Mandatory Greenhouse Gas Reporting Rule: EPA's Response to Public Comments

Volume No.:46

Subpart II—Industrial Wastewater Treatment

June 2010

Subpart II—Industrial Wastewater Treatment

U. S. Environmental Protection Agency
Office of Atmosphere Programs
Climate Change Division
Washington, D.C.

FOREWORD

This document provides EPA's responses to public comments on EPA's Proposed Mandatory Greenhouse Gas Reporting Rule. EPA published a Notice of Proposed Rulemaking in the Federal Register on April 10, 2009 (74 FR 16448). EPA received comments on this proposed rule via mail, e-mail, facsimile, and at two public hearings held in Washington, DC and Sacramento, California in April 2009. Copies of all comments submitted are available at the EPA Docket Center Public Reading Room. Comments letters and transcripts of the public hearings are also available electronically through http://www.regulations.gov by searching Docket ID *EPA-HQ-OAR-2008-0508.*

Due to the size and scope of this rulemaking, EPA prepared this document in multiple volumes, with each volume focusing on a different broad subject area of the rule. This volume of the document provides EPA's responses to significant public comments received for 40 CFR Part 98, Subpart II—Industrial Wastewater Treatment.

Each volume provides the verbatim text of comments extracted from the original letter or public hearing transcript. For each comment, the name and affiliation of the commenter, the document control number (DCN) assigned to the comment letter, and the number of the comment excerpt is provided. In some cases the same comment excerpt was submitted by two or more commenters either by submittal of a form letter prepared by an organization or by the commenter incorporating by reference the comments in another comment letter. Rather than repeat these comment excerpts for each commenter, EPA has listed the comment excerpt only once and provided a list of all the commenters who submitted the same form letter or otherwise incorporated the comments by reference in table(s) at the end of each volume (as appropriate).

EPA's responses to comments are generally provided immediately following each comment excerpt. However, in instances where several commenters raised similar or related issues, EPA has grouped these comments together and provided a single response after the first comment excerpt in the group and referenced this response in the other comment excerpts. In some cases, EPA provided responses to specific comments or groups of similar comments in the preamble to the final rulemaking. Rather than repeating those responses in this document, EPA has referenced the preamble.

While every effort was made to include the significant comments related to 40 CFR Part 98, Subpart II—Industrial Wastewater Treatment in this volume, some comments inevitably overlap multiple subject areas. For comments that overlapped two or more subject areas, EPA assigned the comment to a single subject category based on an assessment of the principle subject of the comment. For this reason, EPA encourages the public to read the other volumes of this document with subject areas that may be relevant to 40 CFR Part 98, Subpart II—Industrial Wastewater Treatment.

The primary contacts regarding questions or comments on this document are:

Carole Cook (202) 343-9263

U.S. Environmental Protection Agency
Office of Atmospheric Programs
Climate Change Division
Mail Code 6207-J
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460

ghgreportingrule@epa.gov

TABLE OF CONTENTS

SUBPART II—WASTEWATER TREATMENT

1. DEFINITION OF SOURCE CATEGORY

Commenter Name: Gregory M. Adams
Commenter Affiliation: Sanitation Districts of Los Angeles County
Document Control Number: EPA-HQ-OAR-2008-0508-0710.1
Comment Excerpt Number: 1

Comment: The Sanitation Districts fully support the conclusion reached by EPA that anthropogenic emissions from POTWs will fall well short of the reporting threshold. We further support the blanket exemption of publicly owned treatment works (POTWs) under the proposed rule.

Response: For EPA's response to comments on centralized municipal wastewater treatment plants, please see Section II.E of the preamble to the final rule.

Commenter Name: Chris Hornback
Commenter Affiliation: National Association of Clean Water Agencies (NACWA)
Document Control Number: EPA-HQ-OAR-2008-0508-0566.1
Comment Excerpt Number: 1

Comment: EPA has estimated that emissions from publicly owned wastewater treatment plants (POTWs) do not exceed the rule's threshold and are therefore not included in the proposal, and NACWA agrees with this decision.

Response: For EPA's response to comments on centralized municipal wastewater treatment plants, please see Section II.E of the preamble to the final rule.

Commenter Name: Theresa Pfeifer
Commenter Affiliation: Metro Wastewater Reclamation District
Document Control Number: EPA-HQ-OAR-2008-0508-0574.1
Comment Excerpt Number: 1

Comment: The District agrees that municipal wastewater treatment plants will not exceed the reporting threshold on the basis of the emissions from the treatment process and therefore should be excluded from the reporting rule.

Response: For EPA's response to comments on centralized municipal wastewater treatment plants, please see Section II.E of the preamble to the final rule.

Commenter Name: Chris Hornback
Commenter Affiliation: National Association of Clean Water Agencies (NACWA)
Document Control Number: EPA-HQ-OAR-2008-0508-0566.1
Comment Excerpt Number: 5

Comment: NACWA commends the Agency for its comprehensive technical evaluation of the greenhouse gas emissions from wastewater treatment plants (Wastewater Treatment Technical Support Document, EPA-HQ-OAR-0508- 035). NACWA has worked over the past few years to help EPA refine the estimates for the wastewater treatment category in its Inventory of U.S. Greenhouse Gas Emissions and Sinks and believes that based on current confirmed information and estimation methodologies, the Agency has made the correct determination that no municipal wastewater treatment plant will trip the reporting threshold, on the basis of the emissions from the treatment process, and therefore should be excluded from the reporting rule. NACWA along with the Water Environment Research Foundation (WERF) are working on independent but coordinated efforts to increase our understanding of the actual emissions from the wastewater treatment process. We hope that future results from this work will further inform EPA's efforts on the Inventory and the reporting rule.

Response: For EPA's response to comments on centralized municipal wastewater treatment plants, please see Section II.E of the preamble to the final rule.

Commenter Name: Chris Hobson
Commenter Affiliation: Southern Company
Document Control Number: EPA-HQ-OAR-2008-0508-1645.2
Comment Excerpt Number: 30

Comment: § 98.350(a) states "This source category applies to onsite wastewater treatment systems at pulp and paper mills, food processing plants, ethanol production plants, petrochemical facilities, and petroleum refining facilities." Yet § 98.351 states that you must report under this subpart "if your facility meets the requirements of either § 98.2(a)(1) or (2)" which includes more than the previously listed source categories. EPA should clarify the sources required to report under this subpart by stating that electric generating facilities are excluded from this subpart.

Response: For EPA's response to comments on clarifying the sources required to report, please see Section II.E of the preamble to the final rule. See §98.358 of the final rule for definitions of food processing and ethanol production to which Subpart II is applicable.

EPA confirms that electric generating facilities are not one of the source categories covered under this subpart.

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 146

Comment: EPA has given conflicting information on which treatment systems are subject to reporting under this subpart: (1) §98.350(a): EPA broadly defined the source category, suggesting that all emissions from all wastewater treatment systems that fall under the applicability thresholds of §98.2 and that are located at certain sources (pulp and paper mills, food processing plants, ethanol production plants, petrochemical facilities, and petroleum refining facilities) are covered under this Subpart. (2) §98.353(a): EPA includes emission factors

for use in Equation II-1 that are applicable to anaerobic treatment, aerobic treatment, and oil/water separators in Table II-1. (3) §98.354: EPA provides QA/QC requirements only for anaerobic treatment systems. To resolve this confusion, we recommend that EPA further clarify in §98.350(a) that the source category only includes anaerobic systems and that aerobic wastewater systems are exempted. We also recommend that EPA clarify that the source categories to which this applies are defined elsewhere in Part 98. Our proposed language for §98.350(a) is below. "A wastewater treatment system is the collection of all processes that treat or remove pollutants and contaminants, such as soluble organic matter, suspended solids, pathogenic organisms, and chemicals from waters released from industrial processes. This source category applies to on-site wastewater treatment systems that include anaerobic treatment and that are located at pulp and paper mills, food processing plants, ethanol production plants, petrochemical facilities, and petroleum refining facilities as defined elsewhere in this Part."

Response: For information on the facility types and anaerobic processes covered by subpart II of the rule, please see Section II.E of the preamble to the final rule.

Commenter Name: Linda Farrington
Commenter Affiliation: Eli Lilly and Company (Lilly)
Document Control Number: EPA-HQ-OAR-2008-0508-0680.1
Comment Excerpt Number: 33

Comment: Lilly requests confirmation that this source category is limited to only those wastewater treatment systems located at pulp and paper mills, food processing plants, ethanol production plants, petrochemical facilities, and petroleum refineries. The language included in EPA's fact sheet on Subpart II, Wastewater Treatment implies a broader applicability than the language in the proposed rule. Specifically, the EPA fact sheet states, "The types of facilities that contain wastewater treatment systems that could be subject to this reporting rule include, but are not limited to, the following, Pulp and paper mills, Food processing plants, Ethanol Production plants, Petrochemical facilities, and Petroleum refining facilities." The use of the phase "but are not limited to" seems to contradict with the language in the proposed rule, §98.350. Therefore, Lilly asks for clarification of the Agency's intent.

Response: For information on the facility types covered by subpart II of the rule, please see Section II.E of the preamble to the final rule. EPA acknowledges that the fact sheet supporting the proposed rule suggested a broader applicability of this subpart than was intended by the rule language.

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 12

Comment: The applicability description that is contained in Subpart II §98.350(a) describes the source category as follow: "This source category applies to on-site wastewater treatment systems at pulp and paper mills, food processing plants, ethanol production plants, petrochemical facilities, and petroleum refining facilities." While not stated specifically, this would appear to reference other specific subcategories in the proposed rule, i.e. Subparts AA, M, J, Y, and X.

These specific subparts should be referenced in §98.350(a) in order to eliminate any confusion over the affected industries.

Response: EPA has revised the definition of the source category. For more information, please see Section II.E of the preamble to the final rule.

Commenter Name: Dean C. DeLorey
Commenter Affiliation: Beet Sugar Development Foundation (BSDF) Environmental Committee
Document Control Number: EPA-HQ-OAR-2008-0508-0559.1
Comment Excerpt Number: 11

Comment: For waste water treatment, if system is essentially facultative lagoon, does the anaerobic portion require reporting?

Response: For information on the anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule.

Facultative lagoons are not classified as anaerobic treatment systems for the purpose of the rule.

Commenter Name: Traylor Champion
Commenter Affiliation: Georgia-Pacific, LLC (GP)
Document Control Number: EPA-HQ-OAR-2008-0508-0380.1
Comment Excerpt Number: 39

Comment: GP supports AF&PA's comment on wastewater treatment systems (WWTS) regarding the state of the science in measurements of pulp and paper WWTS and the types of systems included in the rule (dedicated anaerobic WWTS) versus those that appear to be excluded (aerobic systems and anaerobic portions of aerated stabilization basins).

Response: For information on the anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule.

Commenter Name: Dan F. Hunter
Commenter Affiliation: ConocoPhillips Company
Document Control Number: EPA-HQ-OAR-2008-0508-0515.1
Comment Excerpt Number: 57

Comment: As reported in EPA's "Technical Support Document for the Petroleum Refining Sector: Proposed Rule for Mandatory Reporting of Greenhouse Gases", GHG emissions from wastewater treatment account for 0.43% of the total refinery inventory. ConocoPhillips recommends wastewater treatment at refineries be considered in the *de minimis* category. In addition, wastewater treatment at refineries should be excluded from Subpart II and specifically listed in 98.350(b).

Response: For EPA's response to *de minimis* exclusions in the rule, please see Section II.E of the preamble to the final rule.

Commenter Name: Brian P. Flynn
Commenter Affiliation: MRE, LLC
Document Control Number: EPA-HQ-OAR-2008-0508-0529.1
Comment Excerpt Number: 1

Comment: 40 CFR Part 98 Subpart II does not include a requirement to report CO_2e emissions from domestic wastewater treatment plants. It should. Large plants are significant producers of these gases, especially when you consider the direct evolution of CO_2 into the atmosphere from aerobic biological treatment where half of the influent BOD (or COD) is converted by bacteria to carbon dioxide and energy. We estimate that the total CO_2 released by domestic wastewater treatment plants as: 5.7 Million tons of CO_2 per year. This source was completely overlooked in EPA's Technical Support Document for Wastewater Treatment: Proposed Rule for Mandatory Reporting of Greenhouse Gases (2/4/09)! A requirement should be set to report this CO_2 emission for all domestic wastewater treatment plants treating more than 50 million gallons per day. Petroleum refiners in the US would be insignificant emitters as their total wastewater flowrate is on the order of only 1/3 of one percent of domestic wastewater sources (100 million gallons per day versus 30,000 million gallons per day for domestic wastewater) at the same approximate BOD strength as domestic wastewater.

Response: CO_2 emissions would naturally happen through the biodegradation of human waste. Human waste comes from edible organic material that grows and degrades generally on an annual cycle. Wastewater treatment systems speed up that biodegradation, however, wastewater treatment does not result in a net increase in atmospheric concentrations of CO_2. The *2006 IPCC Guidelines for National Greenhouse Gas Inventories* states: "Carbon dioxide (CO_2) emissions from wastewater are not considered in the IPCC Guidelines because these are of biogenic origin and should not be included in national total emissions." Therefore, EPA does not require the estimating or reporting of CO_2 emissions from wastewater treatment.

EPA estimated that no municipal wastewater treatment plants exceed the threshold of anthropogenic greenhouse gas emissions considered under this rule, therefore EPA has excluded them from the reporting rule. For more information, please see Section II.E of the preamble to the final rule.

Commenter Name: A. J. Hodlofski
Commenter Affiliation: None
Document Control Number: EPA-HQ-OAR-2008-0508-0252.1
Comment Excerpt Number: 1

Comment: As currently proposed, §98.350.a requires only annual reporting of GHG by wastewater treatment facilities operated by pulp and paper mills, food processing plants, ethanol production plants, petrochemical facilities and petroleum refining facilities. No distinction should be made between the "centralized domestic wastewater treatment plants" currently excluded by §98.350.b and the commercial plants already encompassed by proposed rule §98.350.a. §98.350.b should be eliminated and §98.350.a should be revised to require reporting of GHG by all wastewater treatment facilities. This rule should be revised to encompass all waste water treatment facilities because in many parts of the country which use "trinity systems", there is no real distinction between "domestic" and commercial systems. Trinity systems have been in

use in northeastern cities like Philadelphia, Pennsylvania for over 100 years and are designed to handle not only effluent from households, but also industrial waste and rainwater collected from surface streets. In Philadelphia, as in many northeastern cities, this industrial waste includes organic and chemical wastes from food processing plants as well as petrochemicals from smaller "non-point" sources. Failing to author a rule which includes these "domestic" trinity systems would prevent the EPA from collecting key data about GHG emissions from trinity systems which handle and treat exactly the same types of waste as systems which are required to collect and report data.

Response: For information on the exclusion of centralized municipal wastewater treatment systems, please see Section II.E of the preamble to the final rule.

EPA agrees that municipal wastewater treatment systems may also treat commercial and industrial wastewater. As described in the Wastewater Treatment TSD (EPA– HQ–OAR–2008–0508–035), EPA's threshold analysis accounts for industrial contributions to centralized wastewater treatment plant influent. However, as provided in Section II.E of the preamble to the final rule, EPA does not believe any municipal treatment system will exceed the threshold, even with industrial contributions, due to the use of aerobic treatment processes.

The rule requires petroleum refineries to report CH_4 emissions from anaerobic processes at wastewater treatment systems. The rule has the same requirements for ethanol production facilities, food processing facilities, and pulp and paper mills that exceed the threshold of 25,000 CO_2e. These are industries that have the potential to exceed the reporting threshold. They have both high levels of BOD_5 or COD in their wastewater and frequently employ anaerobic treatment operations. These two conditions result in the opportunity for increased greenhouse gas emissions. EPA has reduced the overall reporting burden by focusing the rule requirements on those treatment systems with the highest likelihood of generating greenhouse gas emissions exceeding the reporting threshold.

Commenter Name: See Table 3 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0679.1
Comment Excerpt Number: 215

Comment: §98.350(a). EPA should clarify if the emissions from only anaerobic wastewater treatment processes or from either anaerobic or aerobic wastewater treatment processes should be reported. §98.350(a) says to report CH_4 emissions from anaerobic wastewater treatment processes. However, this statement conflicts with the emissions methodology in §98.353(a). §98.353(a) says to calculate CH_4 emissions from treatment processes other than digesters using equation II-1 and the equation includes a methane conversion factor (MCF) from Table II-1. There are four MCF values in Table II-1, two are for anaerobic systems and two are for aerobic systems. Also, the monitoring and QA/QC requirements in §98.354(c) only discuss requirements for anaerobic systems.

Response: For information on the anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule.

Commenter Name: Gregory A. Wilkins
Commenter Affiliation: Marathon Oil Corporation
Document Control Number: EPA-HQ-OAR-2008-0508-0712.1
Comment Excerpt Number: 84

Comment: Marathon supports that emissions from aerobic wastewater treatment are not subject to reporting under this rule because they are generally considered of biogenic origin. Also Marathon interprets that anoxic zones in aerobic wastewater treatment plants are not considered anaerobic treatment.

Response: For information on the anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule.

The commenter's interpretation is correct. EPA added definitions of anaerobic process, anaerobic reactor, anaerobic lagoon, and anaerobic sludge digester to §98.350. These definitions clarify that anoxic zones in aerobic wastewater treatment plants are not considered anaerobic treatment.

Commenter Name: Michael W. Stroben
Commenter Affiliation: Duke Energy Corporation
Document Control Number: EPA-HQ-OAR-2008-0508-0407.1
Comment Excerpt Number: 17

Comment: The proposal is not clear that wastewater treatment facility reporting requirement apply only to specific industries that may have high levels of organic compounds in the wastewater. Duke Energy requests that EPA clarify that it is not the intent of the Agency to require reporting from wastewater treatment systems outside of pulp and paper mills, food processing plants, ethanol production plants, petrochemical facilities and petroleum refining facilities and that emit little or no greenhouse gas emissions. This would include systems for treating wastewater generated by electric generating stations (for example, the wastewater generated by a flue gas desulfurization system).

Response: For information on the facility types required to report under subpart II, please see Section II.E of the preamble to the final rule.

