

treated as having two intangibles, an amortizable section 197 intangible with an adjusted basis of \$120 and a new amortization period of 15 years and a nonamortizable intangible with an adjusted basis of \$30.

(iii) In applying the anti-churning rules to future transfers of the distributed intangible, under paragraph (h)(12)(ii)(C) of this section, one-third of the intangible will continue to be subject to the anti-churning rules, determined as follows: The sum of the amount of the distributed intangible's basis that is nonamortizable under paragraph (g)(2)(ii)(B) of this section (\$0) and the total unrealized appreciation inherent in the intangible reduced by the amount of the increase in the adjusted basis of the distributed intangible under section 732(b) to which the anti-churning rules do not apply (\$180 - \$120 = \$60), over the fair market value of the distributed intangible (\$180).

Example 29. Distribution of section 197(f)(9) intangible to partner who acquired partnership interest after the effective date.

(i) The facts are the same as in example 28, except that B and C form ABC in 1990. A does not acquire an interest in ABC until 1995. In 1995, A contributes \$150 to ABC in exchange for a one-third interest in ABC. At the time of the distribution, the adjusted basis of A's interest in ABC is \$150.

(ii) As in *Example 28*, the anti-churning rules do not apply to the increase in the basis of the intangible distributed to A under section 732(b) to the extent that it does not exceed the unrealized appreciation from the intangible allocable to B and C. Under paragraph (h)(12)(ii) of this section, the anti-churning provisions also do not apply to the section 732(b) basis increase to the extent of A's allocable share of the unrealized appreciation from the intangible because A acquired the ABC interest from an unrelated person after August 10, 1993, and the intangible was acquired by the partnership before A acquired the ABC interest. Under paragraph (h)(12)(ii)(E) of this section, A is deemed to acquire the ABC partnership interest from an unrelated person because A acquired the ABC partnership interest in exchange for a contribution to the partnership of property other than the distributed intangible and, at the time of the contribution, no partner in the partnership was related to A. Consequently, the increase in the basis of the intangible under section 732(b) is not subject to the anti-churning rules to the extent of the total unrealized appreciation from the intangible allocable to A, B, and C. The total unrealized appreciation from the intangible allocable to A, B, and C is \$180 (the gain the partnership would have recognized if it had sold the intangible for its fair market value immediately before the distribution). Because this amount exceeds the section 732(b) basis increase of \$150, the entire section 732(b) basis increase is amortizable.

(iii) In applying the anti-churning rules to future transfers of the distributed intangible, under paragraph (h)(12)(ii)(C) of this section, one-sixth of the intangible will continue to be subject to the anti-churning rules, determined as follows: The sum of the amount of the distributed intangible's basis that is nonamortizable under paragraph (g)(2)(ii)(B) of this section (\$0) and the total unrealized appreciation inherent in the intangible reduced by the amount of the increase in the adjusted basis of the distributed intangible under section 732(b) to which the anti-churning rules do not apply (\$180 - \$150 = \$30), over the fair market value of the distributed intangible (\$180).

Example 30. Distribution of section 197(f)(9) intangible contributed to the partnership by a partner. (i) The facts are the same as in *Example 29*, except that C purchased the intangible used in the consulting business in 1988 for \$60 and contributed the intangible to ABC in 1990. At that time, the intangible had a fair market value of \$150 and an adjusted tax basis of \$60. When ABC distributes the intangible to A in 2000, the intangible has a fair market value of \$180 and a basis of \$60.

(ii) As in *Examples 28* and *29*, the adjusted basis of the intangible in A's hands is \$150 under section 732(b). However, the increase in the adjusted basis of the intangible under section 732(b) is only \$90 (\$150 adjusted basis after the distribution compared to \$60 basis before the distribution). Pursuant to paragraph (g)(2)(ii)(B) of this section, A steps into the shoes of ABC with respect to the \$60 of A's adjusted basis in the intangible that corresponds to ABC's basis in the intangible and this portion of the basis is nonamortizable. B and C are not related to A. A acquired the ABC interest from an unrelated person after August 10, 1993, and the intangible was acquired by ABC before A acquired the ABC interest. Therefore, under paragraph (h)(12)(ii) of this section, the section 732(b) basis increase is amortizable to the extent of A, B, and C's allocable share of the unrealized appreciation from the intangible. The total unrealized appreciation from the intangible that is allocable to A, B, and C is \$120. If ABC had sold the intangible immediately before the distribution to A for its fair market value of \$180, it would have recognized gain of \$120, which would have been allocated \$10 to A, \$10 to B, and \$100 to C under section 704(c). Because A, B, and C's allocable share of the unrealized appreciation from the intangible exceeds the section 732(b) basis increase in the intangible, the entire \$90 of basis increase is amortizable by A. Accordingly, after the distribution, A will be treated as having two intangibles, an amortizable section 197 intangible with an adjusted basis of \$90 and a new amortization period of 15 years and a nonamortizable intangible with an adjusted basis of \$60.

(iii) In applying the anti-churning rules to future transfers of the distributed intangible, under paragraph (h)(12)(ii)(C) of this section, one-half of the intangible will continue to be subject to the anti-churning rules, determined as follows: The sum of the amount of the distributed intangible's basis that is nonamortizable under paragraph (g)(2)(ii)(B) of this section (\$60) and the total unrealized appreciation inherent in the intangible reduced by the amount of the increase in the adjusted basis of the distributed intangible under section 732(b) to which the anti-churning rules do not apply (\$120 - \$90 = \$30), over the fair market value of the distributed intangible (\$180).

* * * * *

(1) * * *

(1) *In general.* * * * Paragraphs (h)(12)(ii), (iv) and (vi) of this section apply to partnership distributions occurring on or after the date final regulations are published in the **Federal Register**.

* * * * *

David Mader,

Acting Deputy Commissioner of Internal Revenue Service.

[FR Doc. 00-1381 Filed 1-20-00; 1:19 pm]

BILLING CODE 4830-01-U

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[AD-FRL-6523-8]

RIN 2060-AH74

National Emission Standards for Hazardous Air Pollutants for Source Category: Pulp and Paper Production

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule amendments and notice of public hearing.

SUMMARY: Under the Clean Air Act (Act), EPA issued a final rule (63 FR 18504, April 15, 1998) to reduce hazardous air pollutant (HAP) emissions from the pulp and paper production source category. That rule (known as the Pulp and Paper national emission standard for hazardous air pollutants (NESHAP) or pulp and paper NESHAP) is the air component of the integrated air and water rules for the pulp and paper industry (known as the Pulp and Paper Cluster Rules). In this action, we are proposing to amend certain passages

of regulatory text in the 1998 pulp and paper NESHAP by adding equivalent compliance alternatives. These proposed amendments do not change the level of control or compromise the environmental protection achieved by the 1998 pulp and paper NESHAP. We are reopening the public comment period for comment only on the amendments proposed in today's action. We are proposing amendments to the pulping process vent standards and the biological treatment system standards to address technical issues identified after promulgation. Also, drafting errors identified after promulgation are being corrected in today's action.

DATES: *Comments.* The EPA will accept comments regarding these proposed amendments on or before March 10, 2000.

Public Hearing. A public hearing regarding the proposed amendments will be held if requests to speak are

received by the EPA by February 7, 2000. If a public hearing is requested, the hearing will be held on February 11, 2000.

ADDRESSES: *Comments.* Submit written comments (in duplicate, if possible) to Docket No. A-92-40 at the following address: U.S. Environmental Protection Agency, Air and Radiation Docket and Information Center (MC-6102), 401 M Street SW, Washington, DC 20460. The EPA requests that a separate copy of the comments also be sent to Mr. Stephen Shedd at the address listed below.

Docket. Docket No. A-92-40 contains supporting information for this proposed action and the prior promulgated and proposed amendments to the 1998 NESHAP and is available for inspection and copying between 8:00 a.m. and 5:30 p.m., Monday through Friday except for Federal holidays, at the following address: U.S. Environmental Protection Agency, Air

and Radiation Docket and Information Center (MC-6102), 401 M Street SW, Washington, DC 20460, or by calling (202) 260-7548. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Mr. Stephen Shedd, Emission Standards Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711; telephone (919) 541-5397, and e-mail at "shedd.steve@epa.gov". For questions on compliance and applicability determinations, contact Mr. Seth Heminway, Office of Enforcement and Compliance Assessment (2223A), U.S. Environmental Protection Agency, 401 M Street SW, Washington, DC 20460; telephone (202) 564-7017 and e-mail at "heminway.seth@epa.gov".

SUPPLEMENTARY INFORMATION: *Regulated Entities.* Entities potentially regulated by this proposed action include:

Category	SIC code	NAICS code	Examples of regulated entities
Industry	26	3221	Pulp mills and integrated mills (mills that manufacture pulp and paper/paperboard) that chemically pulp wood fiber.

This list is not intended to be exhaustive. It provides a guide regarding the types of entities that we expect to regulate by this proposed action. To determine whether your facility would be regulated by this action, you must carefully examine the applicability criteria in part 63, subparts A and S of title 40 of the Code of Federal Regulations.

Technology Transfer Network. The Technology Transfer Network (TTN) is a network of electronic bulletin boards for the EPA. The TTN provides information and technology exchange in various areas of air pollution control. Information regarding the basis and purpose of this proposed action, the rule, and other relevant documents can be found on the pulp and paper page of EPA's TTN Unified Air Toxics World Wide Web site (UATW) at "http://www.epa.gov/ttn/uatw/pulp/pulppg.html". For more information on the TTN, call the HELP line at (919) 541-5384.

Public Hearing. If a public hearing is requested by the required date (see **DATES** section in this document), the public hearing will be held at the EPA Office of Administration Auditorium, Research Triangle Park, NC. Persons interested in presenting oral testimony or inquiring as to whether a hearing will be held should contact Ms. JoLynn Collins, Waste and Chemical Processes Group, Emission Standards Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, NC

27711, telephone number (919) 541-5671. The record for the hearing will remain open for 30 days after the hearing date to provide an opportunity for submittal of rebuttal and additional information.

In accordance with section 307(d)(5) of the Act, EPA will hold a public hearing, if requested, to discuss the proposed amendments. If a public hearing is held, the EPA may ask clarifying questions during the oral presentations but will not respond to the presentations or comments. To provide an opportunity for all who may wish to speak, oral presentations will be limited to 15 minutes each. Any member of the public may file a written statement (see **DATES** and **ADDRESSES**). The EPA will consider written statements and supporting information with equivalent weight as any oral statement and supporting information subsequently presented at a public hearing, if held.

Docket. The docket is an organized and complete file of all the information considered by EPA in the development of this rulemaking. The docket is a dynamic file because material is added throughout the rule development. The docketing system is intended to allow members of the public and industries involved to readily identify and locate documents so that you can effectively participate in the rulemaking process. Along with the proposed and promulgated standards and their preambles, the contents of the docket

except for certain interagency documents will serve as the record in case of judicial review. (See section 307(d)(7)(A) of the Act.)

Outline. Information on the proposed amendments is organized as follows:

I. Description of the Proposed Amendments

A. Introduction

B. Is a performance test required for boilers that introduce HAP emission streams with the combustion air (§ 63.443(d))?

C. Biological Treatment System Standards

1. Introduction for Proposed Amendments
2. Can a finite list of HAPs be used in demonstrating compliance for biological treatment systems (§ 63.457(l))?
3. Given the finite number of HAPs in regulated condensates, what is the appropriate emission standard for biological treatment systems (§ 63.446(e))?
4. What minimum measurement level should be used in analyzing total HAPs in liquid streams (§ 63.457(c))?

D. Biological Treatment System Performance Test Requirements

1. Introduction
2. Given the proposed changes, how do I conduct a performance demonstration for a biological treatment system (§ 63.457(l))?
3. What procedures must be followed to determine the fraction of compounds degraded in nonthoroughly mixed open biological treatment systems (§ 63.457(l))?

E. Open Biological Treatment System Monitoring Requirements

1. Introduction

2. May a mill use site-specific monitoring parameters for open biological treatment systems instead of the parameters specified in the final rule (§ 63.453(j))?

3. In the event of a parameter excursion, must I conduct in-zone sampling of nonthoroughly mixed open biological treatment systems when unsafe conditions exist (§ 63.453)?
4. Are the biological treatment system monitoring requirements applicable to both open and closed biological treatment systems (§ 63.453)?
5. Given the proposed changes, how do I conduct daily compliance monitoring for open biological treatment systems (§ 63.453(j))?
6. Do I still have to conduct the first quarter compliance tests for total HAPs (§ 63.453(j))?
7. May I use monitoring parameter values recorded during a compliance monitoring test to expand the established parameter operating range (§ 63.455(e))?

F. Drafting Error Corrections

II. Administrative Requirements

- A. Paperwork Reduction Act
- B. Executive Order 12866: Regulatory Planning and Review
- C. Executive Order 13084: Consultations and Coordination With Indian Tribal Governments
- D. Regulatory Flexibility Act
- E. Unfunded Mandates Reform Act
- F. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks
- G. National Technology Transfer and Advancement Act
- H. Executive Order 13132 (Federalism)

I. Description of the Proposed Amendments

A. Introduction

The Pulp and Paper NESHAP was promulgated on April 15, 1998 (63 FR 18504) and was codified as 40 CFR part 63, subpart S. Since promulgation, the rule has been amended by four **Federal Register** notices (63 FR 42238, 63 FR 49455, 63 FR 71385, and 64 FR 17555) to correct minor drafting errors and inadvertent omissions, clarify the intent of the final rule, and provide technical amendments. The above promulgated rule and amendments are hereafter referred to as the "final rule" in this preamble. Today, we are proposing additional changes to the final rule that affect the compliance demonstration for combustion devices used to control pulping vent gases and for biological treatment systems used to treat pulping condensates. The equivalent compliance alternatives proposed in today's amendments do not change the level of control or compromise the environmental protection achieved by the final rule. We are reopening the comment period for comments only on the amendments proposed in today's action.

Following promulgation, we received comments from the industry regarding the pulping process vent and condensate standards. The comments focused on performance testing requirements for combustion devices used to control HAP vent gas streams, and the monitoring and test methods used for demonstrating initial and continuous compliance using biological treatment systems.

We have evaluated the comments and decided to propose amendments to the final rule to address the issues raised by the commenters. For the pulping process vent standards for kraft, soda, and semi-chemical mills, we are proposing to remove the requirement, in some cases, to conduct an initial performance test or continuous temperature monitoring of the control device.

