a DCE recovery furnace system, a smelt dissolving tank, a lime kiln, a sulfite combustion unit, or a semichemical combustion unit.

*Chemical recovery system* means all existing DCE and NDCE recovery furnaces, smelt dissolving tanks, and lime kilns at a kraft or soda pulp mill. Each existing recovery furnace, smelt dissolving tank, or lime kiln is considered a process unit within a chemical recovery system.

*Direct contact evaporator (DCE) recovery furnace* means a kraft or soda recovery furnace equipped with a direct contact evaporator that concentrates strong black liquor by direct contact between the hot recovery furnace exhaust gases and the strong black liquor.

*Direct contact evaporator (DCE) recovery furnace system* means a direct contact evaporator recovery furnace and any black liquor oxidation system, if present, at the pulp mill.

*Dry electrostatic precipitator (ESP) system* means an electrostatic precipitator with a dry bottom (*i.e.*, no black liquor, water, or other fluid is used in the ESP bottom) and a dry particulate matter return system (*i.e.*, no black liquor, water, or other fluid is used to transport the collected PM to the mix tank).

*Hazardous air pollutants (HAP) metals* means the sum of all emissions of antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, and selenium as measured by EPA Method 29 (40 CFR part 60, appendix A) and with all nondetect data treated as one-half of the method detection limit.

*Kraft pulp mill* means any stationary source that produces pulp from wood by cooking (digesting) wood chips in a solution of sodium hydroxide and sodium sulfide. The recovery process used to regenerate cooking chemicals is also considered part of the kraft pulp mill.

*Kraft recovery furnace* means a recovery furnace that is used to burn black liquor produced by the kraft pulping process, as well as any recovery furnace that burns black liquor produced from both the kraft and semichemical pulping processes, and

includes the direct contact evaporator, if applicable. Includes black liquor gasification.

*Lime kiln* means the combustion unit (*e.g.*, rotary lime kiln or fluidized-bed calciner) used at a kraft or soda pulp mill to calcine lime mud, which consists primarily of calcium carbonate, into quicklime, which is calcium oxide (CaO).

*Lime production rate* means the rate at which dry lime, measured as CaO, is produced in the lime kiln.

*Method detection limit* means the minimum concentration of an analyte that can be determined with 99 percent confidence that the true value is greater than zero.

*Modification* means, for the purposes of § 63.862(a)(1)(ii)(E)(1), any physical change (excluding any routine part replacement or maintenance) or operational change (excluding any operational change that occurs during a start-up, shutdown, or malfunction) that is made to the air pollution control device that could result in an increase in PM emissions.

*Nondetect data* means, for the purposes of this subpart, any value that is below the method detection limit.

*Nondirect contact evaporator (NDCE) recovery furnace* means a kraft or soda recovery furnace that burns black liquor that has been concentrated by indirect contact with steam.

*Particulate matter (PM)* means total particulate matter as measured by EPA Method 5, EPA Method 17 (§ 63.865(b)(1)), or EPA Method 29 (40 CFR part 60, appendix A).

*Process unit* means an existing DCE or NDCE recovery furnace, smelt dissolving tank, or lime kiln in a chemical recovery system at a kraft or soda mill.

*Recovery furnace* means an enclosed combustion device where concentrated black liquor produced by the kraft or soda pulping process is burned to recover pulping chemicals and produce steam. Includes black liquor gasification.

*Regenerative thermal oxidizer (RTO)* means a thermal oxidizer that transfers heat from the exhaust gas stream to the inlet gas stream by passing the exhaust stream through a bed of ceramic stoneware or other heat-absorbing medium before releasing it to the atmosphere, then reversing the gas flow so the inlet gas stream passes through the heated bed, raising the temperature of the inlet stream close to or at its ignition temperature.

*Semichemical combustion unit* means any equipment used to combust or pyrolyze black liquor at stand-alone semichemical pulp mills for the purpose

of chemical recovery. Includes black liquor gasification.

*Similar process units* means all existing DCE and NDCE recovery furnaces, smelt dissolving tanks, or lime kilns at a kraft or soda pulp mill.

*Smelt dissolving tanks (SDT)* means vessels used for dissolving the smelt collected from a kraft or soda recovery furnace.

*Soda pulp mill* means any stationary source that produces pulp from wood by cooking (digesting) wood chips in a sodium hydroxide solution. The recovery process used to regenerate cooking chemicals is also considered part of the soda pulp mill.

*Soda recovery furnace* means a recovery furnace used to burn black liquor produced by the soda pulping process and includes the direct contact evaporator, if applicable. Includes black liquor gasification.

*Stand-alone semichemical pulp mill* means any stationary source that produces pulp from wood by partially digesting wood chips in a chemical solution followed by mechanical defibrating (grinding), and has an onsite chemical recovery process that is not integrated with a kraft pulp mill.

*Sulfite combustion unit* means a combustion device, such as a recovery furnace or fluidized-bed reactor, where spent liquor from the sulfite pulping process (i.e., red liquor) is burned to recover pulping chemicals.

*Sulfite pulp mill* means any stationary source that produces pulp from wood by cooking (digesting) wood chips in a solution of sulfurous acid and bisulfite ions. The recovery process used to regenerate cooking chemicals is also considered part of the sulfite pulp mill.

*Total hydrocarbons (THC)* means the sum of organic compounds measured as carbon using EPA Method 25A (40 CFR part 60, appendix A).

#### **§ 63.862 Standards.**

(a) *Standards for HAP metals: existing sources.* (1) Each owner or operator of an existing kraft or soda pulp mill must comply with the requirements of either paragraph (a)(1)(i) or (ii) of this section.

(i) Each owner or operator of a kraft or soda pulp mill must comply with the PM emissions limits in paragraphs (a)(1)(i)(A) through (C) of this section.

(A) The owner or operator of each existing kraft or soda recovery furnace must ensure that the concentration of PM in the exhaust gases discharged to the atmosphere is less than or equal to 0.10 gram per dry standard cubic meter (g/dscm) (0.044 grain per dry standard cubic foot (gr/dscf)) corrected to 8 percent oxygen.