Commenter Name: Robert J. Martineau, Jr
Commenter Affiliation: Counsel, Waller Lansden Dortch & Davis, LLP
Document Control Number: EPA-HQ-OAR-2008-0508-0414.1
Comment Excerpt Number: 13

Comment: Nissan requests clarification on whether non-anaerobic industrial wastewater treatment systems are subject to the reporting requirements outlined in the proposed GHG reporting rule. There is a degree of inconsistency and ambiguity between the Preamble to the proposed regulation, the proposed regulation itself, and the Technical Support Document For Wastewater Treatment: Proposed Rule For Mandatory Reporting Of Greenhouse Gasses. See EPA-HQ-OAR-2008-0508. Specifically, the Preamble to the proposed regulation states: Owners and operators of the following facilities and supply operations would submit annual GHG emission reports under the proposal: . . . Any facility that emits 25,000 metric tons CO_2e or more

per year in combined emissions from stationary fuel combustion units, miscellaneous use of carbonates and all of the source categories listed below that are located at the facility in any calendar year starting in 2010. For these facilities, the GHG emission report would cover all source categories for which calculation methodologies are provided in proposed 40 CFR part 98, subparts B through JJ of the rule, [including]. . . . – Wastewater. 74 Fed. Reg., at 16,462. Following the language of the Preamble concerning wastewater treatment systems, Section V(II)(1) states: An industrial wastewater treatment system is a system located at an industrial facility which includes the collection of processes that treat or remove pollutants and contaminants, such as soluble organic matter, suspended solids, pathogenic organisms, and chemicals from waters released from industrial processes. . . . Industrial wastewater systems that rely on microbial activity to degrade organic compounds under anaerobic conditions are sources of CH_4 . . . . The only wastewater treatment process emissions to be reported in this rule are those from onsite wastewater treatment located at industrial facilities . . . . 74 Fed. Reg. at 16,559-60. Although this section of text acknowledges that anaerobic systems are sources of CH_4, the last sentence of the quoted passage could be interpreted to include non-anaerobic treatment systems at an industrial facility as well. Later, in discussing the proposed monitoring methods, the Preamble identifies proposed monitoring methods for "CH_4 emissions from industrial wastewater treatment system components other than digesters," as well as proposed monitoring methods for "CH_4 Generation from Anaerobic Digesters." 74 Fed. Reg. at 16,560. Again, by including two separate methodologies in this section of the Preamble, the quoted text is suggestive that non-anaerobic treatment systems may be subject to GHG emissions reporting. Turning to the proposed language of 40 C.F.R. § 98.350(a) for a source category, "[a] wastewater treatment system is the collection of all processes that treat or remove pollutants and contaminants, such as soluble organic matter, suspended solids, pathogenic organisms, and chemicals from waters released from industrial processes." 74 Fed. Reg. at 16,704. Moreover, 40 C.F.R.§ 98.351 dictates, "You must report GHG emissions under this subpart if your facility contains a wastewater treatment process and the facility meets the requirements of either § 98.2(a)(1) or (2)." Id. However, in discussing the types of "GHG's to report," 40 C.F.R. Part 98, Subpart II, § 98.352 stipulates that "(a) You must report annual CH_4 emissions from anaerobic wastewater treatment processes, ..." Id. This language suggests that non-anaerobic treatment processes are not included in the reporting requirements. Furthermore, the proposed text of 40 C.F.R. 5 98.354 identifies the "Monitoring and QA/QC requirements" for GHG emissions. 74 Fed. Reg. at 16,705. However, based on the language of the proposed rule, the requirements apply only to the quantity of COD treated anaerobically, facilities with anaerobic treatment systems, and facilities with oil/water separators. Id. It remains unclear whether non-anaerobic industrial wastewater systems, excluding oil/water separators, are subject to the proposed reporting requirements. Lastly, in examining the Technical Support Document For Wastewater Treatment: Proposed Rule For Mandatory Reporting Of Greenhouse Gasses, Section 6.1 outlines the methodologies for calculating methane generation from domestic wastewater treatment and from industrial wastewater treatment; whereas Section 6.2 outlines the methodology for calculating methane combustion at anaerobic digesters. However, neither section adequately addresses the specific types of non-anaerobic industrial wastewater systems, if any, that are subject to the reporting requirements under the proposed regulation. Assuming that a facility contains an industrial wastewater treatment process and the facility meets the requirements of either § 98.2(a)(1) or (2), as detailed in the proposed language of 40 C.F.R. § 98.351, the above-mentioned provisions of the Preamble, the proposed provisions of the regulation, and the Technical Support Document fail to clarify if non-anaerobic wastewater treatment systems are obligated to report GHG emissions when the various provisions are read in conjunction with one another.

Response: For information on the facility types required to report under subpart II and the anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule.

Non-anaerobic wastewater treatment systems are not subject to reporting under Subpart II.

Commenter Name: Carl H. Batliner
Commenter Affiliation: AK Steel Corporation
Document Control Number: EPA-HQ-OAR-2008-0508-0337.1
Comment Excerpt Number: 10

Comment: For Subpart II, Wastewater Treatment, in the proposed rule, the applicable source categories are identified and do not include Iron and Steel Production. However, in the Industrial Wastewater Treatment Sources Fact Sheet in the EPA Website, it states "facilities subject to this reporting rule, include but are not limited to, the following:" then lists the source categories. This implies that Iron and Steel Production facilities could be applicable. Please clarify whether the subject facilities are or are not limited to the source categories listed.

Response: For information on the facility types required to report under subpart II, please see Section II.E of the preamble to the final rule.

Iron and steel production facilities are not subject to reporting under Subpart II.

Commenter Name: Lee Lemke
Commenter Affiliation: Georgia Mining Association (GMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0276.1
Comment Excerpt Number: 5

Comment: The proposed Subpart II prescribes a broad definition of what constitutes a wastewater treatment plant (WWTP): “the collection of all processes that treat or remove pollutants and contaminants…”. Many industrial facilities subject to the Proposed Rule have wastewater treatment plants that could be affected using this broad applicability language. In particular, Georgia mining facilities typically have settling ponds for the treatment of suspended solids prior to effluent discharge. However, it appears that EPA is mainly interested in treatment plants that use biological processes to reduce COD from non-domestic organic waste. Many GMA facilities that would be covered under this broad applicability definition do not use the processes identified as being relevant to greenhouse gas emissions, or use such processes only to treat commingled domestic sewage. In kaolin processing, WWTPs typically involve pH adjustment and settling ponds used to remove dissolved solids from an effluent stream prior to discharge. The nature of kaolin processing dictates that its effluent streams do not contain meaningful quantities of digestible organic material. To avoid inadvertently requiring a large number of minor systems to collect effluent data and calculate emissions for wastewater systems that have little or no potential to emit greenhouse gases outside of commingled sanitary sewage loads, the final rule should include a more precise definition of the source category at §98.350(a). An improved definition of the source category would specify that a sewage treatment or pretreatment plant that is not used for processing waste streams containing industrial organic waste is not included in the source category.

Response: For information on anaerobic processes covered by the rule and the facility types required to report under subpart II, please see Section II.E of the preamble to the final rule.

Mining facilities are not subject to reporting under Subpart II. In addition, only anaerobic reactors, anaerobic lagoons, and anaerobic sludge digesters are considered anaerobic treatment for the purpose of this rule.

Commenter Name: Juanita M. Bursley
Commenter Affiliation: GrafTech International Holdings Inc. Company (GrafTech)
Document Control Number: EPA-HQ-OAR-2008-0508-0686.1
Comment Excerpt Number: 34

Comment: GrafTech believes this subpart is very confusing, as written, as it appears the rule, preamble and Fact Sheet summary document for this subpart have significant discrepancies that affect applicability assessments. The EPA Fact Sheet document is labeled "Industrial Wastewater Treatment Sources" and summarizes that "facilities that contain an industrial wastewater treatment process" and furthermore, indicates that only "anaerobic wastewater treatment systems at industrial facilities" are included. This would imply, but does not state explicitly, that an anaerobic sanitary treatment system, e.g. a septic tank, at an industrial facility that receives no process/industrial wastewater would not be covered under this subpart. Also, the Fact Sheet states that the types of facilities covered under this subpart "include, but are not limited, to the following", after which five specific industries are named. However, §98.350 of the rule is named "Wastewater Treatment" (without the reference to industrial), and defines a wastewater treatment system to include a collection of all processes that treat. .waters released from industrial processes. This language would also appear to exclude anaerobic wastewater treatment systems at industrial facilities that treat only sanitary wastewater, i.e., not wastewater discharged from an industrial process. But, again, this exclusion is not explicitly stated and leaves some doubt. The rule also specifies that this "source category applies to on-site wastewater treatment systems at pulp and paper mills, food processing plants, methanol production plants, petrochemical facilities, and petroleum refining facilities". Since the phrase "include, but are not limited, to the following", is not used, the language of the rule appears to cover only the five named industries. But the preamble also uses the phrase "such as" before listing these five specific industries. The preamble also does not seem to limit this subpart to only anaerobic systems, which would clearly broaden the applicability to all wastewater treatment systems at industrial sites. For example, the preamble states that "[i]ndustrial wastewater systems that rely on microbial activity to degrade organic compounds under anaerobic conditions are sources of CH_4." Furthermore, the preamble states that "only wastewater treatment process emission to be reported in this rule are those from onsite wastewater treatment located at industrial facilities...", again with no specific limitations to only include anaerobic systems and to only include treatment systems receiving process/industrial wastewaters, i.e. not receiving only sanitary wastewaters. The fact that publicly owned treatment works (POTWs) were specifically excluded from this subpart because EPA has determined that POTW emissions do not exceed the threshold considered under this rule (as discussed in their referenced Technical Support Document (TSD)) further adds to the confusion. One could assume that EPA decided not to include CH_4 emissions from anaerobic sanitary wastewater treatment systems at industrial facilities under this subpart because their treatment systems would very likely be sized significantly smaller than municipal systems treating whole communities. However, there is no discussion in the preamble of EPA making such an assessment and there is no specific exclusion covering anaerobic sanitary wastewater treatment systems, such as septic tanks, at industrial facilities. GrafTech believes that

centralized domestic wastewater treatment plants with anaerobic systems likely emit significant quantities of CH_4 in comparison to industrial wastewater treatment facilities. Therefore, GrafTech recommends that §98.350 of the rule and the supporting documents should clearly exempt all sanitary treatment systems at industrial facilities, including the exclusion of anaerobic wastewater treatment systems such as septic tanks, on the basis that EPA has determined that emissions from much larger capacity POTWs do not exceed the threshold considered under this rule.

Response: For information on the anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule.

EPA agrees that separate treatment of sanitary wastewater at industrial facilities should also be exempted from the rule for the same reason that municipal wastewater treatment plants are exempted. Please see Section II.E of the preamble to the final rule for more information. EPA has revised §98.350 to explicitly exclude both municipal wastewater treatment plants and separate treatment of sanitary wastewater at industrial facilities.

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 41

Comment: 98.6 -Calculating GHG Emissions – Anaerobic Treatment Systems (except Digesters) The Technical Support Document (TSD) says that denitrification results from the anaerobic treatment of wastewater. However, anaerobic treatment typically results in little denitrification. For denitrification, anoxic treatment is typically used. Anoxic conditions are defined as environments in which dissolved oxygen is not present in the water and nitrate (NO_3) is used by the microorganisms as the electron acceptor. Under these conditions, the nitrate is converted to nitrogen (N_2) and released to the atmosphere as a gas. The microorganisms use the oxygen as they degrade carbon sources and release CO_2 to atmosphere. In contrast, anaerobic conditions are defined as environments in which dissolved oxygen is not present in the water and sulfur compounds (such as sulfate SO_4 -2) are used as the electron acceptors. Under anaerobic conditions, sulfur (S), hydrogen sulfide (H_2S), and other sulfur-containing compounds such as mercaptans are formed. This distinction is important because methane production is characteristic of anaerobic treatment, not anoxic treatment. EPA has proposed to require that all anaerobic treatment systems must calculate methane production via Equation II-1. Given the confusion between anoxic and anaerobic, EPA should clarify that only anaerobic conditions are the target of Equation II-1. If some systems use Equation II-1 to calculate methane emissions from anoxic treatment, it will vastly overstate the GHG emissions. The clarifications should be made with the following changes: 98.6 Aerobic treatment means the treatment of wastewater with supplemental oxygen feed by the microbial reduction of complex organic compounds to CO_2. Anaerobic treatment means the treatment of wastewater without supplemental oxygen feed by the microbial reduction of complex organic compounds to CO_2 and CH_4. Anaerobic treatment specifically excludes Anoxic treatment. Anoxic treatment means the treatment of wastewater without supplemental oxygen feed by the microbial reduction of complex organic compounds to CO_2.

Response: EPA disagrees that the TSD states that "denitrification results from the anaerobic treatment of wastewater." EPA stated that for nitrous oxide emissions to occur, wastewater must

first be handled aerobically "where ammonia (NH_3) or organic nitrogen is converted to nitrates and nitrites (nitrification), and then handled anaerobically where the nitrates and nitrites are reduced to nitrogen gas (N_2), with intermediate production of N_2O and nitric oxide (NO) (denitrification)." However, EPA agrees with the commenter that biological denitrification is typically accomplished under anoxic conditions, rather than anaerobic conditions.

EPA has not provided definitions for aerobic or anoxic treatment because we have clarified that only anaerobic processes are covered by this subpart. For information on anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule.

Commenter Name: Kyle Pitsor
Commenter Affiliation: National Electrical Manufacturers Association (NEMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0621.1
Comment Excerpt Number: 39

Comment: The NEMA Carbon/Manufactured Graphite EHS Committee believes that centralized domestic wastewater treatment plants with anaerobic systems likely emit significant quantities of methane in comparison to industrial wastewater treatment facilities. Therefore, the NEMA Carbon/Manufactured Graphite EHS Committee recommends that §98.350 of the rule and the supporting documents should clearly exempt all sanitary treatment systems at industrial facilities, including the exclusion of anaerobic wastewater treatment systems such as septic tanks, on the basis that EPA has determined that emissions from much larger capacity POTWs do not exceed the threshold considered under this rule.

Response: For information on the exclusion of municipal wastewater treatment plants and separate treatment of sanitary wastewater at industrial facilities, please see Section II.E of the preamble to the final rule.

Commenter Name: Kyle Pitsor
Commenter Affiliation: National Electrical Manufacturers Association (NEMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0621.1
Comment Excerpt Number: 38

Comment: The preamble also does not seem to limit this subpart to only anaerobic systems, which would clearly broaden the applicability to all wastewater treatment systems at industrial sites. For example, the preamble states that "[i]ndustrial wastewater systems that rely on microbial activity to degrade organic compounds under anaerobic conditions are sources of CH_4." Furthermore, the preamble states that "only wastewater treatment process emission to be reported in this rule are those from onsite wastewater treatment located at industrial facilities...", again with no specific limitations to only include anaerobic systems and to only include treatment systems receiving process/industrial wastewaters, i.e. not receiving only sanitary wastewaters. The fact that publicly owned treatment works (POTWs) were specifically excluded from this subpart because EPA has determined that POTW emissions do not exceed the threshold considered under this rule (as discussed in their referenced Technical Support Document (TSD)) further adds to the confusion. One could assume that EPA decided not to include CH_4 emissions from anaerobic sanitary wastewater treatment systems at industrial facilities under this subpart because their treatment systems would very likely be sized significantly smaller than municipal systems treating whole communities. However, there is no discussion in the preamble of EPA

making such an assessment and there is no specific exclusion covering anaerobic sanitary wastewater treatment systems at industrial facilities.

Response: For information on the exclusion of municipal wastewater treatment plants and separate treatment of sanitary wastewater at industrial facilities, please see Section II.E of the preamble to the final rule.

Commenter Name: Kyle Pitsor
Commenter Affiliation: National Electrical Manufacturers Association (NEMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0621.1
Comment Excerpt Number: 37

Comment: The rule also specifies that this "source category applies to on-site wastewater treatment systems at pulp and paper mills, food processing plants, methanol production plants, petrochemical facilities, and petroleum refining facilities". Since the phrase "include, but are not limited, to the following", is not used, the language of the rule appears to cover only the five named industries. But the preamble also uses the phrase "such as" before listing these five specific industries.

Response: For information on the facility types covered by Subpart II, please see Section II.E of the preamble to the final rule.

Commenter Name: Kyle Pitsor
Commenter Affiliation: National Electrical Manufacturers Association (NEMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0621.1
Comment Excerpt Number: 36

Comment: The Fact Sheet states that the types of facilities covered under this subpart "include, but are not limited, to the following", after which five specific industries are named. However, §98.350 of the rule is named "Wastewater Treatment" (without the reference to industrial), and defines a wastewater treatment system to include a collection of all processes that treat...waters released from industrial processes. This language would also appear to exclude anaerobic wastewater treatment systems at industrial facilities that treat only sanitary wastewater, i.e., not wastewater discharged from an industrial process. But, again, this exclusion is not explicitly stated and leaves some doubt.

Response: For information on the exclusion of separate treatment of sanitary wastewater at industrial facilities, please see Section II.E of the preamble to the final rule.

Commenter Name: Michael Carlson
Commenter Affiliation: MEC Environmental Consulting
Document Control Number: EPA-HQ-OAR-2008-0508-0615
Comment Excerpt Number: 34

Comment: The agency should address the reporting of GHG emissions from surface impoundments if these are subject to Subpart II.

Response: For information on the anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule.

Surface impoundments are not subject to Subpart II.

Commenter Name: Donald R. Schregardus
Commenter Affiliation: Department of the Navy, Department of Defense (DoD)
Document Control Number: EPA-HQ-OAR-2008-0508-0381.1
Comment Excerpt Number: 2

Comment: Subpart II for wastewater treatment does not clearly specify the reporting thresholds that are described in the preamble and Technical Support Documents. The preamble states that "The only wastewater treatment process emissions to be reported in this rule are those from onsite wastewater treatment located at industrial facilities, such as at pulp and paper, food processing, ethanol productions, petrochemical, and petroleum refining facilities." Although it is understood that the list defined is not meant to be all-inclusive of possible sources, it is also believed that it is not EPA's intent to regulate insignificant GHG sources such as small pump-and-treat systems for groundwater contaminants or oil/water separators. We recommend to EPA to set a capacity threshold for commercial-size units that are excluded from the source category.

Response: For information on the facility types covered by the rule and EPA's exclusion from the final rule of CO_2 emissions from oil/water separators, please see Section II.E of the preamble to the final rule.

With regard to the reporting threshold for industrial wastewater treatment, facilities that meet the source category definition of subpart II, must report if their aggregate emissions from all applicable source categories in the rule meet the 25,000 tons CO_2e threshold.

Commenter Name: Michael Carlson
Commenter Affiliation: MEC Environmental Consulting
Document Control Number: EPA-HQ-OAR-2008-0508-0615
Comment Excerpt Number: 33

Comment: The agency should clarify whether wastewater treatment facilities serving commercial establishments, such as food repackaging warehouses, are included in the Wastewater Treatment source category.

Response: For information on the facility types covered by Subpart II, please see Section II.E of the preamble to the final rule. See §98.358 for a definition of food processing as covered by Subpart II. Food repackaging warehouses do not fall under the source category definition.

Commenter Name: Matthew Frank
Commenter Affiliation: Wisconsin Department of Natural Resources
Document Control Number: EPA-HQ-OAR-2008-0508-1062.1
Comment Excerpt Number: 33

Comment: This source category does not include domestic wastewater treatment plants which are more significant sources in Wisconsin than the required industrial sources. Please explain why municipal wastewater treatment facilities are not included.

Response: For information on the exclusion of municipal wastewater treatment plants, please see Section II.E of the preamble to the final rule.

Commenter Name: Michael Carlson
Commenter Affiliation: MEC Environmental Consulting
Document Control Number: EPA-HQ-OAR-2008-0508-0615
Comment Excerpt Number: 32

Comment: The agency should clarify whether package treatmentplants servicing apartment complexes and other residential facilities are excluded from the Wastewater Treatment source category.

Response: For information on the facility types required to report under Subpart II, please see Section II.E of the preamble to the final rule.

Package treatment plants servicing apartment complexes and other residential facilities are not industrial wastewater treatment systems included under Subpart II.

