ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 60

[AD–FRL–6172–9]

RIN 2060–AE94

Standards of Performance for New Stationary Sources: Volatile Organic Compound Emissions From the Synthetic Organic Chemical Manufacturing Industry Wastewater; Supplement