(B) The owner or operator of each existing kraft or soda smelt dissolving tank must ensure that the concentration of PM in the exhaust gases discharged to the atmosphere is less than or equal to 0.10 kg/Mg (0.20 lb/ton) of black liquor solids fired.

(C) The owner or operator of each existing kraft or soda lime kiln must ensure that the concentration of PM in the exhaust gases discharged to the atmosphere is less than or equal to 0.15 g/dscm (0.064 gr/dscf) corrected to 10 percent oxygen.

(ii) As an alternative to meeting the requirements of § 63.862(a)(1)(i), each owner or operator of a kraft or soda pulp mill may establish PM emissions limits for each existing kraft or soda recovery furnace, smelt dissolving tank, and lime kiln that operates 6,300 hours per year or more by:

(A) Establishing an overall PM emission limit for each existing process unit in the chemical recovery system at the kraft or soda pulp mill using the methods in § 63.865(a)(1) and (2).

(B) The emissions limits for each kraft recovery furnace, smelt dissolving tank, and lime kiln that are used to establish the overall PM limit in paragraph (a)(1)(ii)(A) of this section must not be less stringent than the emissions limitations required by § 60.282 of part 60 of this chapter for any kraft recovery furnace, smelt dissolving tank, or lime kiln that is subject to the requirements of § 60.282.

(C) Each owner or operator of an existing kraft or soda recovery furnace, smelt dissolving tank, or lime kiln must ensure that the PM emissions discharged to the atmosphere from each of these sources are less than or equal to the applicable PM emissions limits, established using the methods in § 63.865(a)(1), that are used to establish the overall PM emissions limits in paragraph (a)(1)(ii)(A) of this section.

(D) Each owner or operator of an existing kraft or soda recovery furnace, smelt dissolving tank, or lime kiln must reestablish the emissions limits determined in paragraph (a)(1)(ii)(A) of this section if either of the actions in paragraphs (a)(1)(ii)(D)(1) and (2) of this section are taken:

(1) The air pollution control system for any existing kraft or soda recovery furnace, smelt dissolving tank, or lime kiln for which an emission limit was established in paragraph (a)(1)(ii)(A) of this section is modified (as defined in § 63.861) or replaced; or

(2) Any kraft or soda recovery furnace, smelt dissolving tank, or lime kiln for which an emission limit was established in paragraph (a)(1)(ii)(A) of this section

is shut down for more than 60 consecutive days.

(iii) Each owner or operator of an existing kraft or soda recovery furnace, smelt dissolving tank, or lime kiln that operates less than 6,300 hours per year must comply with the applicable PM emissions limits for that process unit provided in paragraph (a)(1)(i) of this section.

(2) The owner or operator of each existing sulfite combustion unit must ensure that the concentration of PM in the exhaust gases discharged to the atmosphere is less than or equal to 0.092 g/dscm (0.040 gr/dscf) corrected to 8 percent oxygen.

(b) *Standards for HAP metals: new sources.* (1) The owner or operator of any new kraft or soda recovery furnace must ensure that the concentration of PM in the exhaust gases discharged to the atmosphere is less than or equal to 0.034 g/dscm (gr/dscf) corrected to 8 percent oxygen.

(2) The owner or operator of any new kraft or soda smelt dissolving tank must ensure that the concentration of PM in the exhaust gases discharged to the atmosphere is less than or equal to 0.06 kg/Mg (0.12 lb/ton) of black liquor solids fired.

(3) The owner or operator of any new kraft or soda lime kiln must ensure that the concentration of PM in the exhaust gases discharged to the atmosphere is less than or equal to 0.023 g/dscm (0.010 gr/dscf) corrected to 10 percent oxygen.

(4) The owner or operator of any new sulfite combustion unit must ensure that the concentration of PM in the exhaust gases discharged to the atmosphere is less than or equal to 0.046 g/dscm (0.020 gr/dscf) corrected to 8 percent oxygen.

(c) *Standards for gaseous organic HAP.* (1) The owner or operator of any new recovery furnace at a kraft or soda pulp mill must ensure that the concentration or gaseous organic HAP, as measured by methanol, discharged to the atmosphere is no greater than 0.012 kg/Mg (0.025 lb/ton) of black liquor solids fired.

(2) The owner or operator of each existing or new semichemical combustion unit must ensure that:

(i) The concentration of gaseous organic HAP, as measured by total hydrocarbons reported as carbon, discharged to the atmosphere is less than or equal to 1.49 kg/Mg (2.97 lb/ton) of black liquor solids fired; or

(ii) The gaseous organic HAP emissions, as measured by total hydrocarbons reported as carbon, are reduced by at least 90 percent prior to

discharge of the gases to the atmosphere.

**§ 63.863 Compliance dates.**

(a) The owner or operator of an existing affected source or process unit must comply with the requirements in this subpart no later than January 12, 2004.

(b) The owner or operator of a new affected source that has an initial startup date after January 12, 2001, must comply with the requirements in this subpart immediately upon startup of the affected source, except as specified in § 63.6(b).

**§ 63.864 Monitoring requirements.**

(a) *General.* (1) The owner or operator of each affected kraft or soda recovery furnace or lime kiln equipped with an ESP must install, calibrate, maintain, and operate a continuous opacity monitoring system that can be used to determine opacity at least once every successive 10-second period and calculate and record each successive 6-minute average opacity using the procedures in §§ 63.6(h) and 63.8.

(2) The owner or operator of each affected kraft or soda recovery furnace, kraft or soda lime kiln, sulfite combustion unit, or kraft or soda smelt dissolving tank equipped with a wet scrubber must install, calibrate, maintain, and operate a continuous monitoring system that can be used to determine and record the pressure drop across the scrubber and the scrubbing liquid flow rate at least once every successive 15-minute period using the procedures in § 63.8(c), as well as the procedures in paragraphs (a)(2)(i) and (ii) of this section:

(i) The monitoring device used for the continuous measurement of the pressure drop of the gas stream across the scrubber must be certified by the manufacturer to be accurate to within a gage pressure of  $\pm 500$  pascals ( $\pm 2$  inches of water gage pressure); and

(ii) The monitoring device used for continuous measurement of the scrubbing liquid flow rate must be certified by the manufacturer to be accurate within  $\pm 5$  percent of the design scrubbing liquid flow rate.