Commenter Name: Michael Carlson
Commenter Affiliation: MEC Environmental Consulting
Document Control Number: EPA-HQ-OAR-2008-0508-0615
Comment Excerpt Number: 31

Comment: The proposed rule needs to include clearer criteria for which industrial wastewater treatment facilities are included in the Wastewater Treatment Source Category (Subpart II). The Preamble to the proposed rule states (16560): The only wastewater treatment process emissions to be reported in this rule are those from onsite wastewater treatment located at industrial facilities, such as at pulp and paper, food processing, ethanol production, petrochemical, and petroleum refining facilities. Does this mean that only the sources listed above, viz., pulp and paper, food processing, ethanol production, petrochemical, and petroleum refining facilities, are subject to Subpart II? It is critical for the regulated community to understand exactly what the agency is proposing in this rule in order for industrial and commercial representatives to properly comment on it. Without knowing to which industrial wastewater treatment facilities the proposed rule would apply, we cannot adequately comment on this source category. We therefore request that the agency re-propose this source category once it is better defined in order to ensure proper public input. We suggest that Subpart II be renamed “Industrial Wastewater Treatment” if, as the agency states (16560), POTWs are not included in this proposal.

Response: For information on the facility types required to report under Subpart II, please see Section II.E of the preamble to the final rule.

Commenter Name: Jeffry C. Muffat
Commenter Affiliation: 3M Company
Document Control Number: EPA-HQ-OAR-2008-0508-0793.1
Comment Excerpt Number: 26

Comment: The applicability description that is contained in Subpart II, proposed Section 98.350 (a) describes the source category as follow: "This source category applies to on-site wastewater treatment systems at pulp and paper mills, food processing plants, ethanol production plants, petrochemical facilities, and petroleum refining facilities." While not stated specifically, this would appear to reference other specific subcategories in the proposed rule, i.e. Subparts AA, M, J, Y, and X. These specific subparts should be referenced in paragraph 98.3 50 (a) in order to eliminate any confusion over the affected industries.

Response: For information on the facility types required to report under Subpart II, please see Section II.E of the preamble to the final rule.

Commenter Name: Lawrence W. Kavanagh
Commenter Affiliation: American Iron and Steel Institute (AISI)
Document Control Number: EPA-HQ-OAR-2008-0508-0695.1
Comment Excerpt Number: 25

Comment: Subpart II proposes GHG reporting requirements for wastewater treatment systems. The definition of the applicable source category in § 98.350 would appear to limit reporting under this subpart to systems at pulp and paper mills, food processing plants, ethanol production plants, and petrochemical and petroleum refining facilities. Also, the GHGs and processes specified for reporting in § 98.352 and the calculation method specified in § 98.353 appear to relate only to the listed source categories. However, § 98.351 states that reporting is required for facilities listed in §§ 98.2(a)(1) and (2), the latter which includes the iron and steel source category. We interpret this cross-reference to relate only to the threshold reporting value for the listed source categories and not to imply that GHG reporting is required for wastewater treatment processes in iron and steel facilities. We respectfully request clarification and confirmation of this understanding and insertion of the word "only" preceding the list of the categories to which Subpart II applies in § 98.350.

Response: For information on the facility types required to report under Subpart II, please see Section II.E of the preamble to the final rule.

Commenter Name: Michael Garvin
Commenter Affiliation: Pharmaceutical Research and Manufacturers of America (PhRMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0959.1
Comment Excerpt Number: 12

Comment: The applicability language in Sections 98.2(a)(2), 98.350 and 98.351 appear to conflict with each other in terms of when GHG emissions from wastewater treatment systems are to be addressed. Section 98.2(a)(2) implies that GHG emissions from wastewater treatment must be included for all industrial facilities. However, Section 98.350 states that GHG emissions from wastewater treatment states that wastewater emissions are only required for to be included "...at

pulp and paper mills, food processing plants, ethanol production plants, petrochemical facilities, and petroleum refining facilities."

Response: For information on the facility types required to report under Subpart II, please see Section II.E of the preamble to the final rule.

Commenter Name: Rich Raiders
Commenter Affiliation: Arkema Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0511.1
Comment Excerpt Number: 62

Comment: Arkema supports EPAs decision in Subpart II to define the wastewater source category as proposed. EPA has identified the critical wastewater based emissions categories appropriately subject to GHG reporting.

Response: EPA thanks the commenter for their support of EPA's decision to include greenhouse gas emissions from the industrial facility types in the final rule. For further discussion of EPA's revisions to the source category definition to clarify facility types and anaerobic processes that are covered, please see Section II.E of the preamble to the final rule.

Commenter Name: Kyle Pitsor
Commenter Affiliation: National Electrical Manufacturers Association (NEMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0621.1
Comment Excerpt Number: 35

Comment: The NEMA Carbon/Manufactured Graphite EHS Committee believes this subpart is very confusing, as written, as it appears the rule, preamble and Fact Sheet summary document for this subpart have significant discrepancies that affect applicability assessments. The EPA Fact Sheet document is labeled "Industrial Wastewater Treatment Sources" and summarizes that "facilities that contain an industrial wastewater treatment process" and furthermore, indicates that only "anaerobic wastewater treatment systems at industrial facilities" are included. This would imply, but does not state explicitly, that an anaerobic sanitary treatment system, e.g. a septic tank, at an industrial facility that receives no process/industrial wastewater would not be covered under this subpart.

Response: For information on the exclusion of separate treatment of sanitary wastewater at industrial facilities, please see Section II.E of the preamble to the final rule.

Commenter Name: Joel R. Hall
Commenter Affiliation: INEOS Fluor Americas LLC
Document Control Number: EPA-HQ-OAR-2008-0508-1525
Comment Excerpt Number: 8

Comment: The applicability of the wastewater treatment source category needs to be clarified. In regards to Subpart II, §98.350(a) of the proposed rule states, "This source category applies to on-site wastewater treatment systems at pulp and paper mills, food processing plants, petrochemical facilities, and petroleum refining facilities." This gives the impression that the list

is exclusive and therefore Subpart II applies to on-site wastewater treatment systems only at those types of facilities. However, the preamble to the rule (page 16560) states, "The only wastewater treatment processes to be reported in this rule are those from onsite wastewater treatment located at industrial facilities, such as pulp and paper, ...". EPA has made information sheets on each source category available on their website. The information sheet for Subpart II states, "The types of facilities that contain wastewater treatment systems that could be subject to this reporting rule include, but are not limited to, the following: pulp and paper mills, ...". Section 98.351 specifies that reporting under Subpart II is required if "your facility contains a wastewater treatment process and the facility meets the requirements of either §98.2(a)(1) or (2)." However, the proposed rule requires the following to be reported: CH4from anaerobic wastewater treatment processes (§98.352(a)), CO_2 from oil/water separators at refineries (§98.352(b)), and CO_2, CH_4, and N_2O from stationary combustion devices. INEOS Fluor submits that facilities exist which contain wastewater treatment systems and meet the requirements of either §98.2(a)(1) or (2) that are not anaerobic wastewater treatment processes (as specified in §98.352(a)) or oil/water separators at refineries (as specified in §98.352(b)) . Therefore, it is not clear whether a facility that contains a nonbiological wastewater treatment system (i.e., one that is neither aerobic or anaerobic), located at a facility other than those listed in §98.350(a) is subject to the Subpart, further complicating the applicability determination, §98.353(a) states, "Estimate the annual CH_4 mass emissions from systems other than digesters using Equation II-1 of this section." It appears that the intent of §98.353(a) is that it applies to "anaerobic systems Other than digesters", but that is not specified in the rule, preamble, or applicable information sheet and therefore could be interpreted as being applicable to all wastewater treatment systems other than those specified in §98.352(a) and (b). INEOS requests that if Subpart II is intended to be applicable to all wastewater treatment processes at all facilities that meet the requirements of §98.2(a)(1) or (2) that the applicability be stated as such under §98.350(a) in the final rule. Conversely, if the intent is that Subpart II is that it be applicable to anaerobic wastewater treatment systems and oil/water separators at all facilities that meet the requirements of §98.2(a)(1) or (2) OR only "pulp and paper mills, food processing plants, petrochemical facilities, and petroleum refining facilities" then INEOS requests that the applicability be stated as such under §98.350 in the final rule.

Response: For information on the facility types and anaerobic processes covered by Subpart II, and EPA's exclusion from the final rule of CO_2 emissions from oil/water separators please see Section II.E of the preamble to the final rule.

Commenter Name: See Table 3 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0679.1
Comment Excerpt Number: 218

Comment: EPA also suggests that influent should be measured for oil/water separators. These are generally sewers, which are not in the best location to accurately measure a flow. The language also could be interpreted to include covered oil/water separators, which would not be a source of GHG emissions. EPA is catching a number of very small separators, with very small emissions.

Response: With regard to EPA's exclusion from the final rule of CO_2 emissions from oil/water separators, please Section II.E of the preamble to the final rule.

Commenter Name: See Table 3 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0679.1
Comment Excerpt Number: 216

Comment: §98.352(b). §98.352(b) requires refineries to report CO_2 emissions from oil/water separators. Oil/water separator as defined in §98.6 means equipment used to routinely handle oily-water streams, including gravity separators or ponds and air flotation systems. Does EPA intend the definition of oil/water separator to include stormwater ponds? Clearly stormwater ponds contain less hydrocarbon than process water ponds and thus will have less CO_2 emissions from the degradation of hydrocarbons.

Response: With regard to EPA's exclusion from the final rule of CO_2 emissions from oil/water separators, please see Section II.E of the preamble to the final rule.

Commenter Name: See Table 3 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0679.1
Comment Excerpt Number: 214

Comment: EPA requests "comment on monthly sampling of digester gas CH_4 content as an alternative to a continuous composition analyzer." (p. 16560) API comments: API requests specific exclusion of wastewater treatment operations and oil/water separators at refineries. Anaerobic wastewater treatment is extremely rare, and estimating CH_4 emissions based on a conversion of VOC emissions from oil/water separators is not appropriate. GHG emissions from these operations at refineries are extremely small. The requirement as provided in the MRR would impact a large number of extremely small operations. The methodology, monitoring, reporting, and QA requirements are extreme for such very small emission sources. EPA requests comment on "the advantages and disadvantages of using these tools [e.g. National Council of Air and Stream Improvement's GHG Calculation Tools for Pulp and Paper Mills] as a model for tool development and the utility of providing such a tool." (p. 16561) API comments: API does not support the inclusion of refinery wastewater treatment operations or oil/water separators in the mandatory reporting rule. The emissions contribution is extremely small and does not justify the monitoring, reporting, and QA burden. As a result, a tool is not needed to assist refineries in reporting emissions from these operations.

Response: With regard to EPA's decision to remove the oil/water separator reporting requirements because it expects no direct emissions of CO_2, please see Section II.E of the preamble to the final rule.

EPA disagrees that refinery wastewater treatment operations should be excluded from the reporting rule because they are extremely small. Please see Section II.E of the preamble to the final rule for discussion of EPA's conclusion that including GHG emissions for wastewater treatment at certain source categories is justified.

Commenter Name: Karen St. John
Commenter Affiliation: BP America Inc. (BP)
Document Control Number: EPA-HQ-OAR-2008-0508-0631.1
Comment Excerpt Number: 50

Comment: Oil/water Separator §98.6 (p. 16624): EPA's definition of "Oil/water separator" should specifically exclude sumps and stormwater ponds.

Response: With regard to EPA's exclusion of CO_2 emissions from oil/water separators from the final rule, please see Section II.E of the preamble to the final rule.

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 44

Comment: 98.353(b)- Calculating GHG Emissions – Oil/Water Separators EPA has singled-out oil/water separators for GHG reporting without providing justification as to why these units demand special attention. Based on our information, the GHG emissions from a typical oil/water separator at a refinery are insignificant and should not be identified separately, For a typical 150,000 BPD refinery, the wastewater flow will be approximately 5 MGD. Based on Equation II-2 (with which we have other concerns as discussed below), the CO_2 emissions would be only 50 metric ton/year from a covered separator.3 Emissions from an uncovered separator (which are very rare in the industry today) would be 1,687 MTPY.4 These represent less than 0.003% and less than 0.1% of the typical refinery's emissions of 2,000,000 MTY. The emissions from oil/water separators are very small compared to the total GHG inventory and therefore do not need to be reported for the purpose of a registry of emissions. At a minimum, EPA should exempt from reporting any API separator that is covered and vented to a control device (the majority of separators) due to the small emissions.

Response: With regard to EPA's exclusion of indirect CO_2 emissions from oil/water separators from the final rule, please see Section II.E of the preamble to the final rule.

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 42

Comment: Another issue of concern for Subpart II is the definition of oil/water separator in 98.6 for which emissions must be calculated in 98.353(b). EPA defines the oil/water separator very broadly as "equipment used to routinely handle oily-water streams, including gravity separators or ponds and air flotation systems." To define the oil/water separator as any equipment used to routinely handle oily-water streams would suggest that fugitive emissions from the dozens or more pieces of equipment separating oil and water upstream of the API separator would need to be included. EPA needs to narrow the definition of oil/water separator to limit it to the API separator and downstream equipment. We suggest using the definition in 40 CFR 63 Subpart G, Section 63.111: Oil-water separator or organic-water separator means a waste management unit, generally a tank used to separate oil or organics from water. An oil-water or organic- water

separator consists of not only the separation unit but also the forebay and other separator basins, skimmers, weirs, grit chambers, sludge hoppers, and bar screens that are located directly after the individual drain system and prior to additional treatment units such as an air flotation unit, clarifier, or biological treatment unit. Examples of an oil-water or organic-water separator include, but are not limited to, an American Petroleum Institute separator, parallel-plate interceptor, and corrugated-plate interceptor with the associated ancillary equipment.

Response: With regard to EPA's exclusion of indirect CO_2 emissions from oil/water separators from the final rule, please see Section II.E of the preamble to the final rule.

---

2. REPORTING THRESHOLD

Commenter Name: Matthew Frank
Commenter Affiliation: Wisconsin Department of Natural Resources
Document Control Number: EPA-HQ-OAR-2008-0508-1062.1
Comment Excerpt Number: 34

Comment: Emissions are estimated based on the amount of influent processed. The estimation technique is not standardized. How will EPA determine which of the wastewater treatment plants should report based on their guidance?

Response: For information on facility types covered by the final rule, please see Section II.E of the preamble to the final rule.

Facilities in the source categories covered by Subpart II that use the anaerobic processes covered by Subpart II must estimate greenhouse gas emissions using procedures and equations specified by the rule. Facilities that operate anaerobic wastewater treatment processes must monitor the influent COD or BOD_5 concentration, as specified in §98.354(a) and (b), and measure the wastewater flow, as specified in §98.354(c).

We recognize the value of providing additional outreach materials and we are developing guidance and screening tools to help industrial wastewater treatment system operators implement the reporting requirement of this subpart.

Commenter Name: Rhea Hale
Commenter Affiliation: American Forest & Paper Association (AF&PA)
Document Control Number: EPA-HQ-OAR-2008-0508-0909.1
Comment Excerpt Number: 16

Comment: EPA's proposed method of calculating and reporting methane emissions from industry wastewater treatment systems requires clarification. AF&PA interprets the proposed rule only to address those wastewater treatment processes that specifically employ anaerobic biological treatment processes, such as anaerobic reactors, anaerobic lagoons and anaerobic digesters. For example, the proposed rule includes the following language: a. §98.352 GHGs to report. (a) You must report annual CH_4 emissions from anaerobic wastewater treatment processes... b. §98.353 Calculating GHG emissions. The flow and COD should reflect the wastewater treated anaerobically on site in anaerobic systems such as lagoons. The terminologies

"anaerobic wastewater treatment processes" and "wastewater treated anaerobically on site in anaerobic systems such as lagoons" have specific meaning to wastewater treatment professionals that would exclude all unit operations not specifically designed to utilize anaerobic microorganisms to degrade organic matter. However, Table II-1 suggests that reporting is also required for aerobic treatment systems, and different methane conversion factors (MCFs) are specified for "centralized aerobic treatment system, well-managed" (MCF = 0), and "centralized aerobic treatment system, not well-managed (overloaded)" (MCF = 0.3). Inasmuch as all pulp and paper industry facilities are designed and operated to routinely comply with NPDES permit limits for BOD5, TSS and other parameters, there are no systems that would fall into the latter category. Thus, the vast majority of facilities would be reporting zero methane emissions from wastewater treatment operations based on this interpretation of the proposed rule.

Response: AF&PA is correct to interpret the proposed rule as only including anaerobic biological treatment processes. For information on the anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule.

Commenter Name: Michael Garvin
Commenter Affiliation: Pharmaceutical Research and Manufacturers of America (PhRMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0959.1
Comment Excerpt Number: 13

Comment: Section 98.351 states that the reporting threshold for wastewater treatment is required if your facility contains a wastewater treatment process and the facility meets the requirements of either Section 98.2(a)(1) and (2). To address this issue and avoid confusion, PhRMA recommends that the language in Section 98.351 be revised to state: "You must report GHG emissions under this subpart if your facility contains a wastewater treatment process and the facility meets the requirements of either §98.2(a)(1) or (2) 'at pulp and paper mills, food processing plants, ethanol production plants, petrochemical facilities, and petroleum refining facilities'."

Response: For information on facility types covered by Subpart II, please see Section II.E of the preamble to the final rule.

---

3. GHGS TO REPORT

Commenter Name: Burl Ackerman
Commenter Affiliation: J. R. Simplot Company
Document Control Number: EPA-HQ-OAR-2008-0508-1641
Comment Excerpt Number: 28

Comment: The rule states to not include CO_2 emissions resulting from the combustion of anaerobic digester gas. Please clarifier that this applies whether the digester gas is used for energy recovery or flared.

Response: Subpart II of the rule requires that only CH_4 emissions and destruction from biogas collection and combustion systems be reported. Calculations of CO_2 emissions from digester gas

combustion at stationary sources (which do not include flares) are described in Subpart C of the October 2009 Final Rule.

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 148

Comment: EPA has proposed the following for flare emissions: For flares, calculate the CO_2 emissions only from pilot gas and other auxiliary fuels combusted in the flare, as specified in Subpart C of this part. Do not include CO_2 emissions resulting from the combustion of anaerobic digester gas. However, Subpart C does not identify how to calculate emissions from flares and does not include flares in the list of equipment that is considered "stationary fuel combustion sources" (§98.30(a)), a position with which ACC fully agrees. Even if EPA meant for Subpart C to cover the emissions from flare pilot gas, the criteria for selecting the "tier calculation methodology" in §98.33(b) is inappropriate. The criteria are in part dependent on maximum rated heat input capacity of the combustion device. In the case of flares, nearly all of the heat input capacity is dedicated to combustion of anaerobic digester gas which is not to be reported as an anthropogenic emission under §98.352(c). It would be inconsistent and inappropriate to determine applicability based on the capacity to produce non-anthropogenic emissions. In addition, the fuel use in and emissions from the pilot flame are small and should be excluded from detailed calculations because they are considered de minimis emissions as we discuss elsewhere in these comments. For these reasons, EPA should remove the requirement to report CO_2 emissions from flares at wastewater treatment plants that are subject to reporting under Subpart II.

Response: For information on the reporting of emissions from digester gas combustion, please see the response to EPA-HQ-OAR-2008-0508-1641, excerpt 28.

Commenter Name: Brian P. Flynn
Commenter Affiliation: MRE, LLC
Document Control Number: EPA-HQ-OAR-2008-0508-0529.1
Comment Excerpt Number: 3

Comment: 98.352 (b) states that you must report CO_2 emissions from oil/water separators. 98. EPA's Technical Support Document for Wastewater Treatment: Proposed Rule for Mandatory Reporting of Greenhouse Gases (2/4/09) states on page 3 "Wastewater Treatment at oil/water separators onsite at petroleum refineries can result in indirect emissions of CO_2 that are considered anthropogenic." No reason is given for this statement. Frankly, oil/water separators at petroleum refineries merely separate oil from water- there is no CO_2 generation. The requirement for reporting of CO_2 emissions should be dropped.