For biological treatment systems, we are proposing several changes. Under the proposed amendments, you would be allowed to use an optional format of the emission limit, expressed as a minimum HAP mass removal, and to use four specific HAPs as a surrogate for total HAPs. We are also proposing to allow you to determine site-specific monitoring parameters for open biological treatment systems as an alternative to using the parameters specified in the final rule. Additionally, we are proposing new test procedures, including special monitoring procedures, for nonthoroughly mixed biological treatment systems.

The rationale for the proposed amendments is presented in the following sections. The rationale for each change is presented in a question and answer format.

B. Is a Performance Test Required for Boilers That Introduce HAP Emission Streams With the Combustion Air (§ 63.443(d))?

We are proposing to remove the requirement for conducting an initial performance test in some cases. The pulping process vent requirement being proposed today (§ 63.443(d)(4)) eliminates the initial performance test and continuous temperature monitoring if HAP vent gases are introduced with the combustion air into a boiler or recovery furnace with a heat input capacity greater than or equal to 44 megawatts (MW) (150 million British thermal units per hour, Btu/hr).

In the final rule, one option for controlling HAP emission streams from kraft, soda, and semi-chemical pulping systems is to route the streams to a boiler, lime kiln, or recovery furnace (§ 63.443(d)(4)). The final rule does not require you to conduct an initial performance test or continuously

monitor the operating temperature of the combustion unit if the HAP emission stream enters the unit with the primary fuel or enters directly into the flame zone.

Following promulgation, we received comments indicating that pulping vent gases are typically controlled in boilers and recovery furnaces by mixing the vent gases with the combustion air (not introduced directly into the flame zone). The commenters stated that conducting an initial performance test on these combustion devices to demonstrate compliance with the standard would not be reasonable due to the large volume of air flow through these devices. The commenters requested that the initial performance test requirement for these boilers be removed from the final rule.

We have reviewed the performance of combustion devices used to control HAP emissions and found that many standards allow boilers with heat input capacities greater than or equal to 44 MW (150 million Btu/hr) to control HAP emission streams without conducting an initial performance test. The supporting information ("Reactor Processes in the Synthetic Organic Chemical Manufacturing Industry—Background Information for Promulgated Standards," EPA-450/3-90-016b, March 1993) shows that "large" boilers with heat input capacities greater than or equal to 44 MW (150 million Btu/hr) are typically operated at temperatures and residence times exceeding the levels needed to achieve at least 98 percent reduction of HAPs (as required in the final rule (§ 63.443(d)(1))) when the HAP gases are introduced with the combustion air. In contrast, boilers with heat input capacities less than 44 MW are generally not operated at levels that would ensure at least 98 percent HAP reduction unless the HAP emission stream is introduced with the primary fuel or into the flame zone. Using this same rationale, the National Emission Standard for Organic HAP from Process Vents, Storage Vessels, Transfer Operations, and Wastewater (subpart G of part 63), the NESHAP for Petroleum Refineries (subpart CC of part 63), and several other NESHAP allow these large boilers to be used to control HAP emission streams without conducting an initial performance test and without monitoring operating temperature if the HAP emission streams are introduced with the combustion air, with the primary fuel, or into the flame zone.

Consequently, we are proposing to amend the vent control requirements for kraft, soda, and semi-chemical pulping mills to eliminate the initial performance test and continuous monitoring requirements if you

introduce the regulated HAP emission streams with the combustion air into a boiler or recovery furnace with a heat input capacity greater than or equal to 44 MW (150 million Btu/hr). However, an initial performance test and continuous monitoring of the operating temperature are required if you introduce the HAP emission streams with the combustion air into a boiler or recovery furnace with a heat input capacity less than 44 MW. Lime kilns must demonstrate compliance with the final rule by introducing HAP emission streams with the primary fuel or into the flame zone because we do not have any data that show lime kilns can achieve 98 percent destruction by introducing the HAP emission streams by any other means.

Although an initial performance test and continuous monitoring are not required for these large boilers, you must design and operate the closed-vent system according to the requirements specified in the final rule (§ 63.450) and conduct the periodic visual inspections and leak detection tests (§ 63.453) of the closed-vent system components. You must record the results of these inspections and tests and comply with the reporting requirements (§ 63.455) of the final rule. Also, you must keep records of the boiler or recovery furnace downtime (§ 63.10(c)(8)) to demonstrate compliance with the excess emission allowance standards (§ 63.443(e)).

C. Biological Treatment System Standards

1. Introduction for Proposed Amendments

One of the options for complying with the pulping condensate standards in the final rule is to discharge the applicable condensates below the liquid surface of a biological treatment system that achieves 92 percent reduction of total HAPs. Following promulgation, commenters raised several compliance issues associated with using biological treatment systems to comply with the condensate standards. The commenters were concerned that they would have difficulty demonstrating a 92 percent reduction of total HAPs in biological treatment systems. Therefore, they requested the flexibility to use the mass removal option, which is allowed for other treatment devices. The commenters also stated that their analytical labs were having difficulty using Method 305 to evaluate condensate samples for total HAP compounds. The commenters stated their belief that the number of measurable HAPs in the regulated condensate streams is very limited, and

that testing for a specific list of HAPs would reduce the complexity and cost compliance testing. The commenters recommended a specific list of HAPs to measure in biological treatment systems. Additionally, in meetings with industry representatives after promulgation, it was identified that some biological treatment systems used in the industry were not thoroughly mixed. Therefore, the performance tests procedures in the final rule, which were established for thoroughly mixed systems, are not appropriate in all cases for nonthoroughly mixed systems.

Since promulgation, several meetings between the EPA and industry representatives were held to discuss these issues. We have reviewed the comments and information obtained during these meetings and decided to propose amendments to the final rule to address these concerns.

2. Can a Finite List of HAPs be Used in Demonstrating Compliance for Biological Treatment Systems (§ 63.457(l))?

We have found that the regulated condensate streams contain a finite number of measurable HAPs. Today's proposed action amends the test methods and procedures section (§ 63.457(l)) to specify that only four HAP compounds (acetaldehyde, methanol, methyl ethyl ketone, and propionaldehyde) are to be measured to determine compliance with all biological treatment standards, instead of measuring for all 188 HAP compounds.

The final rule (§ 63.457(g)) requires measurement of the total HAPs for mills that comply with the condensate standards using a biological treatment system. At promulgation of the final rule, we had limited data on the speciation profile of total HAPs in regulated condensate streams. We needed additional data to establish a specific list of the 188 HAPs for compliance testing.

To support the development of a specific list of HAPs, the National Council of the Paper Industry for Air and Stream Improvement, Inc. (NCASI), submitted to EPA a study (Hazardous Air Pollutants Present in Kraft Mill Condensates and Their Significance for the Hard-piping Option Under Maximum Achievable Control Technology (MACT), December 1998) (Docket No. A-92-40) of the condensate streams contained in steam stripper feed tanks at eight mills. They sampled condensates in steam stripper feed tanks since these are the same condensates that the final rule regulates. We gave NCASI a list of 108 volatile HAPs to be

evaluated in the study. This list specifies the HAPs that volatilize most readily from biological treatment systems. The NCASI used a test method with a nominal detection limit between 0.5 and 1 part per million by weight (ppmw) to analyze the steam stripper feed tank contents. This detection limit was selected because the final rule (§ 63.457(j)(4)) specifies those HAP compounds with concentrations at the point of determination that are either below 1 ppmw or below the detection limit are not required to be included in the total HAP compliance demonstrations.

The NCASI data report that the HAP compounds with concentrations greater than 1 ppmw in regulated condensate streams are methanol, methyl ethyl ketone, acetaldehyde, and propionaldehyde. Methanol accounts for approximately 98.5 percent of the total HAP mass with acetaldehyde, methyl ethyl ketone, and propionaldehyde accounting for the remaining 1.5 percent.

We have reviewed the test methods and sampling procedures used in the NCASI study and concur that the methods and procedures were appropriate. We have also reviewed the criteria used by NCASI for selecting the condensate streams to be analyzed, and we agree that the condensate streams sampled are representative of the range of condensate streams found at kraft mills. Therefore, we agree that acetaldehyde, methanol, methyl ethyl ketone, and propionaldehyde account for the total of HAP compounds in the regulated condensate streams. Identifying a specific list of HAPs will achieve the EPA's and industry's goal of reducing the performance testing and monitoring burden without reducing the emission reductions achieved by the final rule. Today's proposal amends the test methods and procedures section (§ 63.457(l)) of the final rule to specify that the HAPs in the regulated condensate streams are determined by measuring acetaldehyde, methanol, methyl ethyl ketone, and propionaldehyde.

3. Given the Finite Number of HAPs in Regulated Condensates, What is the Appropriate Emission Standard for Biological Treatment Systems (§ 63.446(e))?

In today's action, we are proposing to amend the test methods and procedures section of the final rule to add a mass standard and two alternative compliance procedures for biological treatment systems. The two alternative procedures require sending additional condensates to the biological treatment

system by calculating the standards on an individual HAP or methanol basis. These proposed revisions to the emission standards and test methods and procedures sections of the final rule are necessary to implement the reduced list of HAPs in condensates, discussed earlier in section I.C.2 of this preamble, and to simplify the testing and monitoring procedures for biological treatment systems.

Since promulgation, we held several meetings with industry representatives to discuss ways to simplify the testing and monitoring procedures for demonstrating compliance of biological treatment systems, considering the condensate speciation data submitted after promulgation (see section I.C.2 of this preamble). Industry representatives suggested that mills be allowed to conduct the initial performance and subsequent compliance monitoring tests only for the major HAP constituent of the regulated condensates, methanol. Industry representatives also requested that they be allowed to comply with the mass removal standard, kilograms of total HAPs per megagram of oven-dried pulp, which is allowed for steam strippers.

We have considered the data and industry comments and decided to propose a mass standard and two alternative compliance procedures in today's action. We believe a mass removal standard is appropriate (as an alternative to the current percent reduction standard) for biological systems since we established one for steam strippers and it provides equivalent environmental protection. To establish the level of the mass standard for biological treatment units to be equivalent to steam strippers, adjustments needed to be made to the proposed mass and current percent reduction standards for biological treatment units. We believe that the mass standard should be set at the current level of the standard and the test procedures should be adjusted to address the proposed list of HAPs (only four HAPs instead of all 188 HAP compounds). In meetings following promulgation, the industry representatives recommended only testing for methanol which is the major HAP constituent in the regulated condensates. During those meetings, we reiterated that steam strippers operating at a 92 percent efficiency to remove methanol, also removed nearly all of the other volatile HAP compounds (see the preamble to the final rule, 63 FR 18524). However, in biological treatment units, the amount of biodegradation of those nonmethanol HAP compounds is less than for methanol. To balance this

difference, we are proposing two alternative procedures that require additional condensate to be sent to the biological treatment system. These two procedures require you to measure the four HAPs and comply with the current percent reduction or proposed mass standard on either an individual HAP or methanol basis, as discussed in the following sections.

A. Individual HAP procedure. The condensate control options in the final rule were developed based on the performance of a steam stripper achieving 92 percent reduction of methanol. We have determined that a steam stripper operating at 92 percent reduction of methanol achieves at least 99 percent reduction of the other HAP compounds (acetaldehyde, methyl ethyl ketone, and propionaldehyde) in the regulated condensates (determination contained in Docket No. A-92-40). Thus, we are setting the percent reduction standard at 92 percent for methanol and 99 percent for acetaldehyde, methyl ethyl ketone, and propionaldehyde.

For the mass standard, we calculated the required mass removal that is equivalent to those percent reduction levels. To set the mass standard for each compound, we used the required mass removal of methanol (10.2 and 6.6 pounds of methanol per oven-dried ton of pulp (lb/ODTP)) and the average composition of the four HAP compounds found in the NCASI testing discussed earlier in section I.C.2 of this preamble. For mills that perform bleaching, the mass standard is 10.2 lb/ODTP for methanol, 0.104 lb/ODTP for acetaldehyde, 0.052 lb/ODTP for methyl ethyl ketone, and 0.010 lb/ODTP for propionaldehyde. For mills that do not perform bleaching, the mass standard is 6.6 lb/ODTP for methanol, 0.067 lb/ODTP for acetaldehyde, 0.034 lb/ODTP for methyl ethyl ketone, and 0.0067 lb/ODTP for propionaldehyde.

B. Methanol procedure. Industry requested the second procedure proposed in today's action to simplify testing requirements and reduce the complications in analyzing HAP compounds which are present in low concentrations in the regulated condensates. As discussed earlier, this is an alternative approach to balance the difference in HAP removal efficiencies between steam strippers and biological treatment systems while allowing mills to demonstrate compliance by measuring only methanol. Sending additional condensate to the biological treatment system achieves this balance. In meetings following promulgation, industry representatives suggested a procedure for determining an estimate

of the required amount of additional condensate HAP mass that you must send to the biological treatment system. Under this concept, you would assume that a steam stripper complying with the condensate standards is achieving 92 percent reduction of methanol and 100 percent reduction of all other HAP compounds present in the regulated condensates.

For example, assume that a hypothetical bleached kraft mill determines that the regulated condensates contain 90 percent methanol. If the mill sends 12 lb/ODTP of methanol to a steam stripper, then the mill is also sending 1.3 lb/ODTP of nonmethanol HAPs. If the steam stripper achieves 92 percent reduction of methanol and 100 percent removal of nonmethanol HAPs, then the steam stripper would be achieving a total HAP removal of 12.3 lb/ODTP. If you make the conservative assumption that biological treatment systems do not achieve any degradation of nonmethanol HAP compounds, then the mill using a biological treatment system would need to remove 12.3 lb/ODTP of methanol. Under this concept, we would require a mill using a steam stripper to remove 10.2 lb/ODTP of methanol to comply with the standard, while we would require a mill using a biological treatment system to remove 11.4 lb/ODTP of methanol to comply with the standard.

We agree with the industry representatives that this approach provides an alternative to the individual HAP approach discussed earlier (section I.C.3.A of this preamble). Under this second alternative procedure in today's proposed action, you measure the mass of the four HAPs in the regulated condensates entering the biological treatment system and determine the ratio of nonmethanol HAP mass to methanol mass. Compliance with the percent reduction or proposed mass removal standard is then determined using that ratio and the appropriate procedures in appendix C of part 63, using methanol measurements instead of measurements for all four HAPs in the condensate streams.