(3) The owner or operator of each affected semichemical combustion unit equipped with an RTO must install, calibrate, maintain, and operate a continuous monitoring system that can be used to determine and record the operating temperature of the RTO at least once every successive 15-minute period using the procedures in § 63.8(c). The monitor must compute and record the operating temperature at the point of incineration of effluent gases that are

emitted using a temperature monitor accurate to within  $\pm 1$  percent of the temperature being measured.

(4) The owner or operator of each affected source or process unit that uses a control device listed in paragraphs (a)(1) through (3) of this section may monitor alternative control device operating parameters subject to prior written approval by the Administrator.

(5) The owner or operator of each affected source or process unit that uses an air pollution control system other than those listed in paragraphs (a)(1) through (3) of this section must monitor the parameters as approved by the Administrator using the methods and procedures in § 63.865(f).

(6) The owner or operator of each affected source or process unit complying with the gaseous organic HAP emissions limitations of § 63.862(c)(1) through the use of an NDCE recovery furnace equipped with a dry ESP system is not required to conduct any performance testing or any continuous monitoring to demonstrate compliance with the gaseous organic HAP emission limitation.

*(b) Initial compliance determination.*

(1) The owner or operator of each affected source or process unit subject to the requirements of this subpart is required to conduct an initial performance test using the test methods and procedures listed in §§ 63.7 and 63.865, except as provided in paragraph (b)(3) of this section.

*(2) Determination of operating ranges.*

(i) During the initial performance test required in paragraph (b)(1) of this section, the owner or operator of any affected source or process unit must establish operating ranges for the monitoring parameters in paragraphs (a)(2) through (5) of this section, as appropriate; or

(ii) The owner or operator may base operating ranges on values recorded during previous performance tests or conduct additional performance tests for the specific purpose of establishing operating ranges, provided that test data used to establish the operating ranges are or have been obtained using the test methods required in this subpart. The owner or operator of the affected source or process unit must certify that all control techniques and processes have not been modified subsequent to the testing upon which the data used to establish the operating parameter ranges were obtained.

(iii) The owner or operator of an affected source or process unit may establish expanded or replacement operating ranges for the monitoring parameter values listed in paragraphs (a)(2) through (5) of this section and

established in paragraph (b)(2)(i) or (ii) of this section during subsequent performance tests using the test methods in § 63.865.

(3) An initial performance test is not required to be conducted in order to determine compliance with the emissions limitations of § 63.862(c)(1) if the affected source or process unit includes an NDCE recovery furnace equipped with a dry ESP system.

(4) After the Administrator has approved the PM emissions limits for each kraft or soda recovery furnace, smelt dissolving tank, and lime kiln, the owner or operator complying with an overall PM emission limit established in § 63.862(a)(1)(ii) must demonstrate compliance with the HAP metals standard by demonstrating compliance with the approved PM emissions limits for each affected kraft or soda recovery furnace, smelt dissolving tank, and lime kiln, using the test methods and procedures in § 63.865(b).

*(c) On-going compliance provisions.*

(1) Following the compliance date, owners or operators of all affected sources or process units are required to implement corrective action, as specified in the startup, shutdown, and malfunction plan prepared under § 63.866(a) if the monitoring exceedances in paragraphs (c)(1)(i) through (v) of this section occur:

(i) For a new or existing kraft or soda recovery furnace or lime kiln equipped with an ESP, when the average of ten consecutive 6-minute averages result in a measurement greater than 20 percent opacity;

(ii) For a new or existing kraft or soda recovery furnace, kraft or soda smelt dissolving tank, kraft or soda lime kiln, or sulfite combustion unit equipped with a wet scrubber, when any 3-hour average parameter value is outside the range of values established in paragraph (b)(2) of this section.

(iii) For a new or existing semichemical combustion unit equipped with an RTO, when any 1-hour average temperature falls below the temperature established in paragraph (b)(2) of this section;

(iv) For an affected source or process unit equipped with an alternative emission control system approved by the Administrator, when any 3-hour average value is outside the range of parameter values established in paragraph (b)(2) of this section; and

(v) For an affected source or process unit that is monitoring alternative operating parameters established in paragraph (a)(4) of this section, when any 3-hour average value is outside the range of parameter values established in paragraph (b)(2) of this section.

(2) Following the compliance date, owners or operators of all affected sources or process units are in violation of the standards of § 63.862 if the monitoring exceedances in paragraphs (c)(2)(i) through (vi) of this section occur:

(i) For an existing kraft or soda recovery furnace equipped with an ESP, when opacity is greater than 35 percent for 6 percent or more of the operating time within any quarterly period;

(ii) For a new kraft or soda recovery furnace or a new or existing lime kiln equipped with an ESP, when opacity is greater than 20 percent for 6 percent or more of the operating time within any quarterly period;

(iii) For a new or existing kraft or soda recovery furnace, kraft or soda smelt dissolving tank, kraft or soda lime kiln, or sulfite combustion unit equipped with a wet scrubber, when six or more

3-hour average parameter values within any 6-month reporting period are outside the range of values established in paragraph (b)(2) of this section;

(iv) For a new or existing semichemical combustion unit equipped with an RTO, when any 3-hour average temperature falls below the temperature established in paragraph (b)(2) of this section;

(v) For an affected source or process unit equipped with an alternative air pollution control system approved by the Administrator, when six or more 3-hour average values within any 6-month reporting period are outside the range of parameter values established in paragraph (b)(2) of this section; and

(vi) For an affected source or process unit that is monitoring alternative operating parameters established in paragraph (a)(4) of this section, when six or more 3-hour average values

within any 6-month reporting period are outside the range of parameter values established in paragraph (b)(2) of this section.

(3) For purposes of determining the number of nonopacity monitoring exceedances, no more than one exceedance will be attributed in any given 24-hour period.

**§ 63.865 Performance test requirements and test methods.**

(a) The owner or operator of a process unit seeking to comply with a PM emission limit under § 63.862(a)(1)(ii)(A) must use the procedures in paragraphs (a)(1) through (4) of this section:

(1) Determine the overall PM emission limit for the chemical recovery system at the mill using Equation 1 of this section as follows:

$$EL_{PM} = [(C_{ref, RF})(Q_{RFtot}) + (C_{ref, LK})(Q_{LKtot})](F1)/(BLS_{tot}) + ER1_{ref, SDT} \quad (\text{Eq. 1})$$

Where:

$EL_{PM}$ =overall PM emission limit for all existing process units in the chemical recovery system at the kraft or soda pulp mill, kg/Mg (lb/ton) of black liquor solids fired.