Response: For information on EPA's exclusion of CO_2 emissions from oil/water separators at petroleum refineries from the final rule, please see Section II.E of the preamble to the final rule.

Commenter Name: Matthew Molinaro
Commenter Affiliation: Ecolab Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0602.1
Comment Excerpt Number: 3

Comment: It is acknowledged in the preamble to the proposed rule, the rule itself, and by the IPCC that CO_2 generated from the destruction of CH_4 in wastewater processes is not considered anthropogenic. The proposed rule does not adequately or consistently describe appropriate destruction mechanisms. In the proposed rule destruction of CH_4 is referred to in §98.352 part (c) only by flaring, but in the preamble to the proposed rule, p 16560, the following language is provided: In some systems, the biogas (primarily CH_4) generated by anaerobic digestion of organic matter is captured and destroyed by flaring and/or energy recovery. IPCC describes the following: "Anaerobic reactors treating industrial effluents are usually linked with the recovery of the generated CH_4 for energy"[IPCC guidelines for national greenhouse gas inventories, Volume 5: waste, chapter 6 Wastewater treatment, p 6.20.], inferring further that CH_4 capture and consumption can occur by means other than flaring. We recommend that language in the rule be included to clarify that CH_4 destruction can occur through biogas consumption by burning in flares or stationary combustion devices, including but not limited to, boilers, turbines, or other chemical energy extraction devices, and that CO_2 emissions resulting from combustion in these scenarios be excluded from mandatory reporting.

Response: For information on the reporting of emissions from digester gas combustion, please see the response to EPA-HQ-OAR-2008-0508-1641, excerpt 28.

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 43

Comment: EPA has proposed the following for flare emissions: For flares, calculate the CO_2 emissions only from pilot gas and other auxiliary fuels combusted in the flare, as specified in Subpart C of this part. Do not include CO_2 emissions resulting from the combustion of anaerobic digester gas. However, Subpart C does not identify how to calculate emissions from flares and does not include flares in the list of equipment that is considered "stationary fuel combustion sources" (98.30(a)). Even if EPA meant for Subpart C to cover the emissions from flare pilot gas, the criteria for selecting the "tier calculation methodology" in 98.33(b) is inappropriate. The criteria are in part dependent on maximum rated heat input capacity of the combustion device. In the case of flares, nearly all of the heat input capacity is dedicated to combustion of anaerobic digester gas which is not to be reported as an anthropogenic emission under 98.352(c). It would be inconsistent and inappropriate to determine applicability based on the capacity to produce non-anthropogenic emissions. In addition, the fuel use in and emissions from the pilot flame are small and should be considered de minimis emissions as we discuss elsewhere. For these reasons, EPA should remove the requirement to report CO_2 emissions from flares at wastewater treatment plants that are subject to reporting under Subpart II.

Response: For information on the reporting of emissions from digester gas combustion, please see the response to EPA-HQ-OAR-2008-0508-1641, excerpt 28. EPA revised the requirements for reporting emissions from combustion of biogas derived from anaerobic processes. As promulgated, under §98.352(c) facilities are required to report CH_4 emissions and CH_4

destruction resulting from biogas collection and biogas destruction devices. Facilities are not required to calculate or report the CO_2 emissions from pilot gas and other auxiliary fuels combusted in the flare.

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 160

Comment: Table II-1 – The default values for uncovered DAF and IAF units and covered DAF and IAF units are 4.00E-34 kg NMVOC/m3 wastewater and 1 .2E-44 kg NMVOC/m3 wastewater, respectively. These default factors will result in very low emissions that are insignificant in comparison to total refinery GHG emissions. Thus, emissions from DAFs and IAFs should not be included in the report.

Response: For information on EPA's exclusion of CO_2 emissions from oil/water separators at petroleum refineries from the final rule, please see Section II.E of the preamble to the final rule. All references to oil/water separators in Table II-I have been removed.

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 151

Comment: EPA has singled-out oil/water separators for GHG reporting without providing justification as to why these units demand special attention. Based on our information, the GHG emissions from a typical oil/water separator at a refinery are insignificant and should not be identified separately; again highlighting the need for a de minimis reporting threshold provision in the rule. For a typical 150,000 BPD refinery, the wastewater flow will be approximately 5 MGD. Based on Equation II-2, the CO_2 emissions would be only 50 metric ton/year from a covered separator. Emissions from an uncovered separator (which are very rare in the industry today) would be 1,687 MTPY. These represent less than 0.003% and less than 0.1% of the typical refinery's emissions of 2,000,000 MTPY. The emissions from oil/water separators are very small compared to the total GHG inventory and therefore do not need to be reported for the purpose of an inventory of emissions. At a minimum, EPA should exempt from reporting any API separator that is covered and vented to a control device (the majority of separators) due to the small emissions.

Response: For information on EPA's exclusion of CO_2 emissions from oil/water separators at petroleum refineries from the final rule, please see Section II.E of the preamble to the final rule.

Commenter Name: Traylor Champion
Commenter Affiliation: Georgia-Pacific, LLC (GP)
Document Control Number: EPA-HQ-OAR-2008-0508-0380.1
Comment Excerpt Number: 38

Comment: EPA should remove emission factor references for well managed and not well managed centralized aerobic treatment systems from the reporting rule Table II-1 and clarify only methane from anaerobic treatment systems need to be reported. GP agrees with EPA that methane emissions from only anaerobic wastewater treatment systems should be reported under this rule { 98.352(a) }. However, it is unclear why EPA has included emission factors in Table II-1 for two types of centralized aerobic wastewater treatment systems. GP requests that the emission factors for aerobic systems in Table II-1 be removed to clarify the intent of the rule is that only methane emissions from anaerobic systems are to be reported.

Response: For information on the anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule.

Commenter Name: Tom Segulijic
Commenter Affiliation: HRP Associates, Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0215
Comment Excerpt Number: 1

Comment: The rule states that with regards to anaerobic digesters you need to report the amount of CH_4 emissions (or volume of CH_4 destroyed in vent CH_4 to a flare) but not count CO_2 emissions from a control devise. However if you use the CH_4 in a boiler to produce steam for an on-site process you need to include the CO_2 emission from the boiler. Is this correct, if so it seems inconsistent since it would discourage the use of CH_4 from a digester for on-site combustion.

Response: Combustion of biogas CH_4 generated in anaerobic processes (such as anaerobic sludge digesters) in a boiler to produce steam is covered under Subpart C, Stationary Fuel Combustion Sources of the October 2009 Final Rule. Subpart C requires reporters to determine and report biogenic CO_2 emissions separately from fossil-fuel derived CO_2 emissions. EPA notes that biogenic CO_2 emissions resulting from combustion of biogas CH_4 in a boiler are not included in the calculation of the CO_2 emissions used to determine the applicability of the rule. However, if the facility meets the applicability requirement (based on the emissions of other GHGs), they must report the biogenic CO_2 emissions. The commenter is correct that if the recovered biogas CH_4 is combusted in a flare, Subpart II does not require reporting the resulting biogenic CO_2 emissions.

---

4. SELECTION OF PROPOSED GHG EMISSIONS CALCULATION AND MONITORING METHODS

Commenter Name: Kyle Pitsor
Commenter Affiliation: National Electrical Manufacturers Association (NEMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0621.1
Comment Excerpt Number: 40

Comment: The NEMA Carbon/Manufactured Graphite EHS Committee believes that EPA has erroneously assumed in its TSD that all facilities collect BOD or COD concentration in the influent wastewater and that this data already exists. However, it is uncommon for sanitary treatment systems at industrial facilities to be equipped with flow measuring devices and sample

collection ports at the influent piping. Therefore, it would be excessively burdensome and costly on industrial facilities to be required to make modifications to existing sanitary treatment systems to install such monitoring equipment for the purpose of collecting data for emissions calculations.

Response: EPA considered the comments received on the proposed rule regarding the cost to monitor influent flow and BOD or COD concentration. EPA notes that the proposed rule required facilities to monitor COD concentration in the influent wastewater, not BOD_5. EPA disagrees that it had assumed all facilities collect COD concentration in the influent and that the data already exist. EPA included costs in the proposed rule for the collection and analysis of COD samples for influent wastewater. However, EPA did not include costs for influent flow meters and has revised the cost basis for the rule to include this capital cost.

With regard to providing flexibility to monitor for either BOD_5 or COD, and the applicability of Subpart II to separate treatment of sanitary wastewater at industrial facilities, please see Section II.E of the preamble to the final rule.

Commenter Name: Juanita M. Bursley
Commenter Affiliation: GrafTech International Holdings Inc. Company (GrafTech)
Document Control Number: EPA-HQ-OAR-2008-0508-0686.1
Comment Excerpt Number: 35

Comment: GrafTech believes that EPA has erroneously assumed in its TSD that all facilities collect BOD or COD concentration in the influent wastewater and that this data already exists. However, it is uncommon for sanitary treatment systems at industrial facilities to be equipped with flow measuring devices and sample collection ports at the influent piping. Therefore, it would be excessively burdensome and costly on industrial facilities to be required to make modifications to existing sanitary treatment systems to install such monitoring equipment for the purpose of collecting data for emissions calculations.

Response: With regard to the costs to monitor influent flow and BOD or COD concentration, please see the response to EPA-HQ-OAR-2008-0508-0621.1, excerpt 40.

Commenter Name: Sean M, O'Keefe
Commenter Affiliation: Hawaiian Commercial and Sugar Company (HC&S)
Document Control Number: EPA-HQ-OAR-2008-0508-1138.1
Comment Excerpt Number: 14

Comment: The HC&S Puunene Sugar Mill would be required to report GHG emissions from on-site wastewater treatment under the proposed rule. Wastewater generated by the sugar mill comes primarily from the cane cleaner, where the incoming sugarcane is washed to remove adhered soil and other extraneous matter prior to milling; the wastewater therefore contains significant suspended sediment as well as organic material. Mill wastewater (or "millwater") travels via a ditch system to a reservoir where some of the suspended sediment settles out; the millwater is then piped from the reservoir into a dedicated irrigation system used to irrigate approximately 500 acres of sugarcane through overhead sprinklers. Anaerobic conditions within the reservoirs result in emissions of methane. The proposed method of calculating methane emissions from wastewater treatment lagoons, as specified in Subpart II, assumes that all of the

organic material present in the wastewater (represented by the Chemical Oxygen Demand) entering the lagoon is available for degradation to produce methane. The extent to which this quantity of organic matter will actually degrade anaerobically to methane, indicated by the Methane Correction Factor (MCF), depends in part upon the design of the lagoon. However, the amount of organic material that actually degrades in the lagoon will also depend in part upon the residence time of the wastewater in the lagoon; if the wastewater does not remain in the lagoon for sufficient time, then some of the organic matter will remain in the wastewater when it is discharged and will not be anaerobically degraded to produce methane. For a sugar mill wastewater system, where the wastewater is used to irrigate the sugarcane crop, the residence time in the reservoir is relatively short (less than 24 hours). Accordingly COD levels in the wastewater flowing into the reservoir may be reduced by less than half by the time the water flows out of the reservoir into the irrigation system. Estimating methane emissions from such a system using the method prescribed in the proposed Subpart II and the influent COD will therefore result in erroneously high calculated GHG emissions (in some cases double the actual emissions or more). For systems in which wastewater flows through a treatment lagoon and is subsequently discharged into an irrigation system before all organic matter in the wastewater has degraded, methane emissions from the lagoon should be estimated based upon the difference between the COD of the lagoon influent and effluent streams. A&B recommends that the proposed Subpart II be modified accordingly.

Response: Sugar mill facilities are not included in the definition of Food Processing Facility, are not covered under Subpart II, and therefore are not required to report their wastewater emissions under this subpart.

As the commenter notes, the Methane Correction Factor (MCF) is the fraction of the organic load that is treated anaerobically (i.e., available for conversion to methane). This factor accounts for the extent to which wastewater treatment systems do not produce the maximum amount of methane possible from the wastewater, for reasons such as reduced residence time in the reservoir, as described by the commenter. For anaerobic lagoons, reporters may use MCFs of 0.8 (for deep lagoons) or 0.2 (for shallow lagoons). The MCF of 0.8 may also indirectly reflect a longer residence time, while the MCF of 0.2 reflects a shorter residence time. A factor of 0.8 reflects that 80% of the organic load is treated anaerobically, while 0.2 reflects that only 20% of the organic load is treated anaerobically.

Commenter Name: Matthew Molinaro
Commenter Affiliation: Ecolab Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0602.1
Comment Excerpt Number: 2

Comment: Anaerobic processes that enable biogas capture include anaerobic digesters and high-rate anaerobic reactors. The primary distinction between these operations is that digesters are intended to handle insoluble matter (e.g., sludge) at a moderate flow rate, whereas reactors are intended to handle water-soluble matter at a high load and fast flow rate. Industrial wastewater treatment facilities, especially those associated with food processing plants, may opt for anaerobic reactors, which are more appropriate for high flow rate influent. Section V subpart M. Food Processing defers to subpart II. Wastewater Treatment for GHG 2 Mandatory Greenhouse Gas Reporting, 40 CFR Part 98, Federal Register Vol 74, No 68, April 10, 2009 3 IPCC guidelines for national greenhouse gas inventories, Volume 5: waste, chapter 6 Wastewater treatment emission reporting requirements; therefore, anaerobic reactors appear to be within the

scope of subpart II. Section V subpart II. Wastewater Treatment appears to inadequately describe anaerobic processes, referring only to "anaerobic digestion" in §98.353. IPCC acknowledges several types of anaerobic processes, including lagoons and reactors.[IPCC guidelines for national greenhouse gas inventories, Volume 5: waste, chapter 6 Wastewater treatment, Figures 6.1 and Table 6.1] Throughout EPA TSD for wastewater treatment, the preamble, and the proposed rule only "digestion" or "digesters" are described. However, it is unclear whether the term "digestion" is being used generically to describe anaerobic processes, or whether a distinction between digesters and reactors is intended. Table II-1 p 16706 of the proposed rule provides an MCF for "anaerobic deep lagoon, anaerobic reactor...", but is the only instance of the term "reactor" in the rule. This appears to be an oversight, and it appears that high-rate anaerobic reactors and digesters are being collectively referred to as anaerobic digestion processes. We recommend including consideration of high-rate anaerobic reactors along with language describing anaerobic digesters as in "anaerobic digester or reactor" where appropriate in subpart II. Wastewater Treatment, or providing explicit clarification that "digester" is a generic term referring to anaerobic processes that capture biogas inclusive of anaerobic reactors.

Response: For information on anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule.

EPA revised §98.353 to clarify that facilities with anaerobic reactors and lagoons must measure the concentration of organic material entering anaerobic wastewater treatment and calculate the annual mass of CH_4 generated. EPA also clarified that for each anaerobic process (such as anaerobic digester, reactor, or lagoon) from which biogas is recovered, facilities must measure the flow rate of recovered biogas and the biogas CH_4 concentration, and must calculate the annual mass of CH_4 recovered. Please see Section II.E of the preamble to the final rule for a discussion of why anaerobic digesters are not required to estimate CH_4 generated.

Commenter Name: Bob Dinneen
Commenter Affiliation: Renewable Fuels Association (RFA)
Document Control Number: EPA-HQ-OAR-2008-0508-0494.1
Comment Excerpt Number: 13

Comment: RFA agrees that generally requiring direct measurement of landfills and wastewater treatment is not warranted, and that facilities should be able to rely on simplified measurements to calculate emissions. RFA supports EPA developing a tool to assist reporters in calculating emissions from wastewater treatment as noted on page 16,561 of the Proposed Rule, and EPA should, at a minimum, delay inclusion of this source category until such a tool is developed.

Response: EPA has retained the emissions calculation approach as stated in the proposed rule and will not require direct measurement of landfills and wastewater treatment. We recognize the value of providing additional outreach materials and we are developing guidance and screening tools to help industrial wastewater treatment system operators implement the reporting requirements.

Commenter Name: Keith Overcash
Commenter Affiliation: North Carolina Division of Air Quality (NCDAQ)
Document Control Number: EPA-HQ-OAR-2008-0508-0588
Comment Excerpt Number: 27

Comment: In addition to combustion and landfills, wastewater may be the most common source of GHGs found at a facility. We encourage the development of screening tools for applicability determination and emission calculation tools.

Response: We recognize the value of providing additional outreach materials and we are developing guidance and screening tools to help industrial wastewater treatment system operators implement the reporting requirements.

Commenter Name: Bob Dinneen
Commenter Affiliation: Renewable Fuels Association (RFA)
Document Control Number: EPA-HQ-OAR-2008-0508-0494.1
Comment Excerpt Number: 14

Comment: RFA agrees that generally requiring direct measurement of landfills and wastewater treatment is not warranted, and that facilities should be able to rely on simplified measurements to calculate emissions.

Response: With regard to the emissions calculation approach in Subpart II, please see the response at EPA-HQ-OAR-2008-0508-0494.1, excerpt 13.

Commenter Name: See Table 1 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0440.1
Comment Excerpt Number: 14

Comment: EPA has proposed that wastewater treatment emissions be calculated from a weekly analysis of flow and chemical oxygen demand (COD). However, EPA instead should look instead to biochemical oxygen demand (BOD5) to make this determination. Although this approach is a more time-consuming test than COD determination, making a BOD5 determination is a very common Clean Water Act NPDES permit requirement and therefore is already being monitored at meat industry wastewater facilities. To avoid imposing redundant financial and labor burdens, AMI urges EPA to require BOD5 use instead of COD in the calculation of GHG emissions from meat industry wastewater treatment facilities. In that regard, 24 hour composite samples would be appropriate in most cases, but the rule should provide flexibility to use grab samples in some situations. The sampling frequency requirement should be the same as what is required under a facility's existing NPDES permit conditions.

Response: With regard to providing flexibility to monitor for either BOD_5 or COD, please see Section II.E of the preamble to the final rule.

EPA considered revising the language of §98.354 to clarify how facilities meet the requirement for the collection of grab samples or time-weighted composite samples. Grab samples consist of a single sample collected at one time and place; time-weighted composite samples consist of fixed volumes collected at equal time intervals.

EPA considered allowing facilities to collect time-weighted composite samples if the flow rate of the wastewater influent to the anaerobic wastewater treatment process does not vary more than

±50% of the mean flow rate for a 24-hour sampling period. Similarly, EPA considered allowing facilities to collect grab samples if the wastewater influent to the anaerobic wastewater treatment process represents the discharge from a well-mixed wastewater storage unit (tank or pond), such that the COD or BOD_5 concentration of the wastestream does not vary in a 24-hour period.

However, establishing that these conditions are met would require the facility to collect more samples than the proposed requirement to collect flow-weighted composite samples. For this reason, EPA revised the language to require facilities to collect a flow-proportional composite sample (either constant time interval between samples with sample volume proportional to stream flow, or constant sample volume with time interval between samples proportional to stream flow). Facilities are required to collect a minimum of four sample aliquots per 24 hour period and to composite the aliquots for analysis.

Further, EPA has not revised the sampling frequency to conform to a facility's NPDES permit conditions. NPDES permits typically only require sampling following treatment prior to discharge. Treated effluent characteristics do not vary significantly over small time intervals, whereas wastewater characteristics prior to treatment can be highly variable over small time intervals. EPA has determined that the sampling methods contained in the rule are the least burdensome while still resulting in an accurate estimate of greenhouse gas emissions from wastewater treatment processes for the purpose of this rulemaking.