In today's action, we are proposing to amend the kraft pulping process condensate standards (§ 63.446(e)(2)) to specify that biological treatment systems may be used to comply with the proposed mass removal and percent reduction requirements, using either the individual HAP or methanol procedure. Additionally, we are proposing to revise the test methods and procedures section (§ 63.457(g) and (l)) of the final rule to include the alternative procedures for

demonstrating compliance for biological treatment systems.

4. What Minimum Measurement Level Should Be Used in Analyzing Total HAPs in Liquid Streams (§ 63.457(c))?

You must use the procedure proposed in today's action to determine the minimum measurement level (MML) of a specific HAP for the liquid stream test method that you select to demonstrate compliance. Also, you must use this MML value in all compliance calculations if the test method does not detect a value at or below the MML. Today's proposed action amends the test methods and procedures section (§ 63.457(c)) of the final rule to add two alternative procedures to determine the MML.

The final rule and the amendments proposed in today's action require kraft mills to determine the HAP or methanol concentration in liquid streams (*e.g.*, steam stripper outlet or biological treatment system inlet or outlet) to demonstrate compliance with the condensate standards. Following promulgation, commenters stated that there could be some cases where the concentration of a particular HAP may be too low to quantify using a given test method. Consequently, the commenters stated that because the compliance demonstration calculations for the percent reduction, mass removal, and control device outlet concentration treatment options require a HAP concentration, an MML was needed.

We have evaluated the comments and decided to propose in today's action two alternative procedures to determine the MML that you must use in compliance calculations. Also, a quality assurance procedure is being proposed in today's action that must be followed for either alternative, in addition to the quality assurance procedures required in § 63.7(c) of the NESHAP general provisions. These procedures were developed by EPA's testing group and industry representatives to provide you with flexibility in determining the appropriate MML. The two alternative procedures are: (1) a procedure for each analytical laboratory to follow to determine the MML for each test method setup, and (2) a procedure to follow if a group chooses to collect sufficient data to determine the MML for a given test method.

In the first procedure for determining the MML of a particular HAP using one of the test methods specified in the § 63.457(c)(3) of the final rule, you must perform the following procedures each time that the analytical equipment for the test method is set up: (1) assume a concentration that you believe

represents the MML; (2) measure the concentration in a minimum of three replicate samples that contain the target HAP at the MML concentration, using the selected test method; and (3) calculate the relative standard deviation (RSD) and the upper confidence limit at the 95 percent confidence level of the resulting concentration values, using the assumed MML as the mean.

In the first step of this procedure, you must assume a concentration value for the particular HAP in question (*e.g.*, acetaldehyde, methanol, methyl ethyl ketone, or propionaldehyde) that you believe represents the MML. However, the MML chosen must not be below the calibration standard of the selected test method.

In the second step of this procedure, you must measure the concentration of the target HAP in a minimum of three replicate condensate samples, using the selected test method. All replicate condensate samples must be run through the entire analytical procedure. Spiking of the liquid samples with a known concentration of the target HAP may be necessary to ensure that the HAP concentration in the three samples is at the MML.

In the final step of this procedure, you must calculate the RSD and the upper confidence limit at the 95 percent confidence level, using the measured HAP concentrations determined in step 2 of the procedure. If the upper confidence limit of the RSD is less than 30 percent, then the selected MML is acceptable, and this MML value would be established for the laboratory's analytical equipment setup and procedure used in this analysis. If the upper confidence limit of the RSD is greater than or equal to 30 percent, then the selected MML is too low and a higher MML must be selected.

In the second procedure proposed in today's action, a group (*e.g.*, company or trade association) would determine the MML and present supporting data to demonstrate, to the EPA's satisfaction, that the selected MML is appropriate. To support the selected MML, enough data would need to be collected from different laboratories to demonstrate that the appropriate MML for a particular test method and specific HAP was determined. Once EPA approval is obtained, then the MML value would be established, and this value would be used in compliance demonstration calculations. Also, any laboratory may use the MML value provided that the proper quality assurance procedures are followed, including the quality assurance procedures discussed in the following paragraph.

Once the MML has been determined using one of the alternative procedures, the analytical laboratory that you choose to conduct the initial performance test analysis must also follow the quality assurance procedure proposed in today's action to demonstrate that they are performing the test method correctly. The proposed quality assurance procedure specifies that the analytical laboratory must measure the concentration of the target HAP in a minimum of three replicate condensate samples using the selected test method. The upper confidence limit of the RSD at the 95 percent confidence level determined using the measured HAP concentrations must be less than 30 percent. If the upper confidence limit of the RSD is greater than or equal to 30 percent, then the test method is not being performed correctly. If you have not met the quality assurance procedure, then the analytical equipment must be corrected, and you must repeat the quality assurance procedure until met.

Today's action proposes to amend the test methods and procedures section (§ 63.457(c)) of the final rule to (1) specify that the MML must be used in compliance demonstrations if the selected test method indicates nondetect for a specific HAP, and (2) to include the procedures for determining the MML. In today's proposed action, we are also amending the delegation of authority section (§ 63.458) of the final rule to specify that the procedure for obtaining EPA approval of the demonstrated MML is not delegated to the States.

D. Biological Treatment System Performance Test Requirements

1. Introduction

At promulgation, the only treatment option available for biological treatment systems was the percent reduction option. Today's proposed amendments allow mills to use biological treatment systems to comply with the condensate standard mass removal requirements and to use four specific HAPS as a surrogate for total HAPS. Consequently, these proposed amendments alter the procedures for conducting performance tests of biological treatment systems.

2. Given the proposed changes, how do I conduct a performance demonstration for a biological treatment system (§ 63.457(l))?

To conduct a performance test of an open or closed biological treatment system, you would first measure the mass of the four specific HAPs entering the biological treatment system. The

subsequent compliance procedures would differ depending on if you are complying with the proposed percent reduction or mass removal treatment options.

For biological treatment systems, table 1 presents a summary of the proposed performance test requirements including those in today's action.

Briefly, to conduct a performance test of a biological treatment system, you would measure the mass of the four HAPs in the regulated condensates entering the biological treatment system. Then you determine the fraction of compounds that are biodegraded (f_{bio}) in the biological treatment system, using

the appropriate procedures in appendix C of part 63. Using the inlet mass of the four HAP compounds and the value of f_{bio} , you would demonstrate compliance with the percent reduction or mass removal treatment options on an individual HAP or methanol basis using the procedures specified in § 63.457(l).

TABLE 1.—SUMMARY OF THE PERFORMANCE TEST PROCEDURES FOR BIOLOGICAL TREATMENT SYSTEMS

Determine the inlet and outlet HAP mass flow rates by—	Determine the fraction of HAP compounds degraded in the biological treatment system using—	Demonstrate compliance with the condensate standards using—
Measuring the volumetric flow rate of the liquid streams entering and exiting the treatment system using the procedures specified in § 63.457(c)(2),	The inlet and outlet concentration procedure (procedure 3) in appendix C of part 63, for thoroughly mixed systems, or	The individual HAP percent reduction or mass removal procedures specified in § 63.457(l) (1) and (2), or
Measuring the concentration of acetaldehyde, methanol, methyl ethyl ketone, and propionaldehyde in the liquid streams using one of the test methods specified in § 63.457(c)(3), and	The multiple zone concentration measurements procedure (procedure 5) in appendix C of part 63, for nonthoroughly mixed systems.	The methanol percent reduction or mass removal procedures specified in § 63.457(l) (3) and (4).
Calculating the individual HAP mass flow rates using the equations specified in § 63.457(j).		

After promulgation of the final rule, a few mills said that they intended to use closed biological treatment systems (both aerobic and anaerobic systems) to comply with the kraft pulping process condensate standards. The mill representatives have mentioned multiple types of systems, however, we have not received any specific information detailing system designs or how they would conduct the performance demonstration for a closed biological treatment system.

Consequently, we cannot amend the final rule to specifically address closed biological treatment systems, and we believe that setting one procedure for a few systems with varying designs would be impractical. Typically, closed biological treatment systems would need to test all inlets and outlets and demonstrate compliance with the applicable emission standard and demonstrate appropriate continuous compliance monitoring procedures. Appendix C of part 63 contains test procedures that can be used for most known designs of closed systems. If the design of the systems mentioned by industry representatives meets the calculation procedures of appendix C, then you could use appendix C procedures. For other designs, you must present for EPA approval the design of the system and a test and monitoring plan. The above information is provided for discussion purposes only, and we are not requesting or taking comment or planning to propose test procedures for all designs of closed biological

treatment systems in this proposal or comment period.

3. What Procedures Must Be Followed To Determine the Fraction of Compounds Degraded in Nonthoroughly Mixed Open Biological Treatment Systems (§ 63.457(1))?

We plan to propose in the near future a new procedure for calculating the site-specific fraction of organic compounds biodegraded in nonthoroughly mixed open biological treatment systems (or units) under a separate action. This new procedure, called the Multiple Mixing Zone Concentration Measurements Procedure, will be proposed as an addition to appendix C of part 63.

The performance test and monitoring procedures in the final rule for open biological treatment systems were developed under the presumption that all biological treatment systems at kraft mills would be thoroughly mixed systems, and that the Inlet and Outlet Concentration Measurement Procedure in appendix C of part 63 would be the most appropriate procedure for you to use to determine the performance of the open biological treatment system at pulp mills. However, the Inlet and Outlet Concentration Measurement Procedure is not appropriate for evaluating the performance of nonthoroughly mixed biological treatment systems. In meetings with industry representatives following promulgation, it was identified that the biological treatment systems at most mills do not meet the criteria (uniform biomass distribution and organic

compound concentrations) for thoroughly mixed systems.

Consequently, another procedure is needed because appendix C of part 63 does not contain a concentration measurement procedure for modeling nonthoroughly mixed systems.

The soon-to-be proposed amendments to appendix C of part 63 will include a concentration measurement procedure for determining f_{bio} in nonthoroughly mixed biological treatment systems. A draft copy of these soon-to-be proposed procedures is contained in the docket for today's proposed action (see the **ADDRESSES** and **SUPPLEMENTARY INFORMATION** sections at the beginning of this preamble for docket information). In developing the new procedure, we worked with industry representatives, including NCASI. The new procedure, Multiple Zone Concentration Measurements—Procedure 5, specifies the biological treatment system information that you must have to use the new procedure.

Additionally, there are two documents ("Technical Support Document for Evaluation of Thoroughly Mixed Biological Treatment Units" and the "Technical Support Document for the Evaluation of Aerobic Biological Treatment Units with Multiple Mixing Zones") that provide technical information on how to determine if a biological treatment system is thoroughly mixed and how to evaluate the performance of a nonthoroughly mixed biological treatment system using multiple mixing zones. The first document is available from the public

docket and from the pulp and paper page of EPA's TTN UATW at "<http://www.epa.gov/ttn/uatw/pulp/pulppg.html>". The second document is near completion and will also be available at the pulp and paper page of the UATW at the address listed above, and a copy of the latest draft is contained in the public docket.

E. Open Biological Treatment System Monitoring Requirements

1. Introduction

The monitoring requirements (§ 63.453(j)) in the final rule require mills using an open biological treatment system to conduct daily parameter monitoring and quarterly performance tests. The parameter values must be established during a performance test. Whenever a parameter excursion occurs, you can conduct a performance test of the open biological treatment system to demonstrate that the system is in compliance with the applicable emission limit even though a parameter exceedance occurred. Quarterly performance tests must be conducted for total HAPs in the first quarter, however the tests may be conducted for methanol in the remaining quarters.

After promulgation, several issues were identified regarding the monitoring requirements for open biological treatment systems. In today's action, we are proposing the following changes to address the issues:

- Allowing you to determine site-specific monitoring parameters for biological treatment systems;
- Providing an alternative procedure for estimating the fraction of organic compounds degraded in a nonthoroughly mixed biological treatment system during unsafe sampling conditions;
- Clarifying the monitoring requirements for open versus closed biological treatment systems;
- Removing the requirement to test for total HAPs in the first quarter performance test; and
- Specifying the period for notifying the Administrator if you intend to use data collected during a performance test to expand the allowable range of a monitoring parameter.

The proposed amendments are discussed in sections I.E.2 through I.E.7 of this preamble.

2. May a Mill Use Site-Specific Monitoring Parameters for Open Biological Treatment Systems Instead of the Parameters Specified in the Final Rule (§ 63.453(j))?

Today's action proposes to amend the final rule to specify that mills may

establish site-specific monitoring parameters for open biological treatment systems. The mill must conduct a performance test to demonstrate that the monitoring parameters are appropriate to determine continuous compliance with the applicable emission standard. The monitoring parameters and the operating ranges that demonstrate continuous compliance must be approved by the permit authority.

The final rule (§ 63.453(j)) requires daily monitoring of outlet soluble biochemical oxygen demand (BOD₅) concentration and other system operating parameters. Additionally, you must collect and archive inlet and outlet grab samples. The grab samples must be used to demonstrate compliance if the soluble (BOD₅), mixed liquor volatile suspended solids (MLVSS), or the aerator horsepower monitoring parameters fall outside the range established during the initial performance test.

After promulgation, commenters indicated that the monitoring parameters in the final rule might not be appropriate for all open biological treatment systems, especially for nonthoroughly mixed systems. The commenters requested that the final rule be revised to give mills the flexibility to monitor different parameters for open biological treatment systems on a case-by-case basis.

We agree that in some circumstances operating parameters other than those specified in the final rule may provide assurance that continuous compliance with the emission limits is being achieved for nonthoroughly mixed systems. The monitoring requirements in the final rule were established under the presumption that all biological treatment systems in the pulp and paper industry were thoroughly mixed and would, therefore, use the inlet and outlet procedure in appendix C of part 63 to determine the performance of the system. However, for nonthoroughly mixed biological treatment systems, the treatment unit must be divided into mixing zones, and concentration monitoring must be conducted within each zone.

In today's action, we are proposing to add a new paragraph to the open biological treatment system monitoring requirements (§ 63.453(j)(2)) that would allow mills the option to determine site-specific monitoring parameters. The site-specific monitoring parameters must be developed based on a performance test and must be approved by the Administrator using the procedures specified in the final rule (§ 63.453(n)). In § 63.453(n), the final rule specifies that you must conduct a

performance test to determine the appropriate parameters to be monitored continuously and corresponding parameter values. The rationale and supporting documentation for the parameter selection must also be provided for the Administrator's approval. The Administrator in this case is the delegated implementation and enforcement State authority.

3. In the Event of a Parameter Excursion, Must I Conduct In-Zone Sampling of Nonthoroughly Mixed Open Biological Treatment Systems When Unsafe Conditions Exist (§ 63.453)?