$C_{ref, RF}$ =reference concentration of 0.10 g/dscm (0.044 gr/dscf) corrected to 8 percent oxygen for existing kraft or soda recovery furnaces.

$Q_{RFtot}$ =sum of the average volumetric gas flow rates measured during the performance test and corrected to 8 percent oxygen for all existing recovery furnaces in the chemical recovery system at the kraft or soda pulp mill, dry standard cubic meters per minute (dscm/min) (dry standard cubic feet per minute [dscf/min]).

$C_{ref, LK}$ =reference concentration of 0.15 g/dscm (0.064 gr/dscf) corrected to 10

percent oxygen for existing kraft or soda lime kilns.

$Q_{LKtot}$ =sum of the average volumetric gas flow rates measured during the performance test and corrected to 10 percent oxygen for all existing lime kilns in the chemical recovery system at the kraft or soda pulp mill, dscm/min (dscf/min).

$F1$ =conversion factor, 1.44 minutes•kilogram/day•gram (min•kg/d•g) (0.206 minutes•pound/day•grain [min•lb/d•gr]).

$BLS_{tot}$ =sum of the average black liquor solids firing rates of all existing recovery furnaces in the chemical recovery system at the kraft or soda pulp mill measured during the performance test, megagrams per day (Mg/d) (tons per day [tons/d]) of black liquor solids fired.

$ER1_{ref, SDT}$ =reference emission rate of 0.10 kg/Mg (0.20 lb/ton) of black liquor solids

fired for existing kraft or soda smelt dissolving tanks.

(2) Establish an emission limit for each kraft or soda recovery furnace, smelt dissolving tank, and lime kiln; and, using these emissions limits, determine the overall PM emission rate for the chemical recovery system at the mill using the procedures in paragraphs (a)(2)(i) through (v) of this section, such that the overall PM emission rate calculated in paragraph (a)(2)(v) of this section is less than or equal to the overall PM emission limit determined in paragraph (a)(1) of this section, as appropriate.

(i) The PM emission rate from each affected recovery furnace must be determined using Equation 2 of this section as follows:

$$ER_{RF} = (F1)(C_{EL, RF})(Q_{RF})/(BLS) \quad (\text{Eq. 2})$$

Where:

$ER_{RF}$ =emission rate from each recovery furnace, kg/Mg (lb/ton) of black liquor solids.

$F1$ =conversion factor, 1.44 min•kg/d•g (0.206 min•lb/d•gr).

$C_{EL, RF}$ =PM emission limit proposed by owner or operator for the recovery

furnace, g/dscm (gr/dscf) corrected to 8 percent oxygen.

$Q_{RF}$ =average volumetric gas flow rate from the recovery furnace measured during the performance test and corrected to 8 percent oxygen, dscm/min (dscf/min).

$BLS$ =average black liquor solids firing rate of the recovery furnace measured during

the performance test, Mg/d (ton/d) of black liquor solids.

(ii) The PM emission rate from each affected smelt dissolving tank must be determined using Equation 3 of this section as follows:

$$ER_{SDT} = (F1)(C_{EL, SDT})(Q_{SDT})/(BLS) \quad (\text{Eq. 3})$$

## Where:

$ER_{SDT}$ =emission rate from each SDT, kg/Mg (lb/ton) of black liquor solids fired.  
 $F1$ =conversion factor, 1.44 min•kg/d•g (0.206 min•lb/d•gr).  
 $C_{EL, SDT}$ =PM emission limit proposed by owner or operator for the smelt dissolving tank, g/dscm (gr/dscf).

$Q_{SDT}$ =average volumetric gas flow rate from the smelt dissolving tank measured during the performance test, dscm/min (dscf/min).  
 $BLS$ =average black liquor solids firing rate of the associated recovery furnace measured during the performance test, Mg/d (ton/d) of black liquor solids fired. If more than one SDT is used to dissolve

the smelt from a given recovery furnace, then the black liquor solids firing rate of the furnace must be proportioned according to the size of the SDT.

(iii) The PM emission rate from each affected lime kiln must be determined using Equation 4 of this section as follows:

$$ER_{LK} = (F1)(C_{EL, LK})(Q_{LK})(CaO_{tot}/BLS_{tot})/(CaO_{LK}) \quad (\text{Eq. 4})$$

## Where:

$ER_{LK}$ =emission rate from each lime kiln, kg/Mg (lb/ton) of black liquor solids.  
 $F1$ =conversion factor, 1.44 min•kg/d•g (0.206 min•lb/d•gr).  
 $C_{EL, LK}$ =PM emission limit proposed by owner or operator for the lime kiln, g/dscm (gr/dscf) corrected to 10 percent oxygen.  
 $Q_{LK}$ =average volumetric gas flow rate from the lime kiln measured during the performance test and corrected to 10 percent oxygen, dscm/min (dscf/min).

$CaO_{LK}$ =lime production rate of the lime kiln, measured as CaO during the performance test, Mg/d (ton/d) of CaO.  
 $CaO_{tot}$ =sum of the average lime production rates for all existing lime kilns in the chemical recovery system at the mill measured as CaO during the performance test, Mg/d (ton/d).  
 $BLS_{tot}$ =sum of the average black liquor solids firing rates of all recovery furnaces in the chemical recovery system at the mill measured during the performance test, Mg/d (ton/d) of black liquor solids.