Commenter Name: Stewart T. Leeth
Commenter Affiliation: Smithfield Foods, Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0553.1
Comment Excerpt Number: 10

Comment: In Sections 98.353 and 98.354, EPA proposes that wastewater treatment emissions be calculated from a weekly analysis of flow and chemical oxygen demand ("COD"). (74 Fed. Reg. at 16,704-05). Smithfield suggests that EPA look instead to biochemical oxygen demand (BOD5) for this determination. While a more time-consuming test than COD determination, BOD5 determination is a very common Clean Water Act NPDES permit requirement and therefore is already being monitored at meat industry wastewater facilities. To avoid unnecessary duplication and additional financial and labor burdens, Smithfield urges EPA to require the use of BOD5 instead of COD in the calculation of GHG emissions from meat industry wastewater treatment facilities.

Response: With regard to the use of BOD_5 in emissions calculations, please see the response to EPA-HQ-OAR-2008-0508-0440.1, excerpt 14 and Section II.E of the preamble to the final rule.

Commenter Name: Rechelle Hollowaty
Commenter Affiliation: Tyson Foods, Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0379.1
Comment Excerpt Number: 12

Comment: Tyson urges EPA use biological oxygen demand (BOD5) analysis for wastewater treatment systems instead of chemical oxygen demand (COD). BOD5 is already a parameter used to determine compliance for most meat industry wastewater treatments systems through NPDES permits. We request EPA to use the same sampling frequency as is required under a

facility's existing NPDES permit conditions thus minimizing additional financial and personnel encumbrance. In addition to analyzing BOD, Tyson urges EPA to consider the calculation methodology used within "Wastewater Engineering Treatment, Disposal, and Reuse" [Footnote: Metcalf and Eddy, Inc., "WASTEWATER ENGINEERING Treatment, Disposal and Reuse", third edition, copyright 1992, pg. 818-825]. and that of which is used in Climate Leaders that includes BOD5 and BODL (BOD ultimate) to determine methane emissions generated from anaerobic activity.

Response: With regard to the use of BOD_5 or COD and the sampling frequency, please see the response to EPA-HQ-OAR-2008-0508-0440.1, excerpt 14 and Section II.E of the preamble to the final rule.

With regard to the direct measurement of BOD_5, EPA believes that the approach required by the final rule results in an accurate estimation of greenhouse gas emissions from wastewater treatment systems, and does not create an economic burden on facilities. Therefore, EPA has retained the requirement for direct measurement of BOD_5 or COD. EPA does not require reporters to determine BOD_L because use of the emissions factors in Table II-1 in the calculation for BOD_5 is less burdensome and provides enough accuracy in the calculation of greenhouse gas emissions for the purposes of this reporting rule.

Commenter Name: Rhea Hale
Commenter Affiliation: American Forest & Paper Association (AF&PA)
Document Control Number: EPA-HQ-OAR-2008-0508-0909.1
Comment Excerpt Number: 18

Comment: Required weekly monitoring of influent organic loads is excessive given the small amounts of methane emitted from wastewater treatment plants. Monthly monitoring is sufficient to provide an adequate characterization of these loads.

Response: EPA disagrees that weekly monitoring is excessive. BOD_5 or COD values can be highly variable in influent waste streams to anaerobic treatment and the collection and analysis of samples is simple to complete. EPA has eased the reporting burden by allowing facilities to measure the influent organic load with either BOD_5 or COD (rather than requiring COD only, as proposed), as well as calculating emissions rather than requiring direct measurement of emissions from treatment units. Therefore, the rule requirements allow for the more accurate determination while minimizing the reporting burden.

Commenter Name: See Table 1 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0440.1
Comment Excerpt Number: 15

Comment: The requirements for monitoring and analysis of methane generated by anaerobic digesters systems are not completely clear with respect to methodologies and frequencies, but appear to be overly burdensome. Quarterly sampling and analysis should be specified.

Response: Monitoring requirements for anaerobic digesters and other anaerobic processes from which biogas is recovered, include monitoring of gas composition and flow, as described in

Section 98.354 (e) through (i). If a facility has equipment that continuously monitors flow rate, methane concentration, temperature, pressure, and moisture content of the biogas that is collected and destroyed, it must be used to determine methane generated. If methane concentration is not continuously monitored, it must be measured at least once each calendar week, with at least three days between measurements using either installed or portable equipment. Flow rate must be monitored continuously.

EPA disagrees that digester gas monitoring should be quarterly. Allowing either continuous or weekly monitoring for methane concentration will minimize costs while maximizing the accuracy of emissions calculations. Anaerobic digester systems are typically equipped with biogas flow meters; therefore, requiring continuous flow monitoring places no additional burden on facilities.

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 154

Comment: In §98.354, EPA has requested comment on requiring monthly sampling of digester gas CH_4 content as an alternative to a continuous composition analyzer. We strongly support the proposed options to measure the methane content monthly or less frequently based on a statistical demonstration of the variability. There are a number of reasons why these options are preferable to continuous monitoring: (1) continuous methane monitoring is expensive; (2) continuous methane monitoring can be problematic, and (3) conditions in anaerobic digesters change at a slow pace relative to other treatment technologies. EPA did not provide cost estimates for the continuous monitoring of methane. Typical costs of the uninstalled instrument can be as high as $40,000 [Footnote: Anderson, Russell. Preparing Your Landfill for an Ofset Project. SCS Engineers. December 11, 2008.] each, with installed costs of $60,000 [Footnote: [Footnote: Continuous Methane Gas Analyzer Bid Summary. Steuben County (NY) Purchasing Department. PW-08-062-B. 1/26/09.] or more each. In contrast, periodic monitoring with instruments would cost about $8,000. There are also difficulties with monitoring digester gas due to its saturated humidity and impurities. Conditions such as these increase the maintenance on a system and shorten the life o that system, both of which increase costs. As EPA has documented [Footnote: Wastewater Technology Fact Sheet: Anaerobic Lagoons. US EPA. EPA 832-F-02-009. Sept 2002.], the hydraulic retention time in anaerobic digesters is measured in days, not hours as with other treatment systems. In addition, a facility that could expect variable influent conditions will have an equalization basin to reduce swings in concentration and make the digester feed more consistent. These design factors reduce the impact from influent changes and ensure more consistent, and hence effective, treatment. This also ensures that biogas production and characteristics (e.g., methane content) are relatively consistent and will vary over days rather than hours. For these reasons, EPA should allow for the monitoring of methane concentration in anaerobic digester gas to be either (i) monthly or (ii) less frequently based on a statistical analysis of the composition data.

Response: EPA has revised the rule to allow either continuous or weekly monitoring for methane concentration. Allowing either continuous or weekly monitoring for methane concentration will minimize costs while maximizing the accuracy of emissions calculations. Weekly monitoring does not substantially increase costs compared to monthly monitoring, but will improve the accuracy of methane emission estimates. For information on monitoring

requirements of this subpart, please see the response to EPA-HQ-OAR-2008-0508-0440.1, excerpt 15.

To estimate compliance costs, EPA assumed that facilities would install and operate an Inova 1316-1 multi-gas nondispersive infrared (NDIR) monitor, or equivalent, at an installed cost of $5,900. NDIR monitors do not require temperature or moisture compensation. EPA assumed that the monitor would be housed in a temperature-controlled, NEMA enclosure, protected from the elements. EPA further assumed that the monitor would be installed following in-line devices that control the moisture and hydrogen sulfide content of the biogas stream.

EPA assumed that the capital equipment lifetime was 20 years and used that lifetime and an interest rate of 7 percent to annualize capital costs. EPA further estimated that annual operation of the biogas methane monitor would cost $900 per year, for a total annualized cost of $1,457 per year. EPA estimated that these costs would not result in negative economic impacts on the facilities required to monitor CH_4 concentration.

Commenter Name: Gregory A. Wilkins
Commenter Affiliation: Marathon Oil Corporation
Document Control Number: EPA-HQ-OAR-2008-0508-0712.1
Comment Excerpt Number: 83

Comment: Marathon opposes the current method of estimating emissions from oil/water separators and induced gas flotation units as it is inconsistent with the API Compendium. According to the proposed 2009 revisions to the API Compendium, refinery wastewater streams do not contain CO_2 (Introduction to Chapter 6 of the 2009 revisions). Any emissions from the control of oil water separators (like thermal oxidizers) should be allowed to be considered de minimis as previously described, or estimated using the methods allowed for "other process vents" from Subpart Y using engineering estimates. The Compendium does not address emissions from oil water separators because the streams do not contain significant amounts of CO-). This is a de minimis source and the effort required to estimate emissions does not equal the benefit received. Marathon stresses that just because a protocol exists as in California's mandatory reporting rule, does not mean that it is providing accurate data.

Response: For information on EPA's exclusion from the final rule of CO_2 emissions from oil/water separators at petroleum refineries, please see Section II.E of the preamble to the final rule.

Commenter Name: See Table 3 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0679.1
Comment Excerpt Number: 217

Comment: §98.353(b). Oil/water separators at petroleum refineries have been included for reporting as the CO_2 emissions are considered anthropogenic emissions (Preamble, p.581). The 2009 API Compendium currently includes this source in Appendix E, in a list of VOC emission sources that are not sources of GHG emissions. This emission estimation method is extremely onerous for such a small GHG emission source, particularly when considering the burden for measurement, monitoring, reporting, and QA.

Response: For information on EPA's exclusion from the final rule of CO_2 emissions from oil/water separators at petroleum refineries, please see Section II.E of the preamble to the final rule.

Commenter Name: See Table 3 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0679.1
Comment Excerpt Number: 219

Comment: In addition, this is the only source in the MRR that considers the atmospheric oxidation of VOCs to form CH_4, which is the basis of the 0.6 conversion factor. This conversion is not considered anywhere else in the rule as VOC is not a GHG, as defined in the rule. This extrapolation is not appropriate at a facility level (IPCC considers this conversion from national inventories).

Response: For information on EPA's exclusion from the final rule of CO_2 emissions from oil/water separators at petroleum refineries, please see Section II.E of the preamble to the final rule.

Commenter Name: Matthew Molinaro
Commenter Affiliation: Ecolab Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0602.1
Comment Excerpt Number: 1

Comment: In Section V subpart II of the proposed rule, p 16704 §98.353 Calculating GHG emissions, Equation II-1 is stated to express net methane emissions, but only describes methane generation and does not include a consumption term for CH_4. Emissions are the difference between generation and consumption. While the section does offer CH_4 consumption (destruction of CH_4) calculations in Equations II-3 and II-4, these are not properly aligned with IPCC Volume 5 chapter 6 for wastewater treatment or the EPA TSD for wastewater treatment. EPA TSD section 6.1 proposes equations to calculate methane generation in domestic and industrial facilities; this is the same calculation proposed for Eq II-1. EPA TSC section 6.2 and 6.3 describe consumption of methane for anaerobic digesters, which are included for the proposed Eq II-3 and II-4. However the proposed rule does not close the loop as in EPA TSD section 6.5, which provides a total mass balance for emissions that accounts for both generation and consumption. In addition, the methane generation as stated in subpart II of the proposed rule, p 16704 §98.353 Calculating GHG emissions, Equation II-1 does not include credit for organic carbon going to sludge and not to biogas. While this is consistent with the equation presented under section 6.1 of the EPA TSD, it is inconsistent with the IPCC Tier 1 method to calculate methane generation (equation 6.4, IPCC V5 Ch6). We recommend that §98.353 be revised to include a final mass balance that accounts for both methane generation terms inclusive of a credit for sludge yield and methane destruction terms for a flare and/or other combustion devices.

Response: EPA has revised the equations presented in the final rule to clearly lay out the methodology for estimating methane generated (using equations II-1 or II-2), methane emissions from systems without methane recovery (using equation II-3), methane recovered (using equation II-4), leakage from methane recovery systems (using equation II-5), and methane

emissions from systems with methane recovery (using equation II-6) accounting for both recovery efficiency and destruction.

For facilities that recover generated biogas, reported emissions are not based on a mass balance. Instead, EPA is requiring facilities to report emissions based on the measured volume and methane concentration of recovered biogas. Facilities must report emissions based on these measurements, accounting for the recovery efficiency (that is, gas that leaks from the recovery system) and destruction.

Because anaerobic sludge digesters and anaerobic reactors are operated in enclosed tanks, EPA expects that facilities that operate these processes collect all generated biogas and will report emissions based on measured gas recovery. Their reported emissions are not based on the influent organic carbon. For this reason, accounting for organic carbon incorporated into sludge and not to biogas is not appropriate.

Anaerobic lagoons are lined or unlined earthen basins, typically open to the air. Some facilities that operate anaerobic lagoons collect generated biogas and will report emissions based on measured gas recovery. Again, their reported emissions are not based on the influent organic carbon and accounting for organic carbon incorporated into sludge is not appropriate.

At other facilities anaerobic lagoons are not covered, biogas is not recovered, and no biogas is destroyed (combusted). These facilities will base their estimated emissions on methane generation calculated using Equation II-1 or II-2. Because biogas is not recovered and destroyed, accounting for CH_4 destruction terms for a flare and/or other combustion devices is not appropriate.

EPA acknowledges it has not accounted for organic carbon that is incorporated into sludge and not converted to biogas. EPA notes that accumulated sludge is seldom removed from anaerobic lagoons meaning that the organic carbon is not lost from the system via sludge. Instead, the sludge biodegrades over time, and the organic carbon is available for conversion to CH_4. Consequently, EPA concluded that accounting for organic carbon incorporated into sludge is not appropriate.

---

5. DETAILED GHG EMISSION CALCULATION PROCEDURES/EQUATIONS IN THE RULE

Commenter Name: See Table 3 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0679.1
Comment Excerpt Number: 220

Comment: §98.353(b) and (c). Equations II-2 and II-4 are inconsistent with the rest of the proposed rule in presenting variable units in the equation. Variable units should be presented in the variable definitions only.

Response: EPA has revised equation II-4 and removed variable units. Note that Equation II-2 included in the proposed rule, has been removed from the final rule.

Commenter Name: See Table 3 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0679.1
Comment Excerpt Number: 221

Comment: §98.353(c). Equation II-3 requires the quantity of CH_4 generated by anaerobic digesters be previously calculated using Eq. II-4. The order of the equations should be rearranged to present calculations in a logical format.

Response: EPA has revised the equations in the rule such that methane generated is no longer required for a previous equation.

Commenter Name: John Piotrowski
Commenter Affiliation: Packaging Corporation of America (PCA)
Document Control Number: EPA-HQ-OAR-2008-0508-1029.1
Comment Excerpt Number: 7

Comment: The Rule proposes that methane emissions from anaerobic lagoons be estimated based on effluent flow and chemical oxygen demand (COD) input to the lagoons (§98.273). The proposed Rule assumes that all COD is converted into methane on a stoichiometric basis, a protocol that we believe introduces a high bias to the calculation. Pulp and paper mill raw effluent contains "refractory COD" in the form of cellulose fiber and lignin, neither of which are readily biodegradable. A more accurate approach would be to measure the net soluble COD reduction across an anaerobic treatment system. For example, our Tomahawk, WI facility employs anaerobic biodegradation to treat raw mill effluent. Monthly influent and effluent COD (total and soluble) are measured to monitor waste treatment efficiency. In 2008 a total of 110 million Kg of total COD entered the anaerobic treatment system. EPA's proposed calculation method predicts that 12.5 million Kg of methane would be produced. This particular system features a biogas recovery system wherein the biogas is collected, conditioned and combusted at an on-site gas pdckage boiler. Since gas flow and composition is continuously monitored, we can easily determine methane production. For 2008, methane production from anaerobic treatment totaled 3.8 million kg, or only 30% of the amount predicted by the calculation method proposed in the Rule (i.e., Eq. 11-1). We find that by inserting the monthly average soluble COD destruction into equation instead of total COD, the calculated methane generation rate very closely matches the actual measured rate at this facility. It is for this reason we believe that the Rule overstates GHG emissions from anaerobic treatment.

Response: EPA disagrees that the proposed rule based methane emissions on effluent flow. The proposed rule specified flow as the volumetric flow rate of wastewater sent to an anaerobic treatment system. In the final rule, EPA retains this requirement to use volumetric flow rate of wastewater sent to an anaerobic treatment process.

With regard to the procedure to estimate methane using flow and COD, EPA based this approach on accepted methods from the Intergovernmental Panel on Climate Change (IPCC) for estimating methane emissions associated with industrial wastewater treatment. Since proposal, EPA considered requests to allow the use of either COD or BOD_5 to represent the organic loading of a waste stream entering an anaerobic treatment process. To ease the burden of reporting, EPA has revised the rule to allow for the use of either COD in conjunction with

Equation II-1 or BOD_5 in conjunction with Equation II-2 for the calculation of methane generation from anaerobic reactors and anaerobic lagoons.

Commenter Name: Michael Garvin
Commenter Affiliation: Pharmaceutical Research and Manufacturers of America (PhRMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0959.1
Comment Excerpt Number: 14

Comment: In Table II-1 of Subpart II, which contains the GHG emissions factors for wastewater treatment, EPA has included a factor for methane emissions from certain "not well managed (overloaded)" aerobic biological treatment systems. This simple statement potentially broadly expands the implications of the wastewater emissions component. In the preamble and elsewhere in the text, wastewater is defined to be limited to strictly anaerobic treatment systems. With this language, PhRMA believes that EPA may be implying that there would be an obligation to demonstrate that aerobic treatment systems are not "overloaded or poorly managed." We recommend that EPA clarify that there is no obligation to demonstrate that aerobic treatment systems are not overloaded or poorly managed.

Response: EPA has clarified that "not well managed" aerobic biological treatment systems are not included in Subpart II. For information on the anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule. Aerobic treatment is not a system component covered by this subpart. Consequently, EPA removed the entry for "not well managed" aerobic biological treatment systems from Table II-1.

Commenter Name: Rhea Hale
Commenter Affiliation: American Forest & Paper Association (AF&PA)
Document Control Number: EPA-HQ-OAR-2008-0508-0909.1
Comment Excerpt Number: 17

Comment: If the proposed rule is intended to apply to all wastewater treatment operations, including those that are not specifically designed to employ anaerobic biological treatment processes, the methane conversion factor (MCF) values used in calculating estimated methane emissions should reflect a range rather than a single value. MCF values indicate the degree to which a given system is anaerobic, with values theoretically ranging from 0 to 1.0. The values provided in Table II-1 are based on information given in the IPCC Guidelines for GHG Inventories (IPCC 2006), which provides a range of values for each system type, offering the reporting entity the option of reporting emissions that may be small but not zero. For example, the IPCC guidance indicates that well-managed aerobic treatment systems can have some methane emissions from "settling basins and other pockets" and suggests a range of MCF from 0 to 0.1, whereas the EPA proposal specifies a MCF of zero for these systems. Allowing user discretion in choosing a value for the MCF would accommodate future adjustments based on new information in this emerging field. Industry data from a small number of pulp and paper mill wastewater treatment operations suggest that methane emissions can be non-zero even for well managed aerobic systems. Thus, flexibility is needed to allow facilities to report their best estimates of methane emissions. Table 1 summarizes the data collected by NCASI at aerated treatment operations using influent BOD5 loading as a measure of the wastewater's biodegradable organic content with potential to generate methane (as is typical of industry practice, COD data was not collected).[See DCN:EPA-HQ-OAR-2008-0508-0909.1 for Table

showing Calculated MCF Values for Four Secondary Biological Treatment Systems Based on NCASI Data for Methane Emissions and BOD5 Loading.] Using data for measured methane emissions and BOD5 loadings collected over a few days, a MCF was calculated for each system tested using Equation II-1 in the proposed rule, rearranged to solve for MCF and using BOD5 in place of COD and a BOD-based factor for maximum methane producing potential, as shown in the following equation. The numerator is the measured methane emissions and the denominator is the maximum methane generation potential of the wastewater. MCF = CH_4/(Flow * BOD5 * B0 * 1000) Where: MCF = Methane conversion factor (fraction of wastewater treated anaerobically) CH_4 = Methane emissions (g/s). Flow = Volumetric flow rate of wastewater (m3/s) BOD5 = Concentration of five-day biochemical oxygen demand of influent wastewater (kg/m3) B0 = Maximum CH_4 producing potential of wastewater (kg CH_4 /kg BOD5), default is 0.60 (per IPCC (2006) guidance) 1000 = Conversion factor from kg to g NCASI Special Report No. 08-05 also describes the methods in which the data were used to estimate industry-wide emissions of methane from pulp and paper industry waste water treatment plants [See DCN:EPA-HQ-OAR-2008-0508-0909.1 for report]. The results of this analysis, presented in Table 2.9, are that combined emissions of methane from industry wastewater management systems are estimated to have been 0.40 Tg CO_2 eq. in both 1990 and 2004. Given that total direct emissions due to fuel combustion at U.S. pulp and paper mills were 57.7 Tg CO_2 eq. in 2004, 0.4 Tg CO_2 eq from wastewater treatment comprise less than one percent of the industry's fuel combustion-related emissions.