No. Today's proposed amendments contain a modeling procedure that can be used until such time as the unsafe conditions pass and in-zone sampling and a full performance test can be conducted. The alternative modeling procedure is proposed as appendix E of part 63—Test Procedure for Nonthoroughly Mixed Biological Treatment Units at Kraft Pulp Mills Under Unsafe Sampling Conditions. In addition, today's action proposes conforming amendments to the monitoring requirements section (§ 63.453(p)(1)). An amendment to the recordkeeping requirements (§ 63.454(e)) section of the final rule is also being proposed to require you to maintain descriptions of the unsafe conditions that would warrant the use of the modeling procedure.

The kraft pulping process condensate standards of the final rule require periodic performance testing of open biological treatment systems that are used as control devices. During discussions following promulgation, industry representatives noted that there are times when sampling and monitoring of multizone biological treatment systems would expose workers to unsafe conditions. Examples of unsafe conditions provided by industry representatives include: weather conditions (e.g., high wind, fog, lightning, heavy rain, hail storm, sleet, and snow); lack of outdoor lighting; availability of boats; personnel availability; heavy foam layer; and high hydrogen sulfide concentration.

Industry representatives requested that when unsafe conditions occur they be able to use a modeling approach (proposed as appendix E of part 63) developed by NCASI that approximates the total HAP or methanol concentrations within the mixing zones of a biological treatment system. The approach consists of three components: (1) Confirmation that the open biological treatment system can be represented by Monod kinetics, (2) data collection to characterize the

performance of the open biological treatment system, and (3) data collection during unsafe conditions.

Under the first component of the modeling approach, the value of the saturation coefficient, K_s , must be determined. The determination that the value of K_s is a constant is used to demonstrate that the mill's open biological treatment system being tested can be represented by Monod kinetics. Under the second component of the modeling approach, you would determine the number and characteristics of each mixing zone in the open biological treatment system, and the recycle ratio of the internal recirculation between the mixing zones. Technical information on how to evaluate open biological treatment systems with multiple mixing zones can be found in the "Technical Support Document for the Evaluation of Aerobic Biological Treatment Units with Multiple Mixing Zones" (discussed in section I.D.3 of this preamble). Under the third component, inlet and outlet concentration data are collected during conditions when conducting in-zone sampling is determined to be unsafe. These data are used with the characterization data developed under the first component to estimate the HAP concentrations in each of the mixing zones. The industry representatives noted that collection of inlet and outlet samples would not be affected by unsafe conditions.

We analyzed the above industry concerns, and we agree that in rare circumstances there may be conditions when sampling in each zone of an open biological treatment system could expose workers to dangerous, hazardous, or otherwise unsafe conditions. During these conditions, we believe that the above modeling procedure proposed in appendix E of part 63 is a reasonable procedure to follow until the full in-zone sampling and performance test can be conducted to determine the system's compliance with the applicable emission limit. If the mass removal or percent reduction calculations using the value of f_{bio} determined from the procedures in appendix E of part 63 show that the open biological treatment system is not achieving the applicable emission limit, then this is considered a violation of the applicable emission standard. However, if the compliance demonstration calculations using the value of f_{bio} derived from the appendix E of part 63 procedures show a mass removal or percent reduction greater than or equal to that required by the final rule, then the mill is in compliance with the daily monitoring procedures. When

conditions permit, a full performance test using the procedures specified in § 63.457 must be performed to demonstrate compliance with the applicable emission standard.

Further, we believe the conditions that warrant the use of the proposed calculations will be limited to those conditions that are beyond the mill's control, such as extreme weather conditions and presence of high and heavy foam or high concentrations of hydrogen sulfide. The mill operator should use remote and automated sampling systems wherever possible to decrease the number and frequency of possible unsafe conditions. We believe that unsafe conditions do not include conditions that are within the control of the mill, such as unavailability of outdoor lighting, boats, or mill personnel. If these later types of conditions cannot be addressed by the mill and made safe for mill personnel, then this will severely limit the ability of the mill and control agency to determine compliance and allow use of an open biological treatment system as a control device. We believe that those conditions are within the control of the operator and that unless they are addressed and fixed by the operator, the other NESHAP control options (recycling, steam stripping, or closed biological systems) must be used to meet the kraft pulping process condensate standards.

The proposed amendments (§ 63.453(p)) specify that if performing the sampling and test procedures for nonthoroughly mixed systems would expose a worker to dangerous, hazardous, or otherwise unsafe conditions, the proposed appendix E of part 63 calculation can be used to estimate compliance of biological treatment systems instead of the full multiple mixing zone performance test procedures specified in the test methods and procedures section (§ 63.457(l)) of the final rule. The proposed amendments to § 63.457(l) also specify that the value of the biorate constant must be determined during the initial performance test (§ 63.457(l)(4)).

The proposed amendments also specify that as soon as practical (but within 24 hours) after the dangerous, hazardous, or otherwise unsafe conditions have passed, you must conduct the full multiple mixing zone performance test procedures (§ 63.457(l)). The performance test is required, regardless of whether or not the monitoring parameter values are within the approved range, following the period of unsafe conditions. The purpose of the test is to confirm that the dangerous, hazardous, or otherwise

unsafe conditions did not alter the performance of the system and to confirm that the treatment system operation is achieving the required removal through biodegradation and not through volatilization.

Amendments to the recordkeeping requirements section (§ 63.454) of the final rule are being proposed that would require you to maintain onsite a written record identifying the specific conditions under which sampling of the open biological treatment system would expose a worker to dangerous, hazardous, or otherwise unsafe conditions. The proposed amendments specify that this written record must include a written explanation of why the in-zone sampling cannot be performed under those conditions. The proposed amendments also specify that whenever dangerous, hazardous, or otherwise unsafe conditions prevent you from conducting the sampling and test requirements for nonthoroughly mixed open biological treatment systems, you must notify the Administrator (the delegated permit authority) as soon as practicable of the onset of the dangerous, hazardous, or otherwise unsafe conditions. The notification must include the reason why the specified sampling and test requirements could not be performed.

4. Are the Biological Treatment System Monitoring Requirements Applicable To Both Open and Closed Biological Treatment Systems (§ 63.453)?

The biological treatment system monitoring and test procedures specified in the final rule are applicable only to open biological treatment systems. Following promulgation, commenters questioned if closed aerobic and anaerobic biological treatment systems would be required to comply with the monitoring procedures specified in § 63.453(j) and (p). Today's action proposes to add the word "open" to citations in the monitoring requirements section of the final rule where the term "biological treatment system" is used.

In the final rule, we intended that the reference to "biological treatment system" in the monitoring requirements section meant open biological treatment systems. Although the test methods and procedures specified in § 63.457(l) refer to open biological treatment systems, we inadvertently omitted the word "open" in the § 63.453(j) and (p) of the final rule. Today's action proposes amendments to the sections mentioned above to clarify that these requirements are applicable only to open biological treatment systems.

If you choose to comply using a closed biological treatment system, you must determine appropriate monitoring parameters and establish the parameter values or ranges during the performance test using the procedures specified in § 63.453(m) and (n). Both the monitoring parameters and the parameter values or ranges must be

approved by the Administrator (see section I.D.2 of this preamble for additional discussion).

5. Given the Proposed Changes, How Do I Conduct Daily Compliance Monitoring for Open Biological Treatment Systems (§ 63.453(j))?

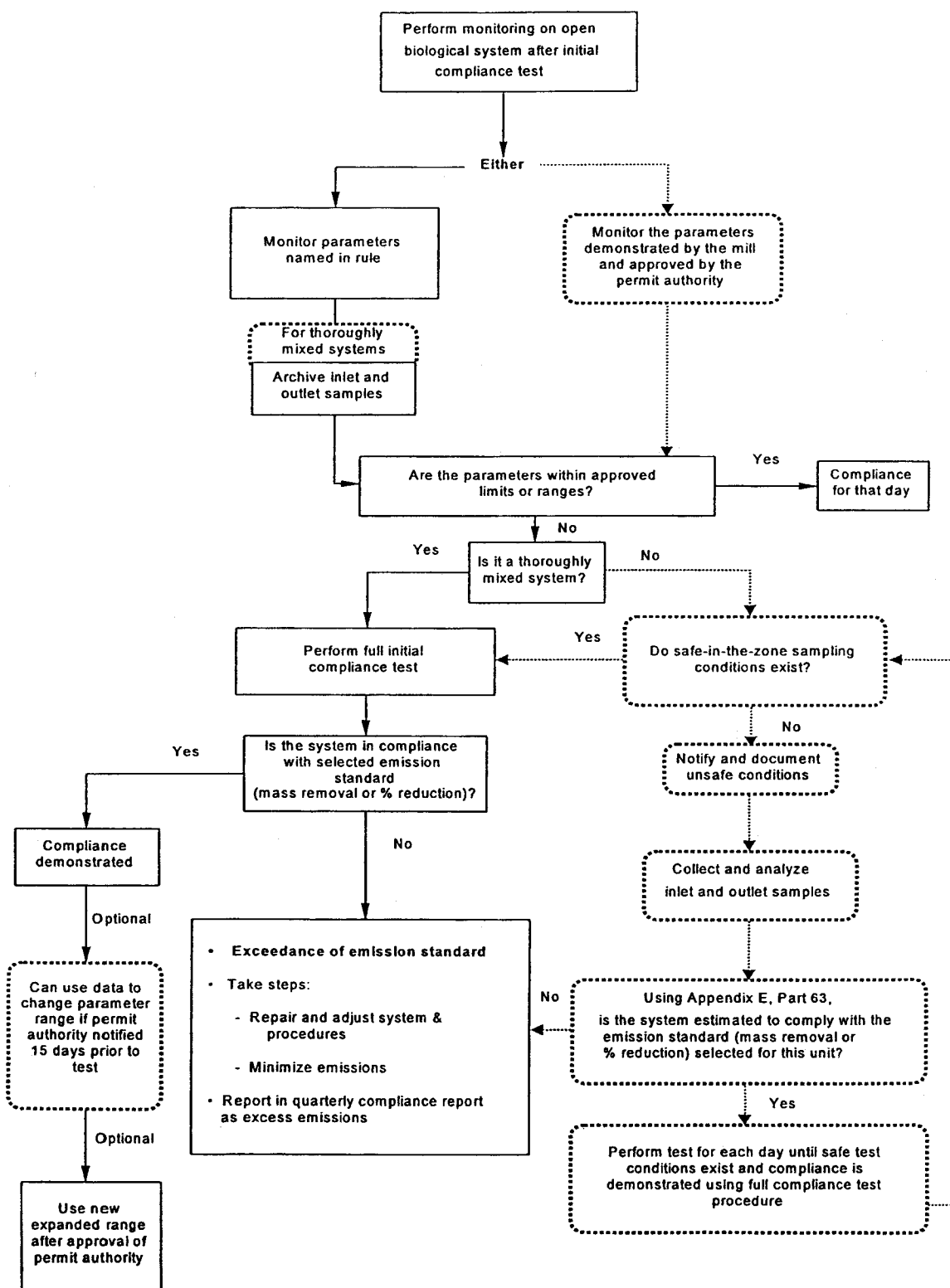
The flow diagram shown in figure 1 summarizes the daily monitoring

requirements for open biological treatment systems. In figure 1, today's proposed changes are depicted by dashed lines and rounded boxes.

BILLING CODE 6560-50-U

Figure 1. Proposed Changes to Daily Monitoring Requirements for Open Biological Treatment Systems

(Dotted lines denote proposed changes)



Mills must monitor on a daily basis either the parameters specified in the final rule (§ 63.453(j)(1)) or site-specific parameters that have been approved (proposed § 63.453(j)(2), see section I.E.2 of this preamble). If the monitoring parameters are within the values or ranges established during the initial performance test, compliance with the applicable emission standard is demonstrated for that day. If the monitoring parameters are outside the established values or ranges, you must conduct a performance test to confirm compliance of the open biological treatment system. The performance test must be performed using the same procedures (*i.e.*, the appropriate procedures in appendix C of part 63) that were followed during the initial performance test.

During periods of monitoring parameter excursions, you must take steps to repair or adjust the process operation to end the parameter excursion, and you must take steps to minimize the total HAP emissions to the atmosphere (§ 63.453(p)(4)). However, the samples for the optional performance test to confirm compliance with the applicable emission limit must be collected before these repair steps are implemented (§ 63.453(p)(2)) since the steps taken to end the parameter excursion or minimize total HAP emissions would influence the results of the performance test.

The final rule (§ 63.453(p)(3)) provides a special procedure to model the fraction of compounds that are biodegraded in nonthoroughly mixed systems. This modeling procedure applies whenever unsafe conditions would prevent mill personnel from conducting in-zone sampling. After the unsafe conditions have passed, you must confirm compliance of the nonthoroughly mixed biological treatment system by conducting a full performance test using the initial performance test procedures.

6. Do I Still Have To Conduct the First Quarter Compliance Tests for Total HAPs (§ 63.453(j))?

Yes. The requirement for quarterly performance tests of open biological treatment systems is retained in the final rule. However, in today's action, we are proposing to allow you to initially demonstrate compliance with the condensate standards by testing for four specific HAPs. Additionally, in today's action we are proposing amendments to the condensate standards that allow you to comply with a percent reduction or mass removal standard using the individual HAPs or using methanol under certain

conditions. Consequently, we are proposing to amend the quarterly performance test requirements in the final rule to incorporate these proposed changes.

The final rule (§ 63.453(j)(2)(ii)) requires you to conduct quarterly performance tests to confirm the performance of open biological treatment systems. The first quarter test is performed for total HAPs while the remaining quarterly tests may be performed for methanol or total HAPs. Also, in the final rule, mills that use a biological treatment system to comply with the condensate standards were limited to the percent reduction standard (§ 63.446(e)(2)).

As discussed in section I.C.2 of this preamble, we are proposing to allow you to measure total HAPs as acetaldehyde, methanol, methyl ethyl ketone, and propionaldehyde since these four compounds represent the majority of the HAPs present in the regulated condensate streams. No changes were necessary to the monitoring section (§ 63.453(j)) text in the final rule to address limiting the analysis to four HAP compounds. The rule text references the test methods and procedures section (§ 63.457(g)) that has already been corrected for this change. Also, in section I.C.3 of this preamble, we are proposing to add a mass removal standard for biological treatment systems. Because the monitoring section of the final rule, as written, does not mention a mass removal standard, we are proposing in today's action to amend the monitoring rule text to include this proposed treatment option.