(iv) If more than one similar process unit is operated in the chemical recovery system at the kraft or soda pulp mill, Equation 5 of this section must be used to calculate the overall PM emission rate from all similar process units in the chemical recovery system at the mill and must be used in determining the overall PM emission rate for the chemical recovery system at the mill:

$$ER_{PU_{tot}} = ER_{PU1}(PR_{PU1}/PR_{tot}) + \dots + (ER_{PUi})(PR_{PUi}/PR_{tot}) \quad (\text{Eq. 5})$$

## Where:

$ER_{PU_{tot}}$ =overall PM emission rate from all similar process units, kg/Mg (lb/ton) of black liquor solids fired.  
 $ER_{PU1}$ =PM emission rate from process unit No. 1, kg/Mg (lb/ton) of black liquor solids fired, calculated using Equation 2, 3, or 4 in paragraphs (a)(2)(i) through (iii) of this section.  
 $PR_{PU1}$ =black liquor solids firing rate in Mg/d (ton/d) for process unit No. 1, if process unit is a recovery furnace or SDT. The CaO production rate in Mg/d

(ton/d) for process unit No. 1, if process unit is a lime kiln.  
 $PR_{tot}$ =total black liquor solids firing rate in Mg/d (ton/d) for all recovery furnaces in the chemical recovery system at the kraft or soda pulp mill if the similar process units are recovery furnaces or SDT, or the total CaO production rate in Mg/d (ton/d) for all lime kilns in the chemical recovery system at the mill if the similar process units are lime kilns.  
 $ER_{PUi}$ =PM emission rate from process unit No. i, kg/Mg (lb/ton) of black liquor solids fired.

$PR_{PUi}$ =black liquor solids firing rate in Mg/d (ton/d) for process unit No. i, if process unit is a recovery furnace or SDT. The CaO production rate in Mg/d (ton/d) for process unit No. i, if process unit is a lime kiln.  
 $i$ =number of similar process units located in the chemical recovery system at the kraft or soda pulp mill.

(v) The overall PM emission rate for the chemical recovery system at the mill must be determined using Equation 6 of this section as follows:

$$ER_{tot} = ER_{RF_{tot}} + ER_{SDT_{tot}} + ER_{LK_{tot}} \quad (\text{Eq. 6})$$

## Where:

$ER_{tot}$ =overall PM emission rate for the chemical recovery system at the mill, kg/Mg (lb/ton) of black liquor solids fired.  
 $ER_{RF_{tot}}$ =PM emission rate from all kraft or soda recovery furnaces, calculated using Equation 2 or 5 in paragraphs (a)(2)(i) and (iv) of this section, where applicable, kg/Mg (lb/ton) of black liquor solids fired.  
 $ER_{SDT_{tot}}$ =PM emission rate from all smelt dissolving tanks, calculated using Equation 3 or 5 in paragraphs (a)(2)(ii) and (iv) of this section, where applicable, kg/Mg (lb/ton) of black liquor solids fired.  
 $ER_{LK_{tot}}$ =PM emission rate from all lime kilns, calculated using Equation 4 or 5 in paragraphs (a)(2)(iii) and (iv) of this section, where applicable, kg/Mg (lb/ton) of black liquor solids fired.

(3) For purposes of determining the volumetric gas flow rate used in this section for each kraft or soda recovery furnace, smelt dissolving tank, and lime kiln, Methods 1 through 4 in appendix A of 40 CFR part 60 must be used.

(4) Process data measured during the performance test must be used to determine the black liquor solids firing rate on a dry basis and the CaO production rate.

(b) The owner or operator seeking to determine compliance with § 63.862(a) must use the procedures in paragraphs (b)(1) through (4) of this section.

(1) For purposes of determining the concentration of PM emitted from each kraft or soda recovery furnace, sulfite combustion unit, smelt dissolving tank or lime kiln, Method 5 or 29 in appendix A of 40 CFR part 60 must be

used, except that Method 17 in appendix A of 40 CFR part 60 may be used in lieu of Method 5 or Method 29 if a constant value of 0.009 g/dscm (0.004 gr/dscf) is added to the results of Method 17, and the stack temperature is no greater than 205°C (400°F). The sampling time and sample volume for each run must be at least 60 minutes and 0.90 dscm (31.8 dscf). Water must be used as the cleanup solvent instead of acetone in the sample recovery procedure.

(2) For sources complying with paragraph (a)(1) or (2) of § 63.862, the PM concentration must be corrected to the appropriate oxygen concentration using Equation 7 of this section as follows:

$$C_{\text{corr}} = C_{\text{meas}} \times (21 - X)/(21 - Y) \quad (\text{Eq. 7})$$

Where:

$C_{\text{corr}}$  = the measured concentration corrected for oxygen, g/dscm (gr/dscf).

$C_{\text{meas}}$  = the measured concentration uncorrected for oxygen, g/dscm (gr/dscf).

X = the corrected volumetric oxygen concentration (8 percent for kraft or soda recovery furnaces and sulfite combustion

units and 10 percent for kraft or soda lime kilns).

Y = the measured average volumetric oxygen concentration.

(3) Method 3A or 3B in appendix A of 40 CFR part 60 must be used to determine the oxygen concentration. The gas sample must be taken at the

same time and at the same traverse points as the particulate sample.

(4) For purposes of complying with paragraph (a)(1) or (2) of § 63.862, the volumetric gas flow rate must be corrected to the appropriate oxygen concentration using Equation 8 of this section as follows:

$$Q_{\text{corr}} = Q_{\text{meas}} \times (21 - X)/(21 - Y) \quad (\text{Eq. 8})$$

Where:

$Q_{\text{corr}}$  = the measured volumetric gas flow rate corrected for oxygen, dscm/min (dscf/min).

$Q_{\text{meas}}$  = the measured volumetric gas flow rate uncorrected for oxygen, dscm/min (dscf/min).

X = the corrected volumetric oxygen concentration (8 percent for kraft or soda recovery furnaces and sulfite combustion

units and 10 percent for kraft or soda lime kilns).

Y = the measured average volumetric oxygen concentration.

(c) The owner or operator seeking to determine compliance with the gaseous organic HAP standard in § 63.862(c)(1) without using an NDCE recovery furnace equipped with a dry ESP system

must use Method 308 in appendix A of this part. The sampling time and sample volume for each run must be at least 60 minutes and 0.014 dscm (0.50 dscf), respectively.

(1) The emission rate from any new NDCE recovery furnace must be determined using Equation 9 of this section as follows:

$$ER_{\text{NDCE}} = (MR_{\text{meas}})/(BLS) \quad (\text{Eq. 9})$$

Where:

$ER_{\text{NDCE}}$  = methanol emission rate from the NDCE recovery furnace, kg/Mg (lb/ton) of black liquor solids fired.