Response: The rule is not intended to apply to <u>all</u> wastewater treatment operations. For information on the anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule. EPA believes the MCF calculation procedure suggested by the commenter is unnecessarily complex. Further, the MCFs listed in Table II-1 apply to the anaerobic processes covered by this subpart and facilities must use them to calculate methane generated, as specified in equations II-1 and II-2.

For information on facility types required to report under Subpart II, and an explanation of the need to include CH_4 emissions from industrial wastewater treatment in the rule, please see Section II.E of the preamble to the final rule.

Commenter Name: Renae Schmidt
Commenter Affiliation: CITGO Petroleum Corporation
Document Control Number: EPA-HQ-OAR-2008-0508-0726.1
Comment Excerpt Number: 28

Comment: The MCF (methane conversion factor) referenced in Equation II-1 for calculating GHG emissions references Table II-1. This table includes an MCF for centralized aerobic treatment systems. The inclusion of aerobic treatment systems seems to directly contradict 98.3 52(a), which specifically requires reporting from anaerobic wastewater treatment systems. It is recommended that the references to aerobic treatment systems be removed from Table II-1 to eliminate confusion.

Response: For information on revisions to Table II-1, please see the response to EPA-HQ-OAR-2008-0508-0959.1, excerpt 14. EPA has removed all references to aerobic treatment systems from Table II-1.

Commenter Name: Rhea Hale
Commenter Affiliation: American Forest & Paper Association (AF&PA)
Document Control Number: EPA-HQ-OAR-2008-0508-0909.1
Comment Excerpt Number: 19

Comment: EPA should allow the use of BOD5 rather than COD as a measure of the organics in wastewater that can degrade to methane. The IPCC (2006) guidance that EPA cites as the source of their proposed method for estimating methane from wastewater treatment operations specifically states that use of B0 based on BOD5 is good practice (IPCC 2006) and only mentions use of a B0 based on COD as relevant for use when estimating the potential for methane from domestic wastewater treatment systems. Chemical oxygen demand (COD) of the influent wastewater may not be a technically sound basis for estimating methane emissions for pulp and paper wastewaters that contain wood-derived materials such as cellulose fibers and dissolved lignin degradation products, as these materials are not biodegradable in time frames representative of industry treatment systems. Thus, influent COD may overstate the potential for methane generation. Facilities should be given the flexibility to use BOD5 rather than COD, as this parameter is more appropriate for estimating methane from industrial wastewater treatment systems.

Response: EPA disagrees that the 2006 IPCC guidance only mentions use of a B_0 based on COD as relevant for estimating methane from municipal wastewater treatment systems. The IPCC guidance for emissions from industrial wastewater specifically states that if no country-specific data are available, it is good practice to use the IPCC COD-default factor for B_0 (0.25 kg CH4/kg COD). For information on the use of either COD or BOD_5 in the emissions calculations, please see Section II.E of the preamble to the final rule.

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 149

Comment: The Technical Support Document [Footnote: Technical Support Document for Wastewater Treatment: Proposed Rule for Mandatory Reporting of Greenhous Gases. USEPA Office of Atmospheric Programs – Climate Change Division. February 4, 2009. Section 1].states that denitrification results from the anaerobic treatment of wastewater. However, anaerobic treatment typically results in little denitrification. For denitrification, anoxic treatment is typically used. Anoxic conditions are defined as an environment in which dissolved oxygen is not present in the water and nitrate (NO_3-) is used by the microorganisms as the electron acceptor. [Footnote: Wastewater Technology Fact Sheet: Sequencing Batch Reactors. US EPA. EPA 832-F-99-073. Sept 1999. p. 4.] Under these conditions, the nitrate is converted to nitrogen (N_2) and released to the atmosphere as a gas. The microorganisms use the oxygen as they degrade carbon sources and release CO_2 to the atmosphere. In contrast, anaerobic conditions are defined as environments in which dissolved oxygen is not present in the water and sulfur compounds (such as sulfate SO_4-2) are used as the electron acceptors. Under anaerobic conditions, sulfur (S), hydrogen sulfide (H_2S), and other sulfur-containing compounds such as mercaptans are formed. This distinction is important because methane production is characteristic ofanaerobic treatment, not anoxic treatment. EPA has proposed to require that all anaerobic treatment systems must calculate methane production via Equation II-1. Given the confusion between anoxic and anaerobic, EPA should clarify that only anaerobic conditions are

the target of Equation II-1. If some systems use Equation II-1 to calculate methane emissions from anoxic treatment, it will vastly overstate the GHG emissions. The clarifications should be made by adding definitions: "Aerobic treatment means the treatment of wastewater with supplemental oxygen feed by the microbial reduction of complex organic compounds to CO_2. Anaerobic treatment means the treatment of wastewater without supplemental oxygen feed by the microbial reduction of complex organic compounds to CO_2 and CH_4. Anaerobic treatment specifically excludes Anoxic treatment. Anoxic treatment means the treatment of wastewater without supplemental oxygen feed by the microbial reduction of complex organic compounds to CO_2."

Response: For information on denitrification and anaerobic wastewater treatment, please see the response to EPA-HQ-OAR-2008-0508-0533.1, excerpt 41.

For information on the anaerobic processes covered by the rule, please see Section II.E of the preamble to the final rule. Anoxic treatment processes are not covered by the rule.

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 153

Comment: Calculating Methane Destruction – Digester Gas Flow Monitoring The techniques that EPA specified for flow monitoring (§§98.353(c), 98.354) do not reflect available technology and could increase the burden on facilities and result in lower data quality. EPA has proposed to require facilities to continuously measure gas flow under actual conditions (ACFM), temperature, and pressure. EPA is proposing that this information be averaged daily and then used to calculate gas flow under standard conditions (SCFM). This prevents facilities from using instrumentation that is widely available that will measure all three conditions (flow, temperature, pressure) simultaneously and report the flow in SCFM. An example of this is the Fox Thermal Instruments Model 10A Thermal Gas Flowmeter. [Footnote: www.foxthermalinstruments.com] Also in §§98.354(g) and (h), EPA is proposing that temperature and pressure monitors and flow measuring devices be calibrated and maintained as specified by the device manufacturer. Instead, we believe that EPA should require calibration according to good engineering and maintenance practices. This alternative wording will allow a facility to incorporate manufacturers' recommendations, equipment standards, and results of previous troubleshooting and maintenance. EPA should allow, though not require, facilities to use instrumentation such as this by modifying the proposal as follows: [See DCN EPA-HQ-OAR-2008-0508-0423.2 page 57 and 58 for suggested rule text including a new equation.]

Response: For information on monitoring requirements, please see the response to EPA-HQ-OAR-2008-0508-0440.1, excerpt 15.

In addition, EPA has revised Equation II-4 that calculates methane recovery to allow for flow meters that automatically correct for temperature, pressure, and/or moisture.

For calibration of gas flow meters as required by §98.354(g), EPA disagrees that facilities should be allowed to use good engineering and maintenance practices to calibrate instrumentation as this determination is subjective and difficult to standardize in comparison to requiring facilities to calibrate and maintain monitoring devices according to the manufacturer's specifications.

Since all gas flow meter manufacturers specify calibration procedures and frequencies for their equipment, it is appropriate that these procedures be followed when calibrating equipment for purposes of this rule.

For calibration of temperature, pressure, and moisture content monitors as required by §98.354(h), EPA has revised the regulation to allow calibration procedures and frequencies that represent an industry accepted practice or industry standard, if no calibration procedures or frequencies are specified by the device manufacturers, since calibration procedures are not typically specified by manufacturers of temperature, pressure or moisture content monitors.

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 47

Comment: EPA should allow, though not require, facilities to use instrumentation such as this by modifying the proposal as follows: [See DCN:EPA-HQ-OAR-2008-0508-0533.1 for equations provided by commenter]

Response: With regard to the frequency of monitoring required, please see the response to EPA-HQ-OAR-2008-0508-0440.1, excerpt 15.

Commenter Name: See Table 3 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0679.1
Comment Excerpt Number: 225

Comment: §98.358, Table II-1. The emission factors for "DAF or IAF - uncovered" and "DAF or IAF - covered" appear to be shown to the wrong order of magnitude (E-34 and E-44, instead of E-3 and E-4, respectively). Refer to California's AB-32 reporting rule, Table 13, where the '4' is a footnote not part of the exponent.

Response: The requirement to monitor CO_2 emissions from oil/water separators has been removed; please see Section II.E of the preamble to the final rule for more details. Therefore, all references to DAF and IAF in Table II-1 have also been removed.

Commenter Name: Renae Schmidt
Commenter Affiliation: CITGO Petroleum Corporation
Document Control Number: EPA-HQ-OAR-2008-0508-0726.1
Comment Excerpt Number: 29

Comment: This section's calculation methods for oil-water separators do not seem to make intuitive sense and have three problems - assuming that all VOC oxidizes in atmosphere to CO_2, only acknowledging thermal destruction devices, and not accounting for floating roof storage tanks that may be used as oil-water separators/storage tanks. Equation II-2 calculates CO_2 emissions from oil-water separators. But most oil-water separators, if not directed to a thermal destruction device, would not directly produce any CO_2, but instead might contribute methane

(CH_4) to a very limited extent (by the time oily wastewater is being handled in oil-water separators, most if not all methane should have been removed during the refining process). Instead, it appears that EPA is making the ill-supported assumption that all of the carbon in the VOC emissions oxidizes in the atmosphere to CO_2. This also seems to be the only evaporative emission source where this assumption is being made; the CO_2 (e) from all other VOC sources in the refinery sector (Subpart Y) is based on methane (e.g., process vents, equipment leaks, storage tanks, product loading, uncontrolled blowdown, etc.). Furthermore, the units for the separator emission factors are in kg NMVOC/m3 wastewater treated. (Note that "NMVOC" is not defined anywhere in this proposed rule or preamble, but is presumed to mean "non-methane volatile organic compounds). Expressing factors in these units would imply that there could also be a methane component to the emissions. If EPA is going to retain oil-water separators in the reporting mix, EPA should revise the calculation to be on a methane basis to be consistent with other evaporative-type emission sources. If this is done, it will likely become apparent that this source category becomes trivial, and should be either eliminated, or be eligible to be placed in a de minimis group where a one-time demonstration is made. The above-referenced equation (Equation II-2) also implicitly references Table 11-1, which provides emission factors (EF) for various general categories of oil-water separators (based on degree of emission control). Unfortunately, the separator factors do not cover the breadth of separators and control systems that may be used at a refinery. The table presumes that all industrial oil-water separators are "gravity type" and either uncovered, covered, or if covered, mayor may not be ducted to a "destruction device". This is an incomplete presumption for two different reasons. First, some refinery oil-water separators can be vented to a carbon adsorption system; such systems do not "destroy" the VQC, but prevent it from being emitted in the first place. The phrase "destruction device" in Table II-1 should be changed to "control device". Second, at refineries, some floating roof process water storage tanks can also function as separators. This type of oil-water separator is in fact allowed under 40 CFR 60 Subpart QQQ (40 CFR 60.693-2). Because of the floating root: emissions associated with these types of tanks are better estimated from tank level changes as opposed to tank throughput. Many such tanks may not have flow meters presently, so to comply with the oil-water separator QA-QC requirements, such tanks would require the installation of flow meters before January 1,2010. It is strongly recommended that if EPA retains industrial oil-water separators in the inventory program, that emissions from petroleum refinery process water storage tanks utilized as oil-water separators be determined and reported under the storage tanks provisions of Subpart Y (40 CFR 98.253(mXl)]. Finally, the above three issues provide a compelling case for eliminating oil-water separators from the WWTP category. However, if oil-water separators are not eliminated, then a broad de minimis category should be created that allows for one-time evaluation of low-Level sources and provides some degree of flexibility to the calculation. If oil-water separators are not eliminated and whether or not a de minimis category is created, the following corrections should be made: 1. Floating roof tanks used as oil-water separators need to be accommodated. Since the only focus of Subpart II's oil-water separators is refineries, a paragraph should be added that explicitly directs those tanks be handled under the Subpart Y emission determination provisions for storage tanks. 2. Equation TI-l for oil-water separation emissions calculation should be revised to report emissions as methane. a. The default carbon fraction should be changed to default methane fraction b. Eliminate the conversion of carbon to methane. 3. Table II-l would need to be revised accordingly. a. Emission factor units should be revised not to reflect NMVOC, but total organic compounds b. The default carbon fraction should be changed to default methane fraction. c. The "EF sep- Gravity Type-Covered and Connected to a Destruction Device" should be changed to ".., Connected to an Emission Control Device", to accommodate carbon adsorption systems. 4. Data reporting requirements would need to be revised to be consistent with corrected emission determination methods.

Response: For information on EPA's exclusion from the final rule of CO_2 emissions from oil/water separators located at petroleum refineries, please see Section II.E of the preamble to the final rule.

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 45

Comment: In 98.353, EPA proposes to require that the volume of wastewater to an oil/water separator be measured and used as an input to Equation II-2. However, very few, if any, oil/water separators will have flow monitoring and this approach does not recognize the technical and practical difficulties of measuring flowrate for a two-phase (oil and water), or sometimes three-phase (oil, water, and oil/water emulsion), stream with inconsistent/varying specific gravities. Nor can these emissions be calculated with a simple material balance. Given the wide variation in sources, flows, and compositions to the oil/water separator in a facility, a material balance engineering calculation would be inaccurate and unsuitable to the purpose. In addition, EPA has inappropriately applied Equation II-2 to calculate CO_2 emissions: [See DCN:EPA-HQ-OAR-2008-0508-0533.1 for Equation II-2] EPA does not reference the source of the equation in the TSD. However, in the preamble, EPA says that the equation was "based on" California's AB32 mandatory reporting rule. In turn, California's rule relied on a document from CONCAWE. In the CONCAWE report, the study and the resulting emission calculation were developed to estimate Non-Methane Volatile Organic Compounds (NMVOC): [See DCN:EPA-HQ-OAR-2008-0508-0533.1 for NMVOC Equation] The California Air Resources Board (CARB) used this equation, along with data from the IPCC, to generate an equation to calculate GHG emissions from oil/water separators. However, EPA inappropriately uses this equation for the following reasons: 1. NMVOC Destroyed in Control Device: CARB specifically cautions against double-reporting the CO_2 emissions10 from both the control device and the oil/water separator. However, EPA has done just that: CO_2 emissions from the combustion of NMVOC from oil/water separators are to be reported both under Subpart C (98.242(b), .352(c)) and Subpart II (98.353(b)). [See DCN:EPA-HQ-OAR-2008-0508-0533.1 for References] 2. NMVOC Oxidized in Atmosphere (i.e. Not Destroyed in Control Device): The IPCC concluded11 that non-CO_2 carbon emissions are eventually oxidized to CO_2 in the atmosphere. The IPCC directs that these GHG emissions should be included in national inventories. However, the eventual CO_2 emissions from NMVOC from other sources are not reported under 98 and oil/water separator emissions should not be treated differently. EPA should use the data that is already reported to it under 40 CFR 51, Subpart A to estimate all NMVOC emissions and its eventual CO_2 conversion. In the case of oil/water separators, their inclusion in 98 would again double-count the GHG emissions. For these reasons, EPA should remove 98.353(b) from the rule.

Response: For information on EPA's exclusion from the final rule of CO_2 emissions from oil/water separators located at petroleum refineries, please see Section II.E of the preamble to the final rule.

Commenter Name: Stewart T. Leeth
Commenter Affiliation: Smithfield Foods, Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0553.1
Comment Excerpt Number: 12

Comment: Subpart II - Wastewater Treatment, Table II – 1 provides emissions factors for dissolved air flotation (DAF) and induced air flotation (IAF). (74 Fed. Reg. at 16,706). We believe that EPA provided these factors for use by petroleum facilities, but request that EPA clarify in the final rule that food processing facilities are not required to report emissions from DAF or IAF units.

Response: Food processing facilities are not required to report emissions from DAF or IAF units.

Commenter Name: Brian P. Flynn
Commenter Affiliation: MRE, LLC
Document Control Number: EPA-HQ-OAR-2008-0508-0529.1
Comment Excerpt Number: 4

Comment: 98.352 (b) states that you must report CO_2 emissions from oil/water separators. 98.353 (b) states that petroleum refineries calculate annual CO_2 emissions by separator type. It refers to Table II-1. This table includes insignificant factors for DAF or IAF (both covered and uncovered). The DAF and IAF should be dropped from Table II-1 and from the requirements to report CO_2 emissions. [An equation is provided by the commenter showing CO_2 estimated emissions of 6.2 E-30 metric tons CO_2 per year from a fairly large refinery.] This is a mere 6.2 E-24 gram- less than one atom's worth! This is not worth calculating or reporting.

Response: For information on EPA's exclusion from the final rule of CO_2 emissions from oil/water separators located at petroleum refineries, please see Section II.E of the preamble to the final rule.

Commenter Name: Brian P. Flynn
Commenter Affiliation: MRE, LLC
Document Control Number: EPA-HQ-OAR-2008-0508-0529.1
Comment Excerpt Number: 5

Comment: Equation II-2 is used for calculating CO_2 emissions. Equation II-2 in 98.353 (b) should be modified to show "metric tons of CO_2/kg" instead of "metric tons of CH_4/kg" in order to be consistent with the equation's purpose.

Response: Upon further review of comments, EPA has removed the requirement to estimate emissions associated with oil/water separators and therefore no longer requires the calculation of CO_2 emissions. Please see Section II.E of the preamble to the final rule.