In today's proposed action, we are specifically requesting comment on the requirement to test for the four HAPs in the first quarter of each year. Industry representatives suggested that testing for the four HAPs in the first quarter of each year was unnecessary because the majority of HAPs in the regulated condensates is one compound (methanol). Also, because the contribution from the other nonmethanol HAPs is small, variations in the composition of these nonmethanol HAPs would be insignificant. The industry representatives suggested that testing for the four HAPs is only necessary if new or modified pulping process condensates are generated, or when changes occur in the annual bleached and unbleached oven-dried ton of pulp production rates used to prorate the mass removal standards. At this time, we do not have data that address the variability of the HAP composition of the regulated condensates. Therefore, in today's action, we are proposing to

retain the requirement for annual testing of the four HAPs in the first quarter. However, if data are submitted with public comments on this proposal, we will consider removing the requirement and allowing you to conduct the quarterly performance tests after the initial first quarter test for methanol only.

7. May I Use Monitoring Parameter Values Recorded During a Compliance Monitoring Test To Expand the Established Parameter Operating Range (§ 63.455(e))?

Yes. You may use monitoring parameter values recorded during a compliance test to expand the established parameter operating range, after approval from your permit authority. Under the general provisions to the final rule, you must notify the permit authority 60 days prior to conducting the initial and subsequent performance tests. However, for the reasons set forth below, we are proposing to change the timing of the notification for certain compliance monitoring performance tests from 60 days to 15 days with a 24-hour confirmation notification.

The final rule (§ 63.457(n)) specifies that you must establish the value or range of values parameter required to be monitored. After promulgation, commenters stated that some open biological treatment system operating parameters (*e.g.*, liquid temperature, biomass concentration, dissolved oxygen concentration) vary with seasonal changes. Because of a limited time period in which to characterize the performance of their open biological treatment system and establish appropriate monitoring parameter values, the commenters noted that they might not see the full range of operating conditions before the compliance date of the final rule. The commenters noted that a monitoring parameter could be outside its established range even though the open biological treatment system continued to achieve compliance with the applicable emission limit. Therefore, the commenters requested that they be allowed to use monitoring parameter values recorded during the compliance monitoring test (*i.e.*, post-initial performance test) required to be conducted due to a parameter excursion (§ 63.453(p)) to change the established operating range for that parameter. To do this, the commenters requested that the notification be reduced from 60 days to 24 hours or the same day as the compliance test.

We agree with the commenters that they should be allowed to change their allowable monitoring parameter ranges

or values using data recorded during any valid subsequent compliance tests required in the monitoring requirements section (§ 63.453(p)) of the final rule. Our intent is evident since the final rule (§ 63.457(n)(1)), as written, specifies that the appropriate value for a monitoring parameter must be established during the initial performance test and any subsequent performance tests, such as compliance tests required by § 63.453(p). Subsequent compliance tests are those tests used to expand the monitoring parameter value or range of values that have been previously selected by the mill and approved by the permit authority. However, the NESHAP general provisions (§ 63.7(b)) specify that the Administrator must be notified at least 60 days before the compliance test is scheduled to begin.

Because these subsequent compliance tests are triggered by monitoring parameter excursions or by conditions that cannot be manipulated by the owner or operator, the performance tests are not scheduled months in advance. Therefore, the 60-day period for notifying the permit authority is not appropriate in all cases. However, a short-term notification (24 hours or the same day) as suggested by the industry representatives would not provide permitting agencies with sufficient time to have an observer present during the subsequent performance test.

We believe that the 15-day notification is the minimum period that is appropriate to allow permit authorities time to plan and attend the subsequent compliance test and given that the exact time of the compliance test may not be known at the time of the 15-day notification, the 24-hour confirmation notification is reasonable. We also agree that all biological treatment system operating conditions cannot be anticipated due to rare circumstances that are outside the control of the mill operator. In these limited cases, shorter notification periods may be necessary and are appropriate with prior approval by the permit authority and properly recorded.

In today's action, we are proposing an amendment to the reporting requirements section (§ 63.455(e)) of the final rule that requires a 15-day notification of intent to conduct a subsequent performance test followed by a 24-hour confirmation notification. The purpose of the 15-day notification is to give permitting agencies an early indication of a possible subsequent performance testing, and the 24-hour confirmation notification would establish the exact date and time for conducting the subsequent performance test.

F. Drafting Error Corrections

Minor drafting errors were identified in the final rule after promulgation. Today's action makes the following corrections:

- Corrects the citations for the condensate segregation requirements in § 63.446(i) of the final rule from (c)(2) to (c)(2) and (3).
- Adds the word "mills" between the words "unbleached" and "specified" in the condensate standards (§ 63.446(i)) of the final rule.
- Removes the comma after the word "reestablish" in § 63.453(n) of the final rule.
- Replaces the word "shall" with the word "may" in the biological treatment system monitoring requirements (§ 63.453(p)) of the final rule.
- Corrects the liquid sampling procedures reference in § 63.457(c)(1) of the final rule from "specified in Method 305 of part 60, appendix A" to "of the test method selected to determine liquid stream total HAP or methanol concentrations."
- Corrects the citation in the condensate segregation procedures (§ 63.457(m)(1) and (m)(1)(iii)) of the final rule from § 63.446(c)(1) to § 63.446(c)(2).
- Corrects the citation in the condensate segregation procedures (§ 63.457(m)(2) and (m)(2)(ii)) of the final rule from § 63.446(c)(2) to § 63.446(c)(3).
- Removes the spaces between the "degree" symbol (°) and the abbreviations for Celsius (C) and Fahrenheit (F) in § 63.457(n) of the final rule.

II. Administrative Requirements

A. Paperwork Reduction Act

The EPA submitted the information requirements of the previously promulgated NESHAP for approval to the Office of Management and Budget (OMB) on April 27, 1998 under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* The EPA prepared an Information Collection Request (ICR) document (ICR No. 1657.03), and a copy may be obtained from Sandy Farmer, Office of Policy, Regulatory Information Division, U.S. Environmental Protection Agency (2137), 401 M Street SW., Washington, DC 20460 or by calling (202) 260-2740. You may also request a copy by e-mail at: "farmer.sandy@epa.gov" or from the Office of Policy website at: "http://www.epa.gov/icr". The information requirements are not effective until OMB approves them.

Today's proposed amendments to the NESHAP will have no impact on the

information collection burden estimates made previously. Consequently, EPA has not revised the ICR.

B. Executive Order 12866: Regulatory Planning and Review

Under Executive Order 12866 (58 FR 51375, October 4, 1993), EPA must determine whether the proposed regulatory action is "significant" and, therefore, subject to OMB review and the requirements of the Executive Order. The order defines "significant" regulatory action as one that is likely to lead to 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, 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.

The NESHAP published on April 15, 1998 was considered significant under Executive Order 12866. Accordingly, EPA prepared a regulatory impact analysis (RIA). The amendments proposed today make technical revisions and correct inadvertent omissions. The OMB evaluated this action and determined it to be nonsignificant; thus, it did not require OMB review.

C. Executive Order 13084: Consultations 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 if 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 proposed action does not significantly or uniquely affect the communities of Indian tribal governments. The final rule published on April 15, 1998 (1998 NESHAP) does not create mandates upon tribal governments. Today's proposed action does not create a mandate on tribal governments. Accordingly, the requirements of section 3(b) of Executive Order 13084 do not apply to this action.

D. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) of 1980 (5 U.S.C. 601 *et seq.*), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996, generally requires an agency to conduct a regulatory flexibility analysis of any rule subject to notice and comment rulemaking 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 not-for-profit enterprises, and small governmental jurisdictions. The EPA determined that it is not necessary to prepare a regulatory flexibility analysis in connection with today's action. These proposed amendments would not result in increased impacts to small entities, and the changes to the final rule in today's proposed action provide additional flexibility to the final rule by adding equivalent treatment alternatives.

E. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 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 to State, local, and tribal governments, in the aggregate, or to 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 today's action does not contain a Federal mandate that may result in expenditures of \$100 million or more to either State, local, or tribal governments in the aggregate or to the private sector in any 1 year. The amendments proposed in today's action provide additional flexibility to the final rule and reduce compliance costs. Therefore, today's proposed rule amendments are not subject to the requirements of sections 202 and 205 of the UMRA.

F. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

Executive Order 13045 applies to any rule that EPA determines (1) is economically significant as defined under Executive Order 12866, and (2) the environmental health or safety risk addressed by the rule has a disproportionate effect on children. If the proposed regulatory action meets both criteria, EPA must evaluate the environmental health or safety effects of the proposed rule on children and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that are based on health or safety risks, so that the analysis required under section 5-501 of the order has the potential to influence the regulation. This proposed rule falls into that category only in part: the minimum rule stringency is set

according to a congressionally mandated, technology-based lower limit called the "floor," while a decision to increase the stringency beyond this floor can be partly based on risk considerations.

No children's risk analysis was performed for the 1998 NESHAP rulemaking because no alternative technologies exist that would provide greater stringency at a reasonable cost, and therefore the results of any such analysis would have no impact on the stringency decision. Today's proposed action is not subject to Executive Order 13045 because it does not involve decisions on environmental health risks or safety risks that may disproportionately affect children.

G. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act (NTTAA) directs all Federal agencies to use voluntary consensus standards instead of government-unique standards in their regulatory 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) that are developed or adopted by one or more voluntary consensus standards bodies. Examples of organizations generally regarded as voluntary consensus standards bodies include the American Society for Testing and Materials (ASTM), the National Fire Protection Association (NFPA), and the Society of Automotive Engineers (SAE). The NTTAA requires Federal agencies like EPA to provide Congress, through the OMB, with explanations when an agency decides not to use available and applicable voluntary consensus standards.

Today's proposed action does not establish new or modify existing technical standards. Therefore, consideration of voluntary consensus standards is not relevant to this action.

H. 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 proposed regulation. EPA also may not issue a regulation that has federalism implications and that preempts State law unless the Agency consults with State and local officials early in the process of developing the proposed regulation.

If EPA complies by consulting, Executive Order 13132 requires EPA to provide to the Office of Management and Budget (OMB), in a separately identified section of the preamble to the rule, a federalism summary impact statement (FSIS). The FSIS must include a description of the extent of EPA's prior consultation with State and local officials, a summary of the nature of their concerns and the agency's position supporting the need to issue the regulation, and a statement of the extent to which the concerns of State and local officials have been met. Also, when EPA transmits a draft final rule with federalism implications to OMB for review pursuant to Executive Order 12866, EPA must include a certification from the agency's Federalism Official stating that EPA has met the requirements of Executive Order 13132 in a meaningful and timely manner.

These proposed amendments to a final rule 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. While the final rule published on April 15, 1998 (1998 NESHAP) does not create mandates upon State, local, or tribal governments EPA involved State and local governments in its development. Thus, the requirements of section 6 of the Executive Order do not apply to this rule. Today's proposed action does not create a mandate upon State, local, or tribal governments, and they have been briefed on the proposed amendments.

List of Subjects in 40 CFR Part 63

Environmental protection,
Administrative practice and procedure,

Air pollution control, Intergovernmental relations.

Dated: January 10, 2000.

Carol M. Browner,
Administrator.

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

PART 63—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES

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

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

Subpart S—National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry

2. Amend § 63.443 by revising paragraph (d)(4) to read as follows:

§ 63.443 Standards for the pulping system at kraft, soda, and semi-chemical processes.

* * * * *

(d) * * *

(4) Reduce total HAP emissions using one of the following:

(i) A boiler, lime kiln, or recovery furnace by introducing the HAP emission stream with the primary fuel or into the flame zone; or

(ii) A boiler or recovery furnace with a heat input capacity greater than or equal to 44 megawatts (150 million British thermal units per hour) by introducing the HAP emission stream with the combustion air.

* * * * *

3. Amend § 63.446 by revising paragraphs (e)(2) and (i) to read as follows:

§ 63.446 Standards for kraft pulping process condensates.

* * * * *

(e) * * *

(2) Discharge the pulping process condensate below the liquid surface of a biological treatment system and treat the pulping process condensates to meet the requirements specified in paragraph (e)(2)(i) or (ii) of this section.

(i) On an individual HAP basis, using the procedures specified in § 63.457(l)(1) or (2), either:

(A) Reduce methanol by 92 percent or more by weight and reduce acetaldehyde, methyl ethyl ketone, and propionaldehyde each by 99 percent or more by weight; or

(B) At mills that do not perform bleaching, remove 3.3 kilograms or more of methanol per megagram (6.6 pounds

per ton) of ODP, remove 0.034 kilograms or more of acetaldehyde per megagram (0.067 pounds per ton) of ODP, remove 0.017 kilograms or more of methyl ethyl ketone per megagram (0.034 pounds per ton) of ODP, and remove 0.003 kilograms or more of propionaldehyde per megagram (0.0067 pounds per ton) of ODP; or

(C) At mills that perform bleaching, remove 5.1 kilograms or more of methanol per megagram (10.2 pounds per ton) of ODP, remove 0.052 kilograms or more of acetaldehyde per megagram (0.104 pounds per ton) of ODP, remove 0.026 kilograms or more of methyl ethyl ketone per megagram (0.052 pounds per ton) of ODP, and remove 0.005 kilograms or more of propionaldehyde per megagram (0.010 pounds per ton) of ODP.

(ii) On a methanol basis, using the test procedures in § 63.457(l)(3) or (4) to determine the additional condensates to be treated, either:

(A) Reduce methanol by 92 percent or more by weight; or

(B) At mills that do not perform bleaching, remove 3.3 kilograms or more of methanol per megagram (6.6 pounds per ton) of ODP; or

(C) At mills that perform bleaching, remove 5.1 kilograms or more of methanol per megagram (10.2 pounds per ton) of ODP.

* * * * *

(i) For the purposes of meeting the requirements in paragraph (c)(2), (c)(3), (e)(4), or (e)(5) of this section at mills producing both bleached and unbleached pulp products, owners and operators may meet a prorated mass standard that is calculated by prorating the applicable mass standards (kilograms of total HAP per megagram of ODP) for bleached and unbleached mills specified in paragraph (c)(2), (c)(3), (e)(4), or (e)(5) of this section by the ratio of annual megagrams of bleached and unbleached ODP.

4. Amend § 63.453 by revising paragraphs (j), (n), and (p) to read as follows:

§ 63.453 Monitoring requirements.