$MR_{\text{meas}}$  = measured methanol mass emission rate from the NDCE recovery furnace, kg/hr (lb/hr).

BLS = average black liquor solids firing rate of the NDCE recovery furnace, Mg/hr

(ton/hr); determined using process data measured during the performance test.

(2) The emission rate from any new DCE recovery furnace system must be determined using Equation 10 of this section as follows:

$$ER_{\text{DCE}} = \left[ (MR_{\text{meas, RF}})/BLS_{\text{RF}} \right] + \left[ (MR_{\text{meas, BLO}})/BLS_{\text{BLO}} \right] \quad (\text{Eq. 10})$$

Where:

$ER_{\text{DCE}}$  = methanol emission rate from each DCE recovery furnace system, kg/Mg (lb/ton) of black liquor solids fired.

$MR_{\text{meas, RF}}$  = average measured methanol mass emission rate from each DCE recovery furnace, kg/hr (lb/hr).

$MR_{\text{meas, BLO}}$  = average measured methanol mass emission rate from the black liquor oxidation system, kg/hr (lb/hr).

$BLS_{\text{RF}}$  = average black liquor solids firing rate for each DCE recovery furnace, Mg/hr (ton/hr); determined using process data measured during the performance test.

$BLS_{\text{BLO}}$  = the average mass rate of black liquor solids treated in the black liquor oxidation system, Mg/hr (ton/hr); determined using process data measured during the performance test.

(d) The owner or operator seeking to determine compliance with the gaseous

organic HAP standards in § 63.862(c)(2) for semichemical combustion units must use Method 25A in appendix A of 40 CFR part 60. The sampling time must be at least 60 minutes.

(1) The emission rate from any new or existing semichemical combustion unit must be determined using Equation 11 of this section as follows:

$$ER_{\text{SCCU}} = (THC_{\text{meas}})/(BLS) \quad (\text{Eq. 11})$$

Where:

$ER_{\text{SCCU}}$  = THC emission rate from each semichemical combustion unit, kg/Mg (lb/ton) of black liquor solids fired.

$THC_{\text{meas}}$  = measured THC mass emission rate, kg/hr (lb/hr).

BLS = average black liquor solids firing rate, Mg/hr (ton/hr); determined using process data measured during the performance test.

(2) If the owner or operator of the semichemical combustion unit has selected the percentage reduction

standards for THC, under § 63.862(c)(2)(ii), the percentage reduction in THC emissions is computed using Equation 12 of this section as follows, provided that  $E_i$  and  $E_o$  are measured simultaneously:

$$(\%R_{\text{THC}}) = \left( \frac{E_i - E_o}{E_i} \right) \times 100 \quad (\text{Eq. 12})$$

Where:

$\%R_{\text{THC}}$  = percentage reduction of total hydrocarbons emissions achieved.

$E_i$  = measured THC mass emission rate at the THC control device inlet, kg/hr (lb/hr).

$E_o$  = measured THC mass emission rate at the THC control device outlet, kg/hr (lb/hr).

(e) The owner or operator seeking to comply with the continuous parameter monitoring requirements of § 63.864(b)(2) must continuously monitor each parameter and determine the arithmetic average value of each parameter during each 3-run performance test. Multiple 3-run performance tests may be conducted to establish a range of parameter values.

(f) The owner or operator of an affected source or process unit seeking to demonstrate compliance with the standards in § 63.862 using a control technique other than those listed in § 63.864(a)(1) through (3) must provide to the Administrator a monitoring plan that includes a description of the control device, test results verifying the performance of the control device, the appropriate operating parameters that will be monitored, and the frequency of measuring and recording to establish continuous compliance with the standards. The monitoring plan is subject to the Administrator's approval. The owner or operator of the affected source or process unit must install, calibrate, operate, and maintain the monitor(s) in accordance with the monitoring plan approved by the Administrator. The owner or operator must include in the information submitted to the Administrator proposed performance specifications and quality assurance procedures for the monitors. The Administrator may request further information and will approve acceptable test methods and procedures.

#### § 63.866 Recordkeeping requirements.

(a) *Startup, shutdown, and malfunction plan.* The owner or operator must develop and implement a written plan as described in § 63.6(e)(3) that contains specific procedures to be followed for operating the source and maintaining the source during periods of startup, shutdown, and malfunction, and a program of corrective action for malfunctioning process and control systems used to comply with the standards. In addition to the information required in § 63.6(e), the plan must include the requirements in paragraphs (a)(1) and (2) of this section.

(1) Procedures for responding to any process parameter level that is inconsistent with the level(s) established under § 63.864(b)(2), including the procedures in paragraphs (a)(1)(i) and (ii) of this section:

(i) Procedures to determine and record the cause of an operating parameter exceedance and the time the exceedance began and ended; and

(ii) Corrective actions to be taken in the event of an operating parameter exceedance, including procedures for recording the actions taken to correct the exceedance.

(2) The startup, shutdown, and malfunction plan also must include the schedules listed in paragraphs (a)(2)(i) and (ii) of this section:

(i) A maintenance schedule for each control technique that is consistent with, but not limited to, the manufacturer's instructions and recommendations for routine and long-term maintenance; and

(ii) An inspection schedule for each continuous monitoring system required under § 63.864 to ensure, at least once in each 24-hour period, that each continuous monitoring system is properly functioning.

(b) The owner or operator of an affected source or process unit must maintain records of any occurrence when corrective action is required under § 63.864(c)(1), and when a violation is noted under § 63.864(c)(2).

(c) In addition to the general records required by § 63.10(b)(2), the owner or operator must maintain records of the information in paragraphs (c)(1) through (6) of this section:

(1) Records of black liquor solids firing rates in units of megagrams/day or tons/day for all recovery furnaces and semichemical combustion units;

(2) Records of CaO production rates in units of megagrams/day or tons/day for all lime kilns;

(3) Records of parameter monitoring data required under § 63.864, including any period when the operating parameter levels were inconsistent with the levels established during the initial performance test, with a brief explanation of the cause of the deviation, the time the deviation occurred, the time corrective action was initiated and completed, and the corrective action taken;

(4) Records and documentation of supporting calculations for compliance determinations made under §§ 63.865(a) through (e);

(5) Records of monitoring parameter ranges established for each affected source or process unit;

(6) Records certifying that an NDCE recovery furnace equipped with a dry ESP system is used to comply with the gaseous organic HAP standard in § 63.862(c)(1).