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 152

Comment: In §98.353, EPA proposes to require that the volume of wastewater to an oil/water separator be measured and used as an input to Equation II-2. However, very few, if any, oil/water separators will have flow monitoring and this approach does not recognize the technical and practical difficulties of measuring flowrate for a two-phase (oil and water), or sometimes three-phase (oil, water, and oil/water emulsion), stream with inconsistent/varying specific gravities. Nor can these emissions be calculated with a simple material balance. Given the wide variation in sources, flows, and compositions to the oil/water separator in a facility, a material balance engineering calculation would be inaccurate and unsuitable to the purpose. In addition, EPA has inappropriately applied Equation II-2 to calculate CO_2 emissions. EPA does not reference the source of the equation in the TSD. However, in the preamble, EPA says that the equation was ³based on´ California‘s AB32 mandatory reporting rule. [Footnote: Title 17, California Code of Regulations §9511 3(c)(2)] In turn, California‘s rule relied on a document from CONCAWE. [Footnote: CONCAWE oil companies‘ European association for environment, health and safety in refining and distribution. www.concawe.org.] In the CONCAWE report [Footnote: Air pollutant emission estimation methods for E-PRTR reporting by refineries. CONCAWE Air Quality Management Group‘s Special Task Force on Emission Reporting Methodologies (STF-69). Brussels, Belgium. Report no. 1/09, January 2009. Section 13.6.3.2.], the study and the resulting emission calculation were developed to estimate Non-Methane Volatile Organic Compounds (NMVOC). [See DCN EPA-HQ-2008-0508-0423.2 (page 56) to view an equation.] The California Air Resources Board (CARB) used this equation, along with data from the IPCC, to generate an equation to calculate GHG emissions from oil/water separators. However, EPA‘s use of this equation is inappropriate for the following reasons: 1. NMVOC Destroyed in Control Device: CARB specifically cautions against double-reporting the CO_2 emissions [Footnote: Attachments C to F. Supplemental Materials Document for Staf Report: Initial Statement of Reasons for Rulemaking. Mandatory Reporting of Greenhouse Gas Emissions. California Air Resources Board. October 19, 2007. Attachment E.] from both the control device and the oil/water separator. However, EPA has done just that: CO_2 emissions from the combustion of NMVOC from oil/water separators are to be reported both under Subpart C (§§98.242(b), 98.352(c)) and Subpart II (§98.353(b)). 2. NMVOC Oxidized in Atmosphere (i.e. Not Destroyed in Control Device): The IPCC concluded [Footnote: 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Intergovernmental Panel on Climate Change. Volume 1, Chapter 7, Section 7.2.1.5.] that non-CO_2 carbon emissions are eventually oxidized to CO_2 in the atmosphere. The IPCC directs that these GHG emissions should be included in national inventories. However, the eventual CO_2 emissions from NMVOC from other sources are not reported under part 98 and oil/water separator emissions should not be treated differently. EPA should use the data that is already reported to it under 40 CFR 51, Subpart A to estimate all NMVOC emissions and its eventual CO_2 conversion. In the case of oil/water separators, their inclusion in part 98 would again double-count the GHG emissions. For these reasons, EPA should remove §98.353(b) from the rule.

Response: For information on EPA’s exclusion from the final rule of CO_2 emissions from oil/water separators located at petroleum refineries, please see Section II.E of the preamble to the final rule.

---

6. MONITORING AND QA/QC REQUIREMENTS

Commenter Name: Burl Ackerman
Commenter Affiliation: J. R. Simplot Company
Document Control Number: EPA-HQ-OAR-2008-0508-1641
Comment Excerpt Number: 27

Comment: We support allowing monthly CH_4 content sampling as an alternative to continuous metering of gas concentration.

Response: For information on the frequency of monitoring required, please see the response to EPA-HW-OAR-2008-0508-0440.1, excerpt 15. EPA agrees that continuous monitoring is not necessary. For discussion of the requirement for weekly monitoring, please see the response to EPA-HQ-OAR-2008-0508-0423.2, excerpt 154.

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 52

Comment: EPA proposes to require that facilities collect all samples as flow-weighted composites but says that time-weighted composites would be acceptable if the COD content and flow "does not vary." Because of the lack of guidance in the proposal, some may interpret "does not vary" as 0% variation which is impossible for any system to achieve. EPA should clarify "does not vary" as having a standard deviation that is less than 50% of the mean.

Response: The final rule no longer contains the phrase 'does not vary' .For information regarding requirements for collecting samples of wastewater influent to anaerobic wastewater treatment processes for determination of COD or BOD_5 concentration, please see Section II.E of the preamble to the final rule

---

Commenter Name: Robert J. Martineau, Jr
Commenter Affiliation: Counsel, Waller Lansden Dortch & Davis, LLP
Document Control Number: EPA-HQ-OAR-2008-0508-0414.1
Comment Excerpt Number: 14

Comment: Nissan requests clarification as to whether a facility utilizing an on-site industrial wastewater treatment system is required to utilize third-party laboratory analysis; or alternatively, may perform the requisite laboratory analysis in-house. The Preamble to the proposed regulation stipulates that in order "[t]o estimate the amount of CH_4 emissions from industrial waste water treatment, plant-specific values of COD would be determined by weekly sampling." 74 Fed. Reg. at 16,560. The proposed text of 40 C.F.R. § 98.354 states, "(c) For anaerobic treatment systems, facilities must monitor the wastewater flow and COD no less than once per week. . . . Facilities must collect 24-hour flow-weighted composite samples . . . (d) For oil/water separators, facilities must monitor the flow no less than once per week." 74 Fed. Reg. at 16,705. Although the proposed regulation includes the term "facilities," no further guidance is offered as to whether the facility may perform monitoring and the collection of samples through use of an in-house laboratory, or instead, must utilize an independent third-party laboratory.

Response: EPA does not require an independent third-party laboratory to provide the analysis of BOD_5 or COD. The facility may use either an in-house laboratory or an independent third party laboratory to perform the monitoring and collect samples.

Commenter Name: Bill Perez
Commenter Affiliation: LANDTEC North America, Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-1485
Comment Excerpt Number: 2

Comment: In several industries including; landfill gas (LFG), manure management, anaerobic digesters, waste-water treatment plants and others, portable infrared analyzers are the instruments of choice for quantifying methane in the field. Fixed infrared analyzers with automatic calibration systems have been proven reliable and cost effective on Clean Development Mechanism (CDM) projects throughout the world. These infrared monitoring systems are passing independent third party validations on CDM projects and generating certified emission reduction credits. We ask the EPA to include calibrated infrared technology as an acceptable method for quantifying methane when reporting Greenhouse gas emissions.

Response: EPA has revised the rule language at 98.354 (e) to provide for flame ionization of nondispersive infrared (NDIR) analyzers to be used as an alternative to gas chromatography methods. This alternative reduces the burden on facilities that do not have existing gas chromatography equipment. However, if the flame ionization or NDIR analyzer measures both methane and non-methane organic compounds they will tend to overstate the methane concentration in biogas and provide a high bias to the amount of methane recovered. To eliminate this bias, when facilities use these types of flame ionization or NDIR analyzers, 98.354 (e) requires a correction factor that must be determined at least annually, to arrive at the ratio of the methane concentration to the analyzer response (calibrated with methane). Including these alternative monitoring methods with the correction factor reduces the burden on facilities, but still ensures that the calculated methane recovery quantities are unbiased and comparable to the recovery quantities calculated when gas chromatographic methods are used to speciate methane specifically.

Commenter Name: Rhea Hale
Commenter Affiliation: American Forest & Paper Association (AF&PA)
Document Control Number: EPA-HQ-OAR-2008-0508-0909.1
Comment Excerpt Number: 20

Comment: Should COD be retained, the rule should provide that all EPA approved methods for monitoring COD in wastewater are allowed to be used for the purposes of this rule. There are several analytical methods for measuring COD, some of which generate hazardous wastes containing, for example, chromium and mercury.

Response: EPA has revised the rule to allow for the use of either COD in conjunction with Equation II-1 or BOD_5 in conjunction with Equation II-2 for the calculation of methane generation. For more information, please see Section II.E of the preamble to the final rule. The rule specifies at 98.354(a) that facilities must use analytical methods appropriate for industrial

wastewater pollutants, conducted in accordance with the methods specified in 40 CFR part 136.3 Table 1B.

Commenter Name: Rhea Hale
Commenter Affiliation: American Forest & Paper Association (AF&PA)
Document Control Number: EPA-HQ-OAR-2008-0508-0909.1
Comment Excerpt Number: 21

Comment: Where appropriate, reporting facilities should be given the option of using flow measurements made at locations downstream of the treatment unit for which methane emissions are being estimated. Flow monitoring of influent streams is not widely practiced at mills, and may require costly modifications to install a flow measuring device in a collection system. Effluent discharge flow measuring devices such as weir, flumes, and venturi meters used for compliance monitoring must be calibrated and maintained on a regular basis per NPDES discharge permits conditions, and are much more likely to provide accurate flow data than meters installed upstream in collection or treatment systems. Where evaporative and other water losses between the influent and the point at which flow is measured are deemed to be significant (e.g., >5% of measured flow), engineering calculations could be used to adjust the measured flows.

Response: The rule requires that flow and BOD_5 or COD be monitored at the location of influent to the anaerobic treatment process. EPA disagrees that facilities should be allowed to use downstream locations. Influent monitoring gives the most accurate determination of GHG emissions and does not require the complex and burdensome back-calculations that effluent flow monitoring would. In addition, allowing for effluent flow monitoring would require EPA to describe all possible treatment scenarios which would make the rule cumbersome and overly complex.

EPA has considered cost of influent flow monitoring and determined it to be a reasonable burden for facilities. For more information, please see Section II.E of the preamble to the final rule. EPA has already taken steps to minimize burden in the rule by excluding small facilities through the application of the 25,000 metric tons of CO_2e threshold.

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 46

Comment: The techniques that EPA specified for flow monitoring (98.353(c), 98.354) do not reflect available technology and could increase the burden on facilities and result in lower data quality. EPA has proposed to require facilities to continuously measure gas flow under actual conditions (ACFM), temperature, and pressure. EPA requires that this information be averaged daily and then used to calculate gas flow under standard conditions (SCFM). This prevents facilities from using instrumentation that is widely available that will measure all three conditions (flow, temperature, pressure) simultaneously and report the flow in SCFM. An example of this is the Fox Thermal Instruments Model 10A Thermal Gas Flowmeter. Also in 98.354(g) and (h), EPA requires that temperature and pressure monitors and flow measuring devices be calibrated and maintained as specified by the device manufacturer. Instead, EPA

should require calibration according to good engineering and maintenance practices. This alternative wording will allow a facility to incorporate manufacturers' recommendations, equipment standards, and results of previous troubleshooting and maintenance.

Response: For more information on the frequency of monitoring required and calibration methods, please see the response to EPA-HQ-OAR-2008-0508-0423.2, excerpt 153.

Commenter Name: Stewart T. Leeth
Commenter Affiliation: Smithfield Foods, Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0553.1
Comment Excerpt Number: 11

Comment: Twenty-four hour composite samples are appropriate in most cases, but there should be flexibility to use grab samples in some situations. The sampling frequency requirement should be the same as what is required under a facility's existing NPDES permit conditions. In addition, most wastewater treatment facilities have effluent flow meters but few have influent flow meters. The text and definitions of these sections referred to flow into the wastewater treatment system in the inclusions and seem to imply that and influent flow meter is required. Please clarify this section to allow the use of effluent flow meter data to minimize the cost and impact on the food industry.

Response: For a discussion of the use of grab and composite samples, please see Section II.E of the preamble to the final rule.

For a discussion of the use of effluent flow meters, please see the response to EPA-HQ-OAR-2008-0508-0909.1, excerpt 21.

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 50

Comment: EPA has requested comment on requiring monthly sampling of digester gas CH_4 content as an alternative to a continuous composition analyzer. We strongly support the options to measure the methane content monthly or less frequently based on a statistical demonstration of the variability. The reasons for these options as opposed to continuous monitoring include: (1) continuous methane monitoring is expensive, (2) continuous methane monitoring can be problematic, and (3) conditions in anaerobic digesters change at a slow pace relative to other treatment technologies. As EPA has documented, the hydraulic retention time in anaerobic digesters is measured in days, not hours as with other treatment systems. In addition, a facility that could expect variable influent conditions will have an equalization basin to reduce swings in concentration and make the digester feed more consistent. These design factors reduce the impact from influent changes and ensure more consistent, and hence effective, treatment. This also ensures that biogas production and characteristics (e.g. methane content) are relatively consistent and will vary over days rather than hours. For these reasons, EPA should allow for the monitoring of methane concentration in anaerobic digester gas to be (i) monthly or (ii) less frequently based on a statistical analysis of the composition data.

Response: EPA agrees that continuous monitoring is not necessary. However, if continuous emissions monitoring equipment is already in place, it must be used. For discussion of the requirement for weekly monitoring, please see the response to EPA-HQ-OAR-2008-0508-0423.2, excerpt 154.

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 155

Comment: In §§98.354(a) and (c), EPA states that the location for the COD sample must represent the influent to the treatment process and requires reporters to collect a 24-hour flow-weighted composite sample at least once per week. Industrial facilities draw COD samples at the wastewater treatment plant discharge per NPDES permit conditions. Maintaining a compositor on the influent will be problematic due to oil, foam, sediment, phase separation, etc. Consistent with California's GHG emissions reporting program, reporters should be given the option to take daily grab samples of the influent to monitor for Total Organic Carbon (TOC) and use a conversion factor to convert TOC to COD. EPA proposes to require that facilities collect all samples as flow-weighted composites but states that time-weighted composites would be acceptable if the COD content and flow "does not vary." Without further clarification, some may interpret ³does not vary´ as requiring 0% variation which is impossible for any system to achieve. EPA should clarify in the final rule that "does not vary" has a standard deviation that is less than 50% of the mean. EPA also states that the location for the COD sample must represent the influent to the treatment process and that the location of the flow sample must correspond to the location of the COD sample. Industrial facilities do not have flow meters on the influent because (1) the NPDES-permit monitoring point is on the effluent outfall, (2) operation of meters in wastewater service is problematic due to oil, foam, phase separation, sediment, etc. and is much more difficult than monitoring the clean effluent, and (3) accuracy of flow meters in a gravity flow, possibly phase-separated system is a concern. As an option to inlet flow meters, reporters should be allowed to use outlet flow meters or engineering determination. This option is consistent with California's GHG emissions reporting program (Title 17 CCR Subchapter 10, Article 2). We recommend these changes be reflected in §98.354(a) and (c) as follows: (new language is in brackets). "(a) The quantity of COD treated anaerobically must be determined using analytical methods for industrial wastewater pollutants and must be conducted in accordance with the methods specified in 40 CFR Part 136. [If COD analysis is impractical due to the sample composition, the facility may measure Total Organic Carbon (TOC) and mathematically convert it to COD using a site-specific conversion factor based on actual analytical data. The quantity of TOC treated anaerobically must be determined using analytical methods for industrial wastewater pollutants and must be conducted in accordance with the methods specified in 40 CFR Part 136.] (c) For anaerobic treatment systems, facilities must monitor the COD [concentration and monitor or calculate the wastewater flow] no less than once per week. The sample location must represent the influent to anaerobic treatment for the time period that is monitored. The flow [data] sample must correspond to the location used to measure the COD. [If flow monitoring at this location is impracticable, the facility must determine the flow using appropriate methods.] Facilities must collect 24-hour flow-weighted composite samples, unless (1) they can demonstrate that the [data for the] COD concentration and wastewater flow into the anaerobic treatment system [has a standard deviation that is less than 50 percent of the mean or (2) flow monitoring at that location is impracticable]. In these cases this case, facilities must collect 24-hour time-weighted composites to characterize changes in

wastewater due to production fluctuations, or a grab sample if the influent flow is equalized resulting in little variability.

Response: EPA has revised §98.354(a) of the rule to clarify that flow and BOD_5 or COD must be monitored at the location of influent to the anaerobic treatment process, following all preliminary and primary treatment steps (e.g., after grit removal, primary clarification, oil-water separation, dissolved air flotation, or similar solids and oil separation processes). After such preliminary and primary treatment, oil, foam, sediment, and phase separation will not interfere with sampling collection or flow measurement. With regard to the use of influent monitoring as opposed to effluent monitoring, please see response to EPA-HQ-OAR-2008-0508-0909.1, excerpt 21.

EPA disagrees that analysis of COD in waste streams after preliminary and primary treatment may be impractical due to the sample composition. First, preliminary and primary treatment change the composition of the wastewater by removing non-aqueous phases such as oil, foam, and sediment. The partially treated wastewater can be sampled with an automatic compositor or by compositing manual grab samples. Second, facilities may select the wastewater flow measurement device that is most appropriate for their wastewater stream. The rule, at §98.354(d), identifies five methods that may be used to monitor wastewater flow. Facilities may choose among these methods or another, as appropriate, used as specified by the manufacturer.

Further, allowing facilities to measure Total Organic Carbon (TOC) and mathematically convert it to COD using a site-specific conversion factor based on actual analytical data can be subjective and difficult to standardize. For this reason, EPA has not revised the rule to allow facilities to analyze influent to anaerobic wastewater treatment processes for TOC rather than COD. California's GHG emissions reporting program does not allow facilities to measure Total Organic Carbon (TOC) and mathematically convert it to COD; therefore the use of COD in Subpart II is consistent with California's Regulation for the Mandatory Reporting of Greenhouse Gas Emissions.

For a discussion of the use of grab and composite samples, please see Section II.E of the preamble to the final rule.

Commenter Name: See Table 3 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0679.1
Comment Excerpt Number: 222

Comment: §98.354(c). The monitoring requirements in §98.354(c) state the location for the COD sample must represent the influent to the treatment process and the location of the flow sample must correspond to the location of the COD sample. For treatment processes that are designed with a staged saturated air treatment unit that flows into an aeration basin, the sampling location should be representative of the influent into the staged saturated air treatment unit.

Response: Subpart II applies to anaerobic processes, including anaerobic reactors, anaerobic lagoons, and anaerobic sludge digesters. Consequently, facilities are not required to monitor treatment processes that are designed with a staged saturated air treatment unit that flows into an aeration basin.

Commenter Name: See Table 3 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0679.1
Comment Excerpt Number: 223

Comment: §98.354(c). The monitoring requirements in §98.354(c) state the location for the COD sample must represent the influent to the treatment process and the location of the flow sample must correspond to the location of the COD sample. Refineries and petrochemical plants do not have flow meters on the influent because (1) NPDES monitoring point is on the outfall, (2) operation of meters in oily water service is problematic, and (3) accuracy of flow meters in a gravity flow, possibly phase separated system is a concern. As an option to inlet flow meters, reporters should be allowed to use outlet flow meters or engineering determination. This option is consistent with California's GHG emissions reporting program.

Response: Petrochemical facilities are not known to employ anaerobic wastewater treatment. Therefore, this sector has been removed from the final rule.

Please see the response to EPA-HQ-OAR-2008-0508-0423.2, excerpt 155 for a discussion of why EPA has determined that monitoring influent to anaerobic reactors can be done with available technology and at reasonable cost.

For a discussion of the use of effluent flow meters, please see the response to EPA-HQ-OAR-2008-0508-0909.1, excerpt 21.

Commenter Name: See Table 3 at the end of this volume.
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0679.1
Comment Excerpt Number: 224

Comment: §98.354(c). The monitoring requirements in §98.354(c) state the location for the COD sample must represent the influent to the treatment process and requires reporters to collect a 24- hour flow-weighted composite sample at least once per week. Refineries and petrochemical plants draw COD samples at the wastewater treatment plant discharge under NPDES permit. Maintaining a compositor on the influent will be problematic because the waste contains oil and sediments. Consistent with California's GHG emissions reporting program, reporters should be given the option to take daily grab samples on the influent for TOC and use a conversion factor to convert TOC to COD.

Response: Please see the response to EPA-HQ-OAR-2008-0508-0423.2, excerpt 155 for a discussion of why EPA has determined that monitoring influent to anaerobic reactors can be done with available technology at reasonable cost.