* * * * *

(j) Each owner or operator using an open biological treatment system to comply with § 63.446(e)(2) shall perform the daily monitoring procedures specified in either paragraph (j)(1) or (j)(2) of this section and shall conduct a performance test each quarter using the procedures specified in paragraph (j)(3) of this section.

(1) Comply with the monitoring and sampling requirements specified in paragraphs (j)(1)(i) and (j)(1)(ii) of this section.

(i) On a daily basis, monitor the following parameters for each open biological treatment unit:

(A) Composite daily sample of outlet soluble BOD₅ concentration to monitor for maximum daily and maximum monthly average;

(B) Mixed liquor volatile suspended solids;

(C) Horsepower of aerator unit(s);

(D) Inlet liquid flow; and

(E) Liquid temperature.

(ii) If the Inlet and Outlet

Concentration Measurement Procedure (Procedure 3) in appendix C of part 63 is used to determine the fraction of HAP compounds degraded in the biological treatment system as specified in § 63.457(l), conduct the sampling and archival requirements specified in paragraphs (j)(1)(ii)(A) and (j)(1)(ii)(B) of this section.

(A) Obtain daily inlet and outlet liquid grab samples from each biological treatment unit to have HAP data available to perform quarterly compliance tests specified in paragraph (j)(3) of this section and the compliance tests specified in paragraph (p) of this section.

(B) Store the samples as specified in § 63.457(n) until after the results of the soluble BOD₅ test required in paragraph (j)(1)(i)(A) of this section are obtained. The storage requirement is needed since the soluble BOD₅ test requires 5 days or more to obtain results. If the results of the soluble BOD₅ test are outside of the range established during the initial performance test, then the archive sample shall be used to perform the mass removal or percent reduction determinations.

(2) As an alternative to the monitoring requirements of paragraph (j)(1) of this section, conduct daily monitoring of the site-specific parameters established according to the procedures specified in paragraph (n) of this section.

(3) Conduct a performance test as specified in § 63.457(l) within 45 days after the beginning of each quarter and meet the applicable emission limit in § 63.446(e)(2) (i) or (ii).

(i) The performance test conducted in the first quarter (annually) shall be performed for total HAP and the percent reduction or mass removal obtained from the test shall be at least as great as the total HAP percent reduction or mass removal specified in § 63.446(e)(2) (i) or (ii).

(ii) The remaining quarterly performance tests shall be performed for either methanol or total HAP and the percent reduction or mass removal obtained from the test shall be at least as great as the methanol or total HAP percent reduction or mass removal

determined in the previous first-quarter test specified in paragraph (j)(3)(i) of this section.

* * * * *

(n) To establish or reestablish the value for each operating parameter required to be monitored under paragraphs (b) through (j), (l), and (m) of this section or to establish appropriate parameters for paragraphs (f), (i), (j)(2), and (m) of this section, each owner or operator shall use the following procedures:

* * * * *

(p) Each owner or operator of an open biological treatment system complying with paragraph (j) of this section may perform the procedures specified in this paragraph and record the results as soon as practicable whenever the monitoring parameters specified in paragraphs (j)(1)(i) (A) through (C) of this section or any of the monitoring parameters specified in paragraph (j)(2) are below minimum operating parameter values or above maximum operating parameter values established in paragraph (n) of this section.

(1) Determine compliance with § 63.446(e)(2) using the test procedures specified in § 63.457(l) and the monitoring data specified in paragraph (j)(1) or (j)(2) of this section that coincide with the time period of the parameter excursion except as provided in paragraph (p)(3) of this section.

(2) A parameter excursion is not a violation of the applicable emission standard if the results of the compliance test conducted under paragraph (p)(1) of this section demonstrate compliance with § 63.446(e)(2), and no maintenance or changes have been made to the process or control device after the beginning of a parameter excursion that would influence the results of the determination.

(3) If an owner or operator determines that performing the required procedures under paragraph (p)(1) of this section for a nonthoroughly mixed open biological system would expose a worker to dangerous, hazardous, or otherwise unsafe conditions, all of the following procedures shall be performed:

(i) Calculate the mass removal or percent reduction value using the procedures specified in § 63.457(l) except the value for f_{bio} shall be determined using the procedures in appendix E of this part.

(ii) Repeat the procedures in paragraph (p)(3)(i) of this section for every day until the unsafe conditions have passed.

(iii) If the percent reduction or mass removal determined in paragraph (p)(3)(i) of this section is less than the

percent reduction or mass removal values specified in § 63.446(e)(2), as appropriate, then this is a violation of the applicable standard.

(iv) The determination that there is a condition that exposes a worker to dangerous, hazardous, or otherwise unsafe conditions shall be documented according to requirements in § 63.454(e) and reporting in § 63.455(f).

(v) The requirements of paragraphs (p) (1) and (2) of this section shall be performed and met as soon as practical but no later than 24 hours after the conditions have passed that exposed a worker to dangerous, hazardous, or otherwise unsafe conditions.

(4) During periods of monitoring parameter excursions, the following requirements shall be met:

(i) Steps shall be taken to repair or adjust the operation of the process to end the parameter excursion period;

(ii) Steps shall be taken to minimize total HAP emissions to the atmosphere during the parameter excursion period.

5. Amend § 63.454 by revising paragraph (a) and adding paragraph (e) to read as follows:

§ 63.454 Recordkeeping requirements.

(a) The owner or operator of each affected source subject to the requirements of this subpart shall comply with the recordkeeping requirements of § 63.10, as shown in table 1 of this subpart, and the requirements specified in paragraphs (b) through (e) of this section for the monitoring parameters specified in § 63.453.

* * * * *

(e) The owner or operator of an open nonthoroughly mixed biological treatment system complying with § 63.453(p)(3) instead of § 63.453(p)(1) shall prepare a written record identifying the specific conditions that would expose a worker to dangerous, hazardous, or otherwise unsafe conditions. The record must include a written explanation of the specific reason(s) why a worker would not be able to perform the sampling and test procedures specified in § 63.457(l).

6. Amend § 63.455 by adding paragraphs (e) and (f) to read as follows:

§ 63.455 Reporting requirements.

* * * * *

(e) If the owner or operator uses the results of the compliance test required in § 63.453(p)(1) to revise the approved values or ranges of the monitoring parameters specified in § 63.453(j)(1) or (2), the owner or operator shall submit an initial notification of the subsequent compliance test to the Administrator as soon as practicable, but no later than 15

days, before the compliance test required in § 63.453(p)(1) is scheduled to be conducted. The owner or operator shall notify the Administrator as soon as practicable, but no later than 24 hours, before the performance test is scheduled to be conducted to confirm the exact date and time of the performance test.

(f) To comply with the open biological treatment system monitoring provisions of § 63.453(p)(3), the owner or operator shall notify the Administrator as soon as practicable of the onset of the dangerous, hazardous, or otherwise unsafe conditions that did not allow a compliance determination to be conducted using the sampling and test procedures in § 63.457(l). The notification shall occur no later than 24 hours after the onset of the dangerous, hazardous, or otherwise unsafe conditions and shall include the specific reason(s) that the sampling and test procedures in § 63.457(l) could not be performed.

7. Amend § 63.457 by revising paragraphs (c)(1) introductory text and (c)(4) introductory text, (g), (l), (m)(1) introductory text, (m)(1)(iii), (m)(2) introductory text, (m)(2)(ii), and (n), and add paragraphs (c)(5) and (6) to read as follows:

§ 63.457 Test methods and procedures.

* * * * *

(c) * * *

(1) Samples shall be collected using the sampling procedures of the test method listed in paragraph (c)(3) of this section selected to determine liquid stream HAP concentrations;

* * * * *

(4) To determine soluble BOD₅ in the effluent stream from an open biological treatment unit used to comply with § 63.446(e)(2) and § 63.453(j), the owner or operator shall use Method 405.1 of part 136 of this chapter with the following modifications:

* * * * *

(5) If the test method used to determine HAP concentration indicates that a specific HAP is not detectable, the value determined as the minimum measurement level (MML) of the selected test method for the specific HAP shall be used in the compliance demonstration calculations. To determine the MML for a specific HAP using one of the test methods specified in paragraph (c)(3) of this section, one of the procedures specified in paragraphs (c)(5)(i) and (ii) of this section shall be performed.

(i) To determine the MML for a specific HAP, the following procedures shall be performed each time the method is used.

(A) Select a concentration value for the specific HAP in question to represent the MML. The selected value of the MML selected shall not be below the calibration standard of the selected test method.

(B) Measure the concentration of the specific HAP in a minimum of three replicate samples using the selected test method. All replicate samples shall be run through the entire analytical procedure. The samples must contain the specific HAP at the selected MML concentration and should be representative of the liquid streams to be analyzed in the compliance demonstration. Spiking of the liquid samples with a known concentration of the target HAP may be necessary to ensure that the HAP concentration in the three replicate samples is at the selected MML.

(C) Calculate the relative standard deviation (RSD) and the upper confidence limit at the 95 percent confidence level using the measured HAP concentrations determined in paragraph (c)(5)(i)(B) of this section. If the upper confidence limit of the RSD is less than 30 percent, then the selected MML is acceptable. If the upper confidence limit of the RSD is greater than or equal to 30 percent, then the selected MML is too low and the procedures specified in paragraphs (c)(5)(i)(A) through (C) of this section must be repeated.

(ii) Provide for the Administrator's approval the selected value of the MML for a specific HAP and the rationale for selecting the MML including all data and calculations used to determine the MML. The approved MML must be used in all applicable compliance demonstration calculations.

(6) When using the MML determined using the procedures in paragraph (c)(5)(i) or (ii) of this section, the analytical laboratory conducting the analysis must perform and meet the following quality assurance procedures.

(i) Measure the concentration of the specific HAP in a minimum of three replicate samples using the selected test method.

(ii) Calculate the RSD and the upper confidence limit at the 95 percent confidence level using the measured HAP concentrations determined in paragraph (c)(6)(i) of this section. If the upper confidence limit of the RSD is less than 30 percent, then the test method is being performed correctly. The upper confidence limit of the RSD must be less than or equal to 30 percent.

* * * * *

(g) *Condensate HAP concentration measurement.* For purposes of

complying with the kraft pulping condensate requirements in § 63.446, the owner or operator shall measure the total HAP concentration as methanol except as specified in § 63.446(e)(2).

* * * * *

(1) *Biological treatment system percent reduction and mass removal calculations.* To demonstrate compliance with the condensate treatment standards specified in § 63.446(e)(2) and the monitoring requirements specified in § 63.453(j)(3) using a biological treatment system, the owner or operator shall use one of the procedures specified in paragraphs (l)(1) through (4) of this section. Owners or operators using a nonthoroughly mixed open biological treatment system shall also comply with paragraph (l)(5) of this section.

(1) *Percent reduction individual HAP procedure.* For the purposes of complying with the condensate treatment requirements specified in § 63.446(e)(2)(i)(A), the percent reduction due to destruction in the biological treatment system shall be calculated using the following equation:

$$R = f_{\text{bio}} \times 100$$

Where:

R = Destruction of each individual HAP specified in § 63.446(e)(2)(i)(A) in the biological treatment system (percent).

f_{bio} = The fraction of each individual HAP removed in the biological treatment system. The site-specific biorate constants shall be determined using the procedures specified and as limited in Appendix C of part 63.

(2) *Mass removal individual HAP procedure.* For the purposes of complying with the condensate treatment requirements specified in § 63.446(e)(2)(i)(B) or (C), the mass removal in the biological treatment system shall be calculated using the following equation:

$$E = (F) * (f_{\text{bio}})$$

Where:

E = mass of each individual HAP specified in § 63.446(e)(2)(i)(B) or (C) removed in the biological treatment system (kg/Mg ODP).

F = mass of each individual HAP entering the biological treatment system determined using the procedures specified in paragraph (j)(2) of this section (kg/Mg ODP).

(3) *Percent reduction methanol procedure.* For the purposes of complying with the condensate treatment requirements specified in § 63.446(e)(2)(ii)(A), the methanol

percent reduction shall be calculated using the following equation:

$$R = \frac{f_{\text{bio}}(\text{MeOH})}{(1 + 1.087(r))} * 100$$

Where:

R=percent destruction.

r=ratio of the sum of acetaldehyde, methyl ethyl ketone, and propionaldehyde mass to methanol mass determined using the procedures in paragraph (j)(2) of this section.

$f_{\text{bio}}(\text{MeOH})$ =the fraction of methanol removed in the biological treatment system. The site-specific biorate constants shall be determined using the appropriate procedures specified in appendix C of part 63.

(4) *Mass removal methanol procedure.* For the purposes of complying with the condensate treatment requirements specified in § 63.446(e)(2)(ii)(B) or (C), the methanol mass removal shall be calculated using the following equation:

$$E = E_b * (f_{\text{bio}}(\text{MeOH}) / (1 + 1.087(r)))$$

Where:

E=methanol mass removal (kg/Mg ODP);
E_b=inlet mass flow rate of methanol (kg/Mg ODP) determined using the procedures in paragraph (j)(2) of this section;

(5) The owner or operator of a nonthoroughly mixed open biological treatment system using the monitoring requirements specified in § 63.453(p)(3) shall follow the procedures specified in appendix E of this part during the initial and any subsequent performance tests.

* * * * *

(m) * * *

(1) To demonstrate compliance with the percent mass requirements specified in § 63.446(c)(2), the procedures specified in paragraphs (m)(1)(i) through (iii) of this section shall be performed.

* * * * *

(iii) Compliance with the segregation requirements specified in § 63.446(c)(2) is demonstrated if the condensate stream or streams from each equipment system listed in § 63.446(b)(1) through (3) being treated as specified in § 63.446(e) contain at least as much total HAP mass as the target total HAP mass determined in paragraph (m)(1)(ii) of this section.

(2) To demonstrate compliance with the percent mass requirements specified in § 63.446(c)(3), the procedures specified in paragraphs (m)(2)(i) through (ii) of this section shall be performed.

* * * * *

(ii) Compliance with the segregation requirements specified in § 63.446(c)(3)

is demonstrated if the total HAP mass determined in paragraph (m)(2)(i) of this section is equal to or greater than the appropriate mass requirements specified in § 63.446(c)(3).

(n) *Open biological treatment system monitoring sampling storage.* The inlet and outlet grab samples required to be collected in § 63.453(j)(2) shall be stored at 4°C (40°F) to minimize the biodegradation of the organic compounds in the samples.

8. Amend § 63.458 by adding paragraph (b)(5) to read as follows:

§ 63.458 Delegation of authority.