#### § 63.867 Reporting requirements.

(a) *Notifications.* The owner or operator of any affected source or process unit must submit the applicable notifications from subpart A of this part, as specified in Table 1 of this subpart.

(b) *Additional reporting requirements for HAP metals standards.* (1) Any owner or operator of a group of process units in a chemical recovery system at a mill complying with the PM emissions limits in § 63.862(a)(1)(ii) must submit the PM emissions limits determined in § 63.865(a) for each affected kraft or soda recovery furnace, smelt dissolving tank, and lime kiln to the Administrator for approval. The emissions limits must be submitted as part of the notification of compliance status required under subpart A of this part.

(2) Any owner or operator of a group of process units in a chemical recovery system at a mill complying with the PM emissions limits in § 63.862(a)(1)(ii) must submit the calculations and supporting documentation used in § 63.865(a)(1) and (2) to the Administrator as part of the notification of compliance status required under subpart A of this part.

(3) After the Administrator has approved the emissions limits for any process unit, the owner or operator of a process unit must notify the Administrator before any of the actions in paragraphs (b)(3)(i) through (iv) of this section are taken:

(i) The air pollution control system for any process unit is modified or replaced;

(ii) Any kraft or soda recovery furnace, smelt dissolving tank, or lime kiln in a chemical recovery system at a kraft or soda pulp mill complying with the PM emissions limits in § 63.862(a)(1)(ii) is shut down for more than 60 consecutive days;

(iii) A continuous monitoring parameter or the value or range of values of a continuous monitoring parameter for any process unit is changed; or

(iv) The black liquor solids firing rate for any kraft or soda recovery furnace during any 24-hour averaging period is

increased by more than 10 percent above the level measured during the most recent performance test.

(4) An owner or operator of a group of process units in a chemical recovery system at a mill complying with the PM emissions limits in § 63.862(a)(1)(ii) and seeking to perform the actions in paragraph (b)(3)(i) or (ii) of this section must recalculate the overall PM emissions limit for the group of process units and resubmit the documentation required in paragraph (b)(2) of this section to the Administrator. All modified PM emissions limits are subject to approval by the Administrator.

(c) *Excess emissions report.* The owner or operator must report quarterly if measured parameters meet any of the conditions specified in paragraph (c)(1) or (2) of § 63.864. This report must contain the information specified in

§ 63.10(c) of this part as well as the number and duration of occurrences when the source met or exceeded the conditions in § 63.864(c)(1), and the number and duration of occurrences when the source met or exceeded the conditions in § 63.864(c)(2). Reporting excess emissions below the violation thresholds of § 63.864(c) does not constitute a violation of the applicable standard.

(1) When no exceedances of parameters have occurred, the owner or operator must submit a semiannual report stating that no excess emissions occurred during the reporting period.

(2) The owner or operator of an affected source or process unit subject to the requirements of this subpart and subpart S of this part may combine excess emissions and/or summary reports for the mill.

**§ 63.868 Delegation of authority.**

(a) In delegating implementation and enforcement authority to a State under section 112(d) of the Clean Air Act, the authorities contained in paragraph (b) of this section must be retained by the Administrator and not transferred to a State.

(b) The authorities which will not be delegated to States are listed in paragraphs (b)(1) through (4) of this section:

(1) Approval of alternatives to standards in § 63.862 under § 63.6(g).

(2) Approval of major alternatives to test methods under § 63.7(e)(2)(ii) and (f) and as defined in § 63.90.

(3) Approval of major alternatives to monitoring under § 63.8(f) and as defined in § 63.90.

(4) Approval of major alternatives to recordkeeping and reporting under § 63.10(f) and as defined in § 63.90.

TABLE 1 TO SUBPART MM—GENERAL PROVISIONS APPLICABILITY TO SUBPART MM

General provisions reference	Summary of requirements	Applies to subpart MM	Explanation
63.1(a)(1) .....	General applicability of the General Provisions	Yes .....	Additional terms defined in §63.861; when overlap between subparts A and MM of this part, subpart MM takes precedence.
63.1(a)(2)–(14) .....	General applicability of the General Provisions	Yes.	Subpart MM specifies the applicability in §63.860.
63.1(b)(1) .....	Initial applicability determination. ....	No. ....	
63.1(b)(2) .....	Title V operating permit—see 40 CFR part 70	Yes .....	All major affected sources are required to obtain a title V permit.
63.1(b)(3) .....	Record of the applicability determination .....	No .....	All affected sources are subject to subpart MM according to the applicability definition of subpart MM.
63.1(c)(1) .....	Applicability of subpart A of this part after a relevant standard has been set.	Yes .....	Subpart MM clarifies the applicability of each paragraph of subpart A of this part to sources subject to subpart MM.
63.1(c)(2) .....	Title V permit requirement .....	Yes .....	All major affected sources are required to obtain a title V permit. There are no area sources in the pulp and paper mill source category.
63.1(c)(3) .....	[Reserved] .....	NA..	Additional terms defined in §63.861; when overlap between subparts A and MM of this part occurs, subpart MM takes precedence.
63.1(c)(4) .....	Requirements for existing source that obtains an extension of compliance.	Yes.	
63.1(c)(5) .....	Notification requirements for an area source that increases HAP emissions to major source levels.	Yes.	
63.1(d) .....	[Reserved] .....	NA.	
63.1(e) .....	Applicability of permit program before a relevant standard has been set.	Yes.	
63.2 .....	Definitions .....	Yes .....	
63.3 .....	Units and abbreviations .....	Yes.	
63.4 .....	Prohibited activities and circumvention .....	Yes.	
63.5(a) .....	Construction and reconstruction—applicability	Yes.	
63.5(b)(1) .....	Upon construction, relevant standards for new sources.	Yes.	
63.5(b)(2) .....	[Reserved] .....	NA.	
63.5(b)(3) .....	New construction/reconstruction .....	Yes.	
63.5(b)(4) .....	Construction/reconstruction notification .....	Yes.	
63.5(b)(5) .....	Construction/reconstruction compliance .....	Yes.	
63.5(b)(6) .....	Equipment addition or process change .....	Yes.	
63.5(c) .....	[Reserved] .....	NA.	
63.5(d) .....	Application for approval of construction/reconstruction.	Yes.	
63.5(e) .....	Construction/reconstruction approval .....	Yes.	