Commenter Name: Matthew Molinaro
Commenter Affiliation: Ecolab Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0602.1
Comment Excerpt Number: 4

Comment: The proposed monitoring and QA procedures described in §98.354 may present an undue burden on facilities whose current measurement procedures are more appropriate for process control decisions and not compliance monitoring. EPA has not provided typical on-site approved measurement methods for influent COD that are appropriate for the proposed rule. The only on-site method identified has capacity that is half of the requirement for minimum influent measurement for typical anaerobic treatment. Food processing wastewater is typically in the range 3000 – 30,000 mg/L COD, through some plants may operate with influent COD as high as 60,000 mg/L.[Metcalf & Eddy, Wastewater Engineering 4th ed p 987.] Typical current practice is to use an on-site test such as Hach Method 8000 "High Range Plus", which has a range of 200 – 15,000 mg/L COD.[Hach Company, P.O. Box 389, Loveland, Colorado, 80539-0389, Phone: 800-227-4224, www.hach.com.] For influent COD in excess of 15,000 mg/L dilution steps are required, which have not been described as acceptable in the proposed rule. It is common for these process control tests to be performed on-site, but the current scope of the proposed rule would require off-site testing. This can be costly in terms of both direct testing costs and fees (estimated at $2000 or more per year) and indirect overhead costs from managing and preparing samples. EPA must determine affordable on-site methods or dilution practices that allow users to accurately perform calculations for this rule. We recommend EPA provide further guidance to appropriate measurement methods or techniques and/or reduce the rigor of the requirements to facilitate reporting.

Response: EPA has revised §98.354 of the rule to clarify that while facilities must determine the concentration of organic material in wastewater treated anaerobically using analytical methods for COD or BOD_5 in accordance with the methods specified in 40 CFR part 136.3 Table 1B, for the purpose of determining concentrations of wastewater influent to the anaerobic wastewater treatment process, samples may be diluted to the concentration range of the approved method. Alternatively, facilities may send their samples to an offsite laboratory for analysis.

Commenter Name: Dean C. DeLorey
Commenter Affiliation: Beet Sugar Development Foundation (BSDF) Environmental Committee
Document Control Number: EPA-HQ-OAR-2008-0508-0559.1
Comment Excerpt Number: 18

Comment: Wastewater sampling frequencies appear unnecessarily specific and detailed. How is this level of effort and documentation justified by the relative accuracy of the calculation and the overall contribution to GHG emissions? This should be guidance rather than a specific requirement.

Response: For a discussion of EPA's clarification of wastewater sampling requirements in 98.354(b), please see Section II.E of the preamble to the final rule. The final rule continues to require facilities to collect and analyze samples of anaerobic treatment process influent no less than once per week. Weekly monitoring provides an adequate number of samples to evaluate the variability and uncertainty associated with methane generation. Monthly monitoring would result in greater uncertainty and would not significantly reduce the costs compared to weekly monitoring. EPA has considered cost of sampling and analysis of influent wastewater and determined it to be a reasonable burden for facilities. EPA has already taken steps to minimize burden in the rule by excluding small facilities through the application of the 25,000 metric tons of CO_2e threshold.

EPA disagrees that monitoring frequency should be provided as guidance rather than a specific requirement. Facility responses to guidance would be subjective and difficult to standardize. EPA continues to require facilities to collect and analyze samples of anaerobic treatment process influent no less than once per week.

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 48

Comment: Section 98.354(g) should read as follows: If required for Equation II-4, all temperature and pressure monitors must be calibrated using the procedures and frequencies established by good engineering and maintenance practices.

Response: For calibration of temperature, pressure, and moisture content monitors as required by §98.354(h), EPA has revised the regulation to allow calibration procedures and frequencies that represent an industry accepted practice or industry standard, if no calibration procedures or frequencies are specified by the device manufacturers, since calibration procedures are not typically specified by manufacturers of temperature, pressure, or moisture content monitors.

Commenter Name: Brian P. Flynn
Commenter Affiliation: MRE, LLC
Document Control Number: EPA-HQ-OAR-2008-0508-0529.1
Comment Excerpt Number: 2

Comment: For clarity, the second sentence of 40CFR 98.354 (d) should refer to monitoring, not sample as no sample is required, flowrate is monitored.

Response: EPA has removed the requirement to monitor CO_2 emissions from oil/water separators at refineries. Please see Section II.E of the preamble to the final rule for more details. Therefore the edit described in this comment is no longer needed.

---

7. PROCEDURES FOR ESTIMATING MISSING DATA

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 156

Comment: In §98.355(a), EPA describes the use of an averaging method for substitute data. We recommend that EPA also allow as an option the use of a method that is case-specific and justified by the operator based on facility operating knowledge or data. The averaging method may not be appropriate in all cases. For example, if the data gap should occur during a known spike or drop in concentrations or flow, it would not be appropriate to use the data that surrounds the gap. Only the operator will have the knowledge to make that assessment.

Response: EPA disagrees that an averaging method for substitute data is not appropriate. Allowing facilities the option to utilize case-by-case determinations for estimating missing data will make reporting more cumbersome and variable. Utilizing an average to determine substitute data will allow for standardization and simplify what facilities must do to meet rule requirements.

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 53

Comment: In 98.355(a), EPA describes a method for substitute data. As an option, EPA should also allow using another method that is case-specific and justified by the operator based on facility operating knowledge or data. The averaging method may not be appropriate in all cases. The operator will have the knowledge to make that assessment.

Response: With regard to the use of case specific methods, please see the response to EPA-HQ-OAR-2008-0508-0423.2, excerpt 156.

---

8. DATA REPORTING REQUIREMENTS

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 159

Comment: EPA has proposed in §98.356(r) to require that facilities with anaerobic digesters report ”fugitive methane.” This is also ambiguous. As EPA notes, [Footnote: 74 Federal Register 16529, April 10, 2009.] it uses multiple definitions for “fugitive.” For example, in some sections, “fugitive” includes flare emissions but in other sections it does not. EPA provides no clarification which definition should apply for wastewater plants in the Preamble, Technical Support Document, or proposed rule language. For Subpart II, EPA should define “fugitive methane” emissions to be that methane which is fed to the destruction device (e.g. flare, engine) but not destroyed.

Response: EPA has revised §98.353 to clarify fugitive emission calculations. The final rule requires facilities to calculate the quantity of biogas generated but not recovered; that is, the mass of CH_4 that leaks from the process due to inefficiencies in the anaerobic process CH_4 collection system.

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 158

Comment: EPA has proposed in §§98.356(m), (n), and (o) to require that the data from continuous methane, temperature and pressure monitors be submitted. As written, this is an overwhelming amount of data. Continuous monitors will collect a data point many times per minute. This means that EPA will require facilities to submit millions of data points every year. EPA has never before required such information to be submitted for emissions inventory reports and should not begin now unless it can present compelling reasons to do so. Detailed data such as methane content, temperature, and pressure should be maintained by the facility and made available for inspection in keeping with existing practice. We suggest that EPA remove §§98.356(m), (n), and (o).

Response: EPA has revised the rule language in §98.356 to clarify that facilities are only required to report the monthly average of methane, temperature, and pressure monitoring.

Commenter Name: Lorraine Krupa Gershman
Commenter Affiliation: American Chemistry Council (ACC)
Document Control Number: EPA-HQ-OAR-2008-0508-0423.2
Comment Excerpt Number: 157

Comment: In §98.356(b), EPA has proposed to require that systems report the "percent of wastewater treated at each system component." We find this statement ambiguous. Industrial wastewater treatment plants are complex systems that can contain multiple treatment steps that proceed both in parallel and series. Portions of the wastewater can be removed from or added to the system at different points. Multiple conclusions can be drawn from the request. For example, is EPA seeking the amount of wastewater that is treated: (1) In an anaerobic digester vs. other anaerobic technology? (2) In an anaerobic digester or other technology vs. aerobic technology? (3) In a neutralization basin? (4) In an equalization basin? (5) In an oil/water separator? In addition, this information is not required for the GHG emissions from the facility. EPA has proposed to request an unprecedented amount of detailed data throughout the rule, much of which is not important to GHG emission calculations. We suggest that EPA remove §98.356(b) in its entirety from the final rule.

Response: EPA agrees with the commenter and has removed the requirement for percent wastewater treated from the final rule. However, the rule does require facilities to list the anaerobic processes at on-site wastewater treatment systems operated at the facility and whether biogas generated by the process is recovered. Further, for each anaerobic wastewater treatment process, facilities must report the volumetric flow rate of wastewater entering the process for each month it is operated. In addition, the rule requires facilities to report monthly average COD or BOD_5 concentration of wastewater entering each anaerobic wastewater treatment process, for each month the anaerobic process was operated.

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 54

Comment: In 98.356(b), EPA has proposed to require that systems report the "percent of wastewater treated at each system component." This is ambiguous. Industrial wastewater treatment plants are complex systems that can contain multiple treatment steps that proceed in

both parallel and series. Portions of the wastewater can be removed from or added to the system at different points. Multiple conclusions can be drawn from the request: Is EPA seeking the amount of wastewater that is treated: 1. In an anaerobic digester vs. other anaerobic technology? 2. In an anaerobic digester or other technology vs. aerobic technology? 3. In a neutralization basin? 4. In an equalization basin? 5. In an oil/water separator? In addition, this information is not required for determining the GHG emissions from the facility. As discussed elsewhere in these comments, EPA has proposed to request an unprecedented amount of detailed data throughout the rule, much of which is not important to GHG emission calculations. We suggest that EPA remove 98.356(b). In98.356(m), (n), (o), EPA has proposed to require that the data from continuous methane, temperature and pressure monitors be submitted. As written, this is an overwhelming request. Continuous monitors will collect a data point many times per minute. This means that EPA will require facilities to submit millions of data points every year. EPA has never before required such information to be submitted for emissions inventory reports and should not begin now. As discussed elsewhere in these comments, EPA has proposed to request an unprecedented amount of detailed data throughout the rule. Detailed data such as methane content, temperature, and pressure should be retained onsite rather than reported and made available for inspection in keeping with existing practice. We suggest that EPA remove 98.356(m), (n), (o). In 98.356(r), EPA has proposed to require that facilities with anaerobic digesters report "fugitive methane." This is also ambiguous. As EPA highlights, [Footnote: 74 FR 16529, April 10, 2009] it uses multiple definitions for "fugitive." For example, in some sections, "fugitive" includes flare emissions but in other sections, it is excluded. However, there is no clarification of which definition EPA intends for wastewater plants in the Preamble, Technical Support Document, or proposed rule language. For Subpart II, EPA should define "fugitive methane" emissions to be that methane which is fed to the destruction device (e.g. flare, engine)

Response: With regard to the reporting of data from continuous methane, temperature, and pressure monitors, please see the response to EPA-HQ-OAR-2008-0508-0423.2, excerpt 158.

With regard to the requirement for reporting percent wastewater treated, please see the response to EPA-HQ-OAR-2008-0508-0423.2, excerpt 157.

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 49

Comment: Section 98.356(n) should read as follows: Temperature at which flow is measured (if required for Equation II-4 at facilities with anaerobic digesters). Section 98.356(o) should read as follows: Pressure at which flow is measured (if required for Equation II-4 at facilities with anaerobic digesters).

Response: Section 98.356 has been revised such that subsection (d) (4) (formerly section n) now states: "Monthly average temperature for each month at which flow is measured for biogas collected for destruction, or statement that temperature is incorporated into monitoring equipment internal calculations." In addition, subsection (d) (6) (formerly section o) now states: "Monthly average pressure for each month at which flow is measured for biogas collected for destruction, or statement that pressure is incorporated into monitoring equipment internal calculations."

9. COST DATA

Commenter Name: Karin Ritter
Commenter Affiliation: American Petroleum Institute (API)
Document Control Number: EPA-HQ-OAR-2008-0508-2167.1
Comment Excerpt Number: 4

Comment: The following summarizes API member company feedback on parameters EPA used to develop the cost implications for Subpart C. The responses below represent feedback from 7 U.S. refineries, with capacities ranging from 50 to over 300 KBPCD (thousand barrels per calendar day).

Subpart II (Wastewater Treatment) Costs:

1. EPA assumes the following annual costs associated with Subpart II: $871 to collect and organize flow data, $795 for sampling, $361 to calculate and report emissions, and $973 for labor and calibration kits.

2. API members estimated a cost of approximately $10,000 to operate the continuous measurement system, including the cost to calibrate the analyzers monthly and to compile annual emission reports.

3. API members estimated a cost range of $5,000 to $10,000 for collecting and analyzing COD wastewater samples.

4. API members estimated a cost of approximately $100,000 per facility to purchase and install flow meters and tank temperature sensors.

5. API members estimated a cost range of $10,000 to $50,000 for additional O&M, reporting, monitoring, and QA/QC associated with the rule.

Response: EPA considers that API member company feedback substantially overstates the cost petroleum refineries will incur to meet Subpart II reporting requirements.

1. EPA revised its estimated annual costs associated with Subpart II, based on the following unit costs –
    a. EPA estimated $480 to collect and organize flow rate of wastewater entering each anaerobic wastewater treatment process.
    b. EPA estimated $2,600 for determination of COD or BOD_5 concentration entering each anaerobic wastewater treatment processes, based on weekly sampling and analysis.
    c. EPA estimated $200/year for calculating and reporting the annual mass of methane generated and emitted by each anaerobic wastewater treatment process.
    d. EPA estimated $900/year for calibrating the gas composition analyzer for each anaerobic wastewater treatment process and anaerobic digester from which biogas is recovered and for calculating and reporting the annual methane emissions from the process.

2. EPA assumed facilities that recover biogas from their anaerobic wastewater treatment processes and anaerobic digesters would use a multi-gas non-dispersive infrared monitor (Inova 1316-1 or equivalent) to analyze the composition of the biogas. According to the product literature for this analyzer, the instrument is designed to be span-stable and frequent span calibration is not required to maintain accurate gas concentration measurements. Span calibration is recommended once per year.
3. EPA estimated $2,600 for determination of COD or BOD_5 concentration entering each anaerobic wastewater treatment processes. EPA assumed that facilities have existing wastewater sampling and analysis capabilities, because they must comply with NPDES discharge permit monitoring requirements, and would not incur additional capital costs for sampling equipment.
4. Subpart II does not require tank temperature sensors. EPA assumed that, at petroleum refineries, the flow rate of wastewater entering each anaerobic wastewater treatment process ranged from 0.4 to 8 MGD. EPA assumed facilities would install an 8"magnetic flow meter (McCrometer Ultra Mag, 150#, 316 stainless steel with NSF fusion bonded ultraliner, or equivalent). EPA estimated the installed cost for this meter as $7,235. EPA assumed that each refinery would require one new flow meter.
5. EPA estimated that all refineries operate one anaerobic wastewater treatment process, but that no refineries recover the methane generated from anaerobic wastewater treatment. Consequently, refineries will incur costs for monitoring wastewater flow and COD or BOD_5 concentration but will not incur costs for monitoring biogas composition or calculating annual methane recovery. EPA estimated that each refinery would expend $3,963 associated with Subpart II.

Documentation for these costs are available in the Memorandum: Greenhouse Gas Reporting Rule, Industrial Wastewater Treatment Source Category, Costs for Final Rule Monitoring Requirements – Revised, March 5, 2010. [see docket EPA-HQ-OAR-2009-0508 for a copy of this document]

Commenter Name: Robert Rouse
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2008-0508-0533.1
Comment Excerpt Number: 51

Comment: EPA did not provide cost estimates for the continuous monitoring requirement. Typical costs of the uninstalled instrument can be as high as $40,000 [footnote: Anderson, Russell. *Preparing Your Landfill for an Offset Project*. SCS Engineers. December 11, 2008.] each with installed costs of $60,000[footnote: *Continuous Methane Gas Analyzer Bid Summary*. Steuben County (NY) Purchasing Department. PW-08-062-B. 1/26/09] or more each. This compares with periodic monitoring with instruments that can cost $8,000. [See DCN:EPA-HQ-OAR-2008-0508-0533.1 for References]. There are also difficulties with monitoring digester gas due to its saturated humidity and impurities. Conditions such as these increase the maintenance on a system and shorten the life of that system, both of which increase costs.

Response: For information on the frequency of monitoring required, please see EPA-HQ-OAR-2008-0508-0440.1, excerpt 15. EPA estimated the costs for monitoring the CH_4 concentration of recovered biogas. Please see the response to EPA-HQ-OAR-2008-0508-2167.1, excerpt 4 and EPA-HQ-OAR-2008-0508-0423.2, excerpt 154. EPA notes that monitors are typically installed

following in-line devices that control the moisture and hydrogen sulfide content of the biogas stream. Facilities install these in-line devices to reduce maintenance requirements and extend the life of biogas destruction devices. They will also reduce maintenance requirements and they extend the life of the CH_4 meter. EPA assumed that the CH_4 meter will have a 20-year operating life. See the Memorandum: Greenhouse Gas Reporting Rule, Industrial Wastewater Treatment Source Category, Costs for Final Rule Monitoring Requirements – Revised, March 5, 2010 [. [see docket EPA-HQ-OAR-2009-0508 for a copy of this document] .

Commenter Name: Stewart T. Leeth
Commenter Affiliation: Smithfield Foods, Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0553.1
Comment Excerpt Number: 18

Comment: In Section 98.353(c), EPA refers to daily biogas monitoring and 98.354(f) and 98.364(d) seem to imply that continuous monitoring by gas chromatography is required for methane concentration on anaerobic digester systems. (74 Fed. Reg. at 16,705-08). This requirement is unnecessarily burdensome and costly for food processing plants and livestock producers with anaerobic digester systems. Gas chromatography equipment for methane analysis costs approximately $15,000, requires frequent calibrations, and is generally beyond the operational capabilities of food processing plant operators. As a practical matter, daily analysis is not required because biogas quality does not vary substantially from day to day or month to month. The Chicago Climate Exchange (CCX) only requires annual testing by an approved laboratory and the California Climate Action Registry (CCAR) only requires quarterly analysis by portable hand held equipment. EPA should adopt a similar approach.

Response: For information on the frequency of monitoring required, please see EPA-HQ-OAR-2008-0508-0440.1, excerpt 15.

Because methane is typically the only combustible gas in biogas generated from food processing wastes, weekly monitoring by a combustible gas monitor (with appropriate temperature and pressure corrections) may be used to calculate the amount of methane recovered.

Table 1

COMMENTER	AFFILIATE	DCN
Mark Dopp	American Meat Institute (AMI)	EPA-HQ-OAR-2008-0508-0440.1
Stewart T. Leeth	Smithfield Foods, Inc.	EPA-HQ-OAR-2008-0508-0553

Table 2

COMMENTER	AFFILIATE	DCN
James Greenwood	Valero Energy Corporation	EPA-HQ-OAR-2008-0508-0571.1 EPA-HQ-OAR-2008-0508-0571.2
Charles T. Drevna	National Petrochemical and Refiners Association	EPA-HQ-OAR-2008-0508-0433.1 EPA-HQ-OAR-2008-0508-0433.2

Table 3

COMMENTER	AFFILIATE	DCN
Karin Ritter	American Petroleum Institute (API)	EPA-HQ-OAR-2008-0508-0679.1
James Greenwood	Valero Energy Corporation	EPA-HQ-OAR-2008-0508-0571.1
William W. Grygar II	Anadarko Petroleum Corporation EPA-HQ	-OAR-2008-0508-0459.1