* * * * *

(b) * * *

(5) Section 63.457(c)(5)(ii)—
Determination of the minimum measurement level in liquid streams for a specific HAP using the selected test method.

9. Add appendix E to part 63 to read as follows:

Appendix E to Part 63—Monitoring Procedure for Nonthoroughly Mixed Open Biological Treatment Units or Systems at Kraft Pulp Mills Under Unsafe Sampling Conditions

I. Purpose

This procedure is required to be performed in subpart S of this part, entitled National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry. Subpart S requires this procedure in § 63.453(p)(3) to be followed during unsafe sampling conditions when it is not practicable to obtain representative samples of hazardous air pollutant (HAP) concentrations from an open biological treatment unit. It is assumed that inlet and outlet HAP concentrations from the open biological treatment unit may be obtained during the unsafe sampling conditions. The purpose of this procedure is to estimate the concentration of HAPs within the open biological treatment unit based on information obtained at inlet and outlet sampling locations in units that are not thoroughly mixed and therefore have different concentrations of HAPs at different locations within the unit.

II. Definitions

Biological treatment unit = wastewater treatment unit designed and operated to promote the growth of bacteria to destroy organic materials in wastewater.

f_{bio} The fraction of organic compounds in the wastewater biodegraded in a biological treatment unit.

Fe=The fraction of applicable organic compounds emitted from the wastewater to the atmosphere.

K1=First-order biodegradation rate constant, L/g mixed liquor volatile suspended solids (MLVSS)-hr

KL=Liquid-phase mass transfer coefficient, m/s

Ks=Monod biorate constant at half the maximum rate, g/m³

III. Test Procedure for Determination of f_{bio} for Nonthoroughly Mixed Open Biological Treatment Units Under Unsafe Sampling Conditions

This test procedure is used under unsafe sampling conditions that do not permit practicable sampling of open biological treatment units within the unit itself, but rather relies on sampling at the inlet and outlet locations of the unit. This procedure may be used only under unsafe sampling conditions to estimate f_{bio} . Once the unsafe conditions have passed, then the formal compliance demonstration procedures of f_{bio} based upon measurements within the open biological treatment unit must be completed.

A. Overview of Estimation Procedure

The steps in the estimation procedure include data collection, the estimation of concentrations within the unit, and the use of Form 1 to estimate f_{bio} . The data collection procedure consists of two separate components. The first data collection component demonstrates that the open biological treatment unit can be represented by Monod kinetics and characterizes the effectiveness of the open biological treatment unit as part of the initial performance test, and the second data collection component is used when there are unsafe sampling conditions. These two data collection components are used together in a data calculation procedure based on a Monod kinetic model to estimate the concentrations in each zone of the open biological treatment unit. After the first two components of data collection are completed, the calculation procedures are used to back estimate the zone concentrations, starting with the last zone in the series and ending with the first zone.

B. Data Collection Requirements

This method is based upon: modeling the nonthoroughly mixed open biological treatment unit as a series of well-mixed zones with internal recycling between the units; and assuming that two Monod biological kinetic parameters can be used to characterize the biological removal rates in each unit. The data collection procedure consists of two separate components. The first data collection component is part of the initial performance test, and the second data collection component is used during unsafe sampling conditions.

1. Initial Performance Test

The objective of the first data collection component is to demonstrate that the open biological treatment unit can be represented by Monod kinetics and to characterize the performance of the open biological treatment unit. An appropriate value of the biorate constant, Ks, is determined using actual sampling data from the open biological treatment unit. This is done during the initial performance test when the open biological treatment unit is operating under normal conditions. This specific Ks value obtained during the initial performance test is used in the calculation procedure to characterize the open biological treatment unit during unsafe sampling conditions. The following open biological treatment unit characterization information is obtained from the first component of the data collection procedure:

- (1) The value of the biorate constant, K_s ;
- (2) The number and characteristics of each zone in the open biological treatment unit (depth, area, characterization parameters for surface aeration, submerged aeration rates, biomass concentration, concentrations of organic compounds, dissolved oxygen (DO), dissolved solids, temperature, and other relevant variables); and
- (3) The recycle ratio of internal recirculation between the zones.

The number of zones and the above characterization of the zones are also used to determine the performance of the unit under the unsafe sampling conditions of concern.

2. Data Collected Under Unsafe Sampling Conditions

In the second data collection component, obtained under unsafe sampling conditions, the measured inlet and outlet HAP concentrations and the biomass concentration are obtained for the open biological treatment unit. After the site specific data collection is completed on the day a parameter excursion occurs, the inlet and outlet concentrations are used with the prior open biological treatment unit characterization to estimate the concentrations of HAPs in each zone. The following information on the open biological treatment unit must be available in the second data collection component:

- (1) Basic unit variables such as inlet and recycle wastewater flow rates, type of agitation, and operating conditions;
- (2) The value of the inlet and outlet HAP concentrations; and
- (3) The biomass concentration in the open biological treatment unit.

C. One Time Determination of a Single Value of K_s (Initial Performance Test)

A single value of K_s is calculated using Form 3 for each data set that is collected during the initial performance test. A single composite value of K_s , deemed to be representative of the biological unit, is subsequently selected so that the f_{bio} values calculated by the procedures in this appendix (using this single value of K_s) for the data sets collected during the initial performance test are within 10 percent of the f_{bio} value determined by using Form 1 with these same data sets. The value of K_s meeting these criteria is obtained by the following steps:

- (1) Determine the median of the K_s values calculated for each data set;
- (2) Estimate f_{bio} for each data set using the selected K_s value (Form 1 and Form 2);
- (3) Calculate f_{bio} for each data set using Form 1; and
- (4) Compare the f_{bio} values obtained in steps (2) and (3); if the f_{bio} value calculated using step (2) differs from that calculated using step (3) by more than 10 percent, adjust K_s (decrease K_s if the f_{bio} value is lower than that calculated by Form 1 and vice versa) and repeat this procedure starting at step (2). If a negative value is obtained for the values of K_s , then this negative kinetic constant may not be used with the Monod model. If a negative value of K_s is obtained, this test procedure cannot be used for evaluating the performance of the open biological treatment unit.

D. Confirmation of Monod Kinetics (Initial Performance Test)

i. Confirmation that the unit can be represented by Monod kinetics is made by identifying the following two items:

- (1) The zone methanol concentrations measured during the initial performance test; and

(2) The zone methanol concentrations estimated by the Multiple Zone Concentrations Calculations Procedure based on inlet and outlet concentrations (Column A of Form 2). For each zone, the concentration in item 1 is compared to the concentration in item 2.

ii. For each zone, the estimated value of item 2 must be:

- (1) Within 25 percent of item 1 when item 1 exceeds 8 mg/L; or
- (2) Within 2 mg/L of item 1 when item 1 is 8 mg/L or less.

iii. Successful demonstration that the calculated zone concentrations meet these criteria must be achieved for 80 percent of the performance test data sets.

iv. If negative values are obtained for the values of K_1 and K_s , then these negative kinetic constants may not be used with the Monod model, even if the criteria are met. If negative values are obtained, this test procedure cannot be used for evaluating the performance of the open biological treatment unit.

E. Determination of KL for Each Zone (Unsafe Sampling Conditions)

i. A site-specific liquid-phase mass transfer coefficient (KL) must be obtained for each zone during the unsafe sampling conditions. Do not use a default value for KL. The KL value for each zone must be based on the site-specific parameters of the specific unit. The first step in using this procedure is to calculate KL for each zone in the unit using Form 4. Form 4 outlines the procedure to follow for using mass transfer equations to determine KL. Form 4 identifies the appropriate form to use for providing the detailed calculations to support the estimate of the value of KL. Forms 5 and 6 are used to provide individual compound estimates of KL for quiescent and aerated impoundments, respectively. A computer model may be used to perform the calculations. If the WATER8 model or the most recent update to this model is used, then report the computer model input parameters that you used as an attachment to Form 4. In addition, the Bay Area Sewage Toxics Emission (BASTE) model version 3.0 or equivalent upgrade and the TOXCHEM (Environment Canada's Wastewater Technology Centre and Environmegas, Ltd.) model version 1.10 or equivalent upgrade may also be used to determine KL for the open biological treatment unit with the following stipulations:

- (1) The programs must be altered to output a KL value that is based on the site-specific parameters of the unit modeled; and

(2) The Henry's law value listed in Form 4 must be substituted for the existing Henry's law values in the models.

ii. The Henry's law value listed in Form 4 may be obtained from the following sources:

- (1) Values listed by EPA with temperature adjustment if needed;

(2) Measured values for the system of concern with temperature adjustment; or

(3) Literature values of Henry's law values for methanol, adjusted for temperature if needed.

iii. Input values used in the model and corresponding output values shall become part of the documentation of the f_{bio} determination. The owner or operator should be aware that these models may not provide equivalent KL values for some types of units. To obtain an equivalent KL value in this situation, the owner or operator shall either use the appropriate procedure on Form 4 or adjust the KL value from the model to the equivalent KL value as described on Form 4.

iv. Report the input parameters that you used in the computer model on Forms 5 and 6 as an attachment to Form 4. If you have submerged air flow in your unit, you must correct the value of KL estimated on Form 4 with the correction factor determined using Form 7 before using the value of KL with Form 2.

F. Estimation of Zone Concentrations (Unsafe Sampling Conditions)

Form 2 is used to estimate the zone concentrations of HAPs based on the inlet and outlet data. The value of K_s entered on the form is that single composite value of K_s discussed in section III.C of this appendix. This value of K_s is calculated during the Initial Performance Test (and subsequently updated, if necessary). A unique value of the biorate K_1 is entered on line 4 of Form 4, and the inlet concentration is estimated in Column A of Form 4. The inlet concentration is located in the row of Form 2 corresponding to zone 0. If there are three zones in the system, $n-3$ equals 0 for the inlet concentration row. These estimated zone concentrations are then used in Form 1 to estimate f_{bio} for the treatment unit.

G. Quality Control/Quality Assurance (QA/QC)

A QA/QC plan outlining the procedures used to determine the measured inlet and outlet concentrations during unsafe conditions and how the zone characterization data were obtained during the initial performance test shall be prepared and submitted with the initial performance test report. The plan should include, but may not be limited to:

(1) A description of each of the sampling methods that were used (method, procedures, time, method to avoid losses during sampling and holding, and sampling procedures) including simplified schematic drawings;

(2) A description of how that biomass was sampled from the activated sludge unit, including methods, locations, and times;

(3) A description of what conditions (DO, temperature, etc.) are important, what the target values are in the zones, how the factors were controlled, and how they were monitored. These conditions are primarily used to establish that the conditions of the initial performance test correspond to the conditions of the day in question;

(4) A description of how each analytical measurement was conducted, including preparation of solutions, dilution procedures, sampling procedures, monitoring of conditions, etc.;

(5) A description of the analytical instrumentation used, how the instruments were calibrated, and a summary of the accuracy and precision for each instrument;

(6) A description of the test methods used to determine HAP concentrations and other measurements. Section 63.457 (c)(3) specifies the test methods that must be used to determine HAP concentrations;

(7) A description of how data are captured, recorded, and stored; and

(8) A description of the equations used and their solutions for sampling and analysis, including a reference to any software used for calculations and/or curve-fitting.

IV. Calculation of Individual f_{bio} (Unsafe Sampling Conditions)

Use Form 1 with your zone concentration information to estimate the value of f_{bio} under unsafe sampling conditions. Form 1 uses measured concentrations of HAPs in the unit inlet and outlet, and Form 1 also uses the estimated concentrations in each zone of the unit obtained from Form 2. This procedure may be used on an open biological treatment unit that has well-defined zones within the unit. Use Form 1 to determine f_{bio} for each open biological treatment unit as it exists under subpart S of part 63. The first step in

using Form 1 is to calculate KL for each zone in the unit using Form 4. Form 7 must also be used if submerged aeration is used. After KL is determined using field data, measure the concentrations of the HAPs in each zone. In this alternative procedure for unsafe sampling conditions, the actual measured concentrations of the HAPs in each zone are replaced with the zone concentrations that are estimated with Form 2. After KL and the zone concentrations are determined, Form 1 is used to estimate the overall unit f_{bio} for methanol.

BILLING CODE 6560-50-U

Form 1

DATA FORM FOR THE ESTIMATION OF MULTIPLE ZONE BIODEGRADATION FROM UNIT CONCENTRATIONS

NAME OF THE FACILITY for site specific biorate determination

COMPOUND for site specific biorate determination

Number of zones in the biological treatment unit

VOLUME of full-scale system (cubic meters)

Average DEPTH of the full-scale system (meters)

FLOW RATE of wastewater treated in the unit (m³/s)Recycle flow of wastewater added to the unit, if any (m³/s)

Concentration in the wastewater treated in the unit (mg/L)

Concentration in the recycle flow, if any (mg/L)

Concentration in the effluent (mg/L).

Methanol

TOTAL INLET FLOW (m³/s) line 4 plus the number on line 5

TOTAL RESIDENCE TIME (s) line 2 divided by line 9.

TOTAL AREA OF IMPOUNDMENT (m²) line 2 divided by line 3

Estimate of KL in

Zone
number
Concentration for
zone, C_i (mg/L)Area of the
zone, A (m²)the zone (m/s)
from Form 4AIR STRIPPING
KL A C_i (g/s)

1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
TOTALS sum for each zone.		12	13	

Removal by air stripping (g/s). Line 13.

Loading in effluent (g/s). Line 8 times line 9.

Total loading (g/s). (Line 5 * line 7) + (line 4 * line 6).

Removal by biodegradation (g/s) Line 16 minus (line 14 + line 15).

Fraction biodegraded: Divide line 17 by line 16..

Fraction air emissions: Divide line 14 by line 16.

Fraction remaining in unit effluent: Divide line 15 by line 16.

14	
15	
16	
17	
18	
19	
20	

Form 2

DATA FORM FOR THE DETERMINATION OF ZONE CONCENTRATIONS FROM KS AND INLET/OUTLET DATA

COMPOUND for site specific biorates determination	methanol	
Influent Flow (m3/s)	1	
Inlet Concentration (g/m3)	2	
Outlet Concentration (g/m3) - Use value from line 3 as C_i value in column A for final Zone (zone n) in table below	3	
Saturation Coefficient, K_s (g/m3) From Form XIV	4	
Biorate K_1 (1/s) - Estimate	5	
Number of Zones	6	

Adjust K_1 value (line 5) until Column A, Row (n - line 6) is within +/- 5% of line 2.