TABLE 1 TO SUBPART MM—GENERAL PROVISIONS APPLICABILITY TO SUBPART MM—Continued

General provisions reference	Summary of requirements	Applies to subpart MM	Explanation
63.5(f)	Construction/reconstruction approval based on prior State preconstruction review.	Yes.	
63.6(a)(1)	Compliance with standards and maintenance requirements—applicability.	Yes.	
63.6(a)(2)	Requirements for area source that increases emissions to become major.	Yes.	
63.6(b)	Compliance dates for new and reconstructed sources.	Yes.	
63.6(c)	Compliance dates for existing sources	Yes	Subpart MM specifically stipulates the compliance schedule for existing sources.
63.6(d)	[Reserved]	NA.	
63.6(e)	Operation and maintenance requirements	Yes.	
63.6(f)	Compliance with nonopacity emissions standards.	Yes.	
63.6(g)	Compliance with alternative nonopacity emissions standards.	Yes.	
63.6(h)	Compliance with opacity and visible emissions (VE) standards.	Yes	Subpart MM does not contain any opacity or VE standards; however, § 63.864 specifies opacity monitoring requirements.
63.6(i)	Extension of compliance with emissions standards.	Yes.	
63.6(j)	Exemption from compliance with emissions standards.	Yes.	
63.7(a)(1)	Performance testing requirements—applicability.	Yes	§ 63.864(a)(6) specifies the only exemption from performance testing allowed under subpart MM.
63.7(a)(2)	Performance test dates	Yes.	
63.7(a)(3)	Performance test requests by Administrator under CAA section 114.	Yes.	
63.7(b)(1)	Notification of performance test	Yes.	
63.7(b)(2)	Notification of delay in conducting a scheduled performance test.	Yes.	
63.7(c)	Quality assurance program	Yes.	
63.7(d)	Performance testing facilities	Yes.	
63.7(e)	Conduct of performance tests	Yes.	
63.7(f)	Use of an alternative test method	Yes.	
63.7(g)	Data analysis, recordkeeping, and reporting	Yes.	
63.7(h)	Waiver of performance tests	Yes	§ 63.864(a)(6) specifies the only exemption from performance testing allowed under subpart MM.
63.8(a)	Monitoring requirements—applicability	Yes	See § 63.864.
63.8(b)	Conduct of monitoring	Yes	See § 63.864.
63.8(c)	Operation and maintenance of CMS	Yes	See § 63.864.
63.8(d)	Quality control program	Yes	See § 63.864.
63.8(e)(1)	Performance evaluation of CMS	Yes.	
63.8(e)(2)	Notification of performance evaluation	Yes.	
63.8(e)(3)	Submission of site-specific performance evaluation test plan.	Yes.	
63.8(e)(4)	Conduct of performance evaluation and performance evaluation dates.	Yes.	
63.8(e)(5)	Reporting performance evaluation results	Yes.	
63.8(f)	Use of an alternative monitoring method	Yes.	
63.8(g)	Reduction of monitoring data	Yes.	
63.9(a)	Notification requirements—applicability and general information.	Yes.	
63.9(b)	Initial notifications	Yes.	
63.9(c)	Request for extension of compliance	Yes.	
63.9(d)	Notification that source subject to special compliance requirements.	Yes.	
63.9(e)	Notification of performance test	Yes.	
63.9(f)	Notification of opacity and VE observations	Yes	Subpart MM does not contain any opacity or VE standards; however, § 63.864 specifies opacity monitoring requirements.
63.9(g)(1)	Additional notification requirements for sources with CMS.	Yes.	
63.9(g)(2)	Notification of compliance with opacity emissions standard.	Yes	Subpart MM does not contain any opacity or VE emissions standards; however, § 63.864 specifies opacity monitoring requirements.
63.9(g)(3)	Notification that criterion to continue use of alternative to relative accuracy testing has been exceeded.	Yes.	

TABLE 1 TO SUBPART MM—GENERAL PROVISIONS APPLICABILITY TO SUBPART MM—Continued

General provisions reference	Summary of requirements	Applies to subpart MM	Explanation
63.9(h) .....	Notification of compliance status .....	Yes.	
63.9(i) .....	Adjustment to time periods or postmark deadlines for submittal and review of required communications.	Yes.	
63.9(j) .....	Change in information already provided .....	Yes.	
63.10(a) .....	Recordkeeping requirements—applicability and general information.	Yes .....	See § 63.866.
63.10(b)(1) .....	Records retention .....	Yes.	
63.10(b)(2) .....	Information and documentation to support notifications and demonstrate compliance.	Yes.	
63.10(b)(3) .....	Records retention for sources not subject to relevant standard.	Yes .....	Applicability requirements are given in § 63.860.
63.10(c) .....	Additional recordkeeping requirements for sources with CMS..	Yes.	
63.10(d)(1) .....	General reporting requirements .....	Yes.	
63.10(d)(2) .....	Reporting results of performance tests .....	Yes.	
63.10(d)(3) .....	Reporting results of opacity or VE observations.	Yes .....	Subpart MM does not include any opacity or VE standards; however, § 63.864 specifies opacity monitoring requirements.
63.10(d)(4) .....	Progress reports .....	Yes.	
63.10(d)(5) .....	Periodic and immediate startup, shutdown, and malfunction reports.	Yes.	
63.10(e) .....	Additional reporting requirements for sources with CMS.	Yes.	
63.10(f) .....	Waiver of recordkeeping and reporting requirements.	Yes.	
63.11 .....	Control device requirements for flares .....	No .....	The use of flares to meet the standards in subpart MM is not anticipated.
63.12 .....	State authority and delegations .....	Yes.	
63.13 .....	Addresses of State air pollution control agencies and EPA Regional Offices.	Yes.	
63.14 .....	Incorporations by reference .....	Yes.	
63.15 .....	Availability of information and confidentiality ...	Yes.	

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