Instructions for completion of table: (1) Transfer value from line 3 into row n, column A. (2) Enter data for all zones into columns B, D, E, G, H, & K. (3) Beginning with row n, perform calculations for columns F, I, J, L, M, N, & O for that zone only. (4) Calculate row n-1, column A using results from previous row (i.e., J_{i-1} , M_{i-1} , N_{i-1}). (5) Repeat steps (3) and (4) until a row of calculations has been completed for each zone. (6) row n - line 6, column A is the calculated inlet concentration.

	A	B	C	D	E	F	G	H
Zone Number	C_i ($J_{i-1} + N_{i-1}$)/ O_{i-1} g/m3	Temp C	$(1.045)^{(B-25)}$	biomass g/m3	Volume m3	line 5 * A * C * D * E / (line 4 + A) g/s	KL m/s	Area m2
n								
n-1								
n-2								
n-3								
n-4								

	I	J	K	L	M	N	O
Zone Number	A * G * H g/s	Reaction F + I g/s	Backmix BM_i	$(1 + BM_i + BM_{i+1})$ * C_i * line 1 g/s	BM_{i+1} * C_{i+1} * line 1 g/s	Flux L - M g/s	$(1 + BM_i)$ * line 1 g/s
n							
n-1							
n-2							
n-3							
n-4							

Form 3

Form XIV DATA FORM FOR THE DETERMINATION OF MONOD CONSTANTS FROM ZONE CONCENTRATIONS WITH BACKMIXING																																																																							
COMPOUND for site specific biorates determination																																																																							
Influent Flow (m3/s)																																																																							
Inlet Concentration (g/m3) - Use value from line 2 as C_{i-1} value in column D for Zone 1 in table below																																																																							
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th></th> <th></th> <th>H</th> </tr> <tr> <th>Zone Number</th> <th>C_i g/m3</th> <th>Backmix (B_{Mi})</th> <th>$(1+B_{M_i}+B_{M_{i+1}})*C_i$ g/m3</th> <th>$(1+B_{M_i})*C_{i-1}$ g/m3</th> <th>$B_{M_{i+1}}*C_{i+1}$ g/m3</th> <th>m/s</th> <th>m2</th> <th>A*F*G g/s</th> </tr> </thead> <tbody> <tr><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>										A	B	C	D	E			H	Zone Number	C_i g/m3	Backmix (B _{Mi})	$(1+B_{M_i}+B_{M_{i+1}})*C_i$ g/m3	$(1+B_{M_i})*C_{i-1}$ g/m3	$B_{M_{i+1}}*C_{i+1}$ g/m3	m/s	m2	A*F*G g/s	1									2									3									4									5								
	A	B	C	D	E			H																																																															
Zone Number	C_i g/m3	Backmix (B _{Mi})	$(1+B_{M_i}+B_{M_{i+1}})*C_i$ g/m3	$(1+B_{M_i})*C_{i-1}$ g/m3	$B_{M_{i+1}}*C_{i+1}$ g/m3	m/s	m2	A*F*G g/s																																																															
1																																																																							
2																																																																							
3																																																																							
4																																																																							
5																																																																							
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>I</th> <th>J</th> <th>K</th> <th>L</th> <th>M</th> <th>N</th> <th>O</th> </tr> <tr> <th>Zone Number</th> <th>Volume m3</th> <th>Temp C</th> <th>$(1.045)^{(J-25)}$</th> <th>biomass g/m3</th> <th>$I*K*L$ gm</th> <th>$M/[line\ 1*(D+E-C)-H]$ s</th> <th>1/A m3/g</th> </tr> </thead> <tbody> <tr><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>										I	J	K	L	M	N	O	Zone Number	Volume m3	Temp C	$(1.045)^{(J-25)}$	biomass g/m3	$I*K*L$ gm	$M/[line\ 1*(D+E-C)-H]$ s	1/A m3/g	1								2								3								4								5														
	I	J	K	L	M	N	O																																																																
Zone Number	Volume m3	Temp C	$(1.045)^{(J-25)}$	biomass g/m3	$I*K*L$ gm	$M/[line\ 1*(D+E-C)-H]$ s	1/A m3/g																																																																
1																																																																							
2																																																																							
3																																																																							
4																																																																							
5																																																																							
Plot values in column N on y axis, and values in column O on x axis, up to, and including first row where C_i is equal to MDL or to last zone.																																																																							
					Y intercept from plot. (g-s/m3)		3																																																																
					K1 (1/s). 1/line 3		4																																																																
					Slope of line		5																																																																
					Ks (g/m3). Line 5 times line 4		6																																																																

Form 4

**PROCEDURES FORM FOR THE
ESTIMATION OF THE KL FROM UNIT SPECIFICATIONS**

NAME OF THE FACILITY for site specific biorate determination

NAME OF UNIT for site specific biorate determination

NAME OF COMPOUND

HENRY'S LAW constant for the compound (mole fraction in gas per mole fraction in water at 25 degrees Celsius)

IDENTIFY THE TYPE OF UNIT (check one box below)

Quiescent impoundment

Surface agitated impoundment

Surface agitated impoundment with submerged air

Unit agitated by submerged aeration gas

1	
2	
3	
4	

PROCEDURES BASED UPON THE TYPE OF UNIT

1. Use the quiescent impoundment model to determine KL. Use Kq as KL as determined from Form 5.
2. Use the quiescent impoundment model to determine KL for the quiescent zone, Form 5. Use the aerated impoundment model to determine KL for the agitated surface, Form 6.
3. Use the quiescent impoundment model to determine Kq for the quiescent zone, Form 5. Use the aerated impoundment model to determine KL for the agitated surface, Form 6. The total system KL is the sum of the KL from Form 6 and the equivalent KL from Form 7
4. Use the aerated impoundment model to determine KL if the surface is agitated. Use the quiescent impoundment model if the surface is not agitated. KL includes the effect of volatilization in the air discharge, the equivalent KL from Form 7. See section 4.6.1 in the EMISSION MODEL REPORT

Estimate of KL obtained from above procedures (m/s)

5	
---	--

Form 5

FORM FOR CALCULATING THE MASS TRANSFER COEFFICIENT FOR A QUIESCENT SURFACE IMPOUNDMENT

FACILITY NAME for site specific biorate determination

COMPOUND for site specific biorate determination

Methanol

Input values

Enter the following:

F - Impoundment fetch (m)

D - Impoundment depth (m)

U10 - Windspeed 10 m above liquid surface (m/s)

Dw - Diffusivity of compound in water (cm²/s)Dether - Diffusivity of ether in water (cm²/s) μ G - Viscosity of air, (g/cm-s)G - Density of air, (g/cm³)Da - Diffusivity of compound in air, (cm²/s)A - Area of impoundment, (m²)H - Henry's law constant, (atm-m³/g mol)R - Universal gas constant, (atm-m³/g mol. K) μ L - Viscosity of water, (g/cm-s)L - Density of liquid, (g/cm³)

T - Impoundment temperature, (C)

Calculate the following:

Calculate F/D:

- A. Calculate the liquid phase mass transfer coefficient, k_L , using one of the following procedures, (m/s)

Where $F/D < 14$ and $U_{10} > 3.25$ m/s, use the following procedure from MacKay and
1 Yeun:

Calculate the Schmidt number on the liquid side, Sc_L , as follows:

$$Sc_L = \mu_L / LD_w$$

Calculate the friction velocity, U^* , as follows, (m/s):

$$U^* = 0.01 \times U_{10} (6.1 + 0.63 U_{10})^{0.5}$$

Where U^* is > 0.3 , calculate k_L as follows:

$$k_L = (1.0 \times 10^{-6}) + (34.1 \times 10^{-4}) U^* \times Sc_L^{-0.5}$$

Where U^* is < 0.3 , calculate k_L as follows:

$$k_L = (1.0 \times 10^{-6}) + (144 \times 10^{-4}) (U^*)^{2.2} \times Sc_L^{-0.5}$$

- For all other values of F/D and U_{10} , calculate k_L using the following procedure from
2 Springer:

Where U_{10} is < 3.25 m/s, calculate k_L as follows:

Form 5

$$k_L = 2.78 \times 10^{-6} (D_w/D_{ether})^{2/3}$$

Where U_{10} is > 3.25 and $14 < F/D < 51.2$, Calculate k_L as follows:

$$k_L = [2.605 \times 10^{-9} (F/D) + 1.277 \times 10^{-7}] U_{10}^2 (D_w/D_{ether})^{2/3}$$

Where $U_{10} > 3.25$ m/s and $F/D > 51.2$, calculate k_L as follows:

$$k_L = (2.611 \times 10^{-7}) U_{10}^2 (D_w/D_{ether})^{2/3}$$

- B. Calculate the gas phase mass transfer coefficient, k_G , using the following procedure from MacKay and Matsasugu, (m/s):

Calculate the Schmidt number on the gas side, Sc_G , as follows: $Sc_G = \mu_G / GDa$

Calculate the effective diameter of the impoundment, d_e , as follows, (m):

$$d_e = (4A/3.14)^{0.5}$$

Calculate k_G as follows, (m/s): $k_G = 4.82 \times 10^{-3} U_{10}^{0.78} Sc_G^{-0.67} d_e^{-0.11}$

- C. Calculate the partition coefficient, K_{eq} , as follows: $K_{eq} = H/[R(T+273)]$

- D. Calculate the overall mass transfer coefficient, K_q , as follows, (m/s):
 $1/K_q = 1/k_L + 1/(K_{eq} k_G)$

Where the total impoundment surface is quiescent:

$$K_L = K_q$$

Where a portion of the impoundment surface is turbulent, continue with Form 6.

Form 6

DATA FORM FOR CALCULATING THE MASS TRANSFER COEFFICIENT FOR AN AERATED SURFACE IMPOUNDMENT

Facility Name:

Waste Stream Compound:

Methanol

Enter the following:

J - Oxygen transfer rating of surface aerator, (lb O₂/hr-hp)

POWR - Total power to aerators, (hp)

T - Water temperature, (C)

Ot - Oxygen transfer correction factor

MWL - Molecular weight of liquid

At - Turbulent surface area of impoundment, (ft²)

(If unknown, use values from Table 1)

A - Total surface area of impoundment, (ft²)rho L - Density of liquid, (lb/ft³)Dw - Diffusivity of constituent in water, (cm²/s)Do - Diffusivity of oxygen in water, (cm²/s)

d - Impeller diameter, (cm)

w - Rotational speed of impeller, (rad/s)

a - Density of air, (gm/cm³)

N - Number of aerators

gc - Gravitation constant, (lbm-ft/s²/lbf)

d* - Impeller diameter, (ft)

Da - Diffusivity of constituent in air, (cm²/s)

MWa - Molecular weight of air

R - Universal gas constant, (atm-m³/g mol. C)H = Henry's law constant, (atm-m³/g mol)

Calculate the following:

- A. Calculate the liquid phase mass transfer coefficient, k_L, using the following Equation from Thibodeaux:

$$k_L = [8.22 \times 10^{-9} J (POWR)(1.024)^{(T-20)} Ot 10^6 MWL / (At \times \rho L / 62.37)] (Dw/Do)^{0.5}, (m/s)$$

- B. Calculate the gas phase mass transfer coefficient, k_G, using the following procedure from Reinhardt:

Calculate the viscosity of air, μ_a , as follows, (g/cm.s):

$$\mu_a = 4.568 \times 10^{-7} T + 1.7209 \times 10^{-4}$$

Calculate the Reynold's number as follows:

$$Re = d^2 w a / \mu_a$$

Calculate power to impeller, PI, as follows, (ft.lbf/s):

$$PI = 0.85 (POWR) 550/N$$

Form 6

Calculate the power number, p , as follows:

$$p = Pl gc / (\rho d^5 w^3)$$

Calculate the Schmidt number, ScG , as follows:

$$ScG = \mu a / aDa$$

Calculate the Fronde number, Fr , as follows:

$$Fr = d w^2 / gc$$

Calculate kG as follows:

$$kG = 1.35 \times 10^{-7} Re^{1.42} p^{0.4} ScG^{0.5} Fr^{-0.21} Da MWa/d, (m/s)$$

C. Calculate the partition coefficient, Keq , as follows:

$$Keq = H/[R(T+273)]$$

D. Calculate the overall turbulent mass transfer coefficient, Kt , as follows, (m/s):

$$1/Kt = 1/kL + 1/(Keq * kG)$$

E. Calculate the quiescent mass transfer coefficient, Kq , for the impoundment using Form 5.

F. Calculate the overall mass transfer coefficient, KL , for the impoundment as follows:

$$KL = (A - At)/A * Kq + At * Kt/A$$

Form 6 Table 1

PROCEDURES FORM FOR THE ESTIMATION OF THE KL FROM WATER⁸ a,b

Motor horsepower	At, Turbulent area,		Effective depth	V, Agitated volume	aV, Area per volume
hp	ft ²	m ²	ft	ft ³	ft ² /ft ³
5	177	16.4	10	1,767	0.1002
7.5	201	18.7	10	2,010	0.1000
10	227	21	10.5	2,383	0.0953
15	284	26.4	11	3,119	0.0911
20	346	32.1	11.5	3,983	0.0869
25	415	38.6	12	4,986	0.0832
30	491	45.7	12	5,890	0.0834
40	661	61.4	13	8,587	0.0770
50	855	79.5	14	11,970	0.0714
60	1075	100	15	16,130	0.0666
75	1452	135	16	23,240	0.0625
100	2206	205	18	39,710	0.0556

a Data for a high speed (1,200) rpm) aerator with 60 cm propeller diameter (d).

b This table provides information potentially useful for the value of At.

Form 7

DATA FORM FOR THE ESTIMATION OF THE EQUIVALENT KL
FROM AIR STRIPPING DUE TO SUBMERGED AERATION.

NAME OF THE FACILITY for site specific biorate determination

COMPOUND for site specific biorate determination

VENT RATE of total gas leaving the unit (G, m3/s)

TEMPERATURE of the liquid in the unit (deg. C)

ESTIMATE OF Henry's law constant (H, g/m3 in gas / g/m3 in liquid).

Corrected for the temperature on line 3.

AREA OF REACTOR (m2)

CALCULATION OF THE ESTIMATE OF EQUIVALENT KL

[H G] ESTIMATE (m3/s) Multiply the number on line 1 by the number on line 3. Enter the results here.

EQUIVALENT KL. Divide the number on line 5 by the number on line 4. Enter the results on line 6.

	Methanol
1	
2	
3	
4	
5	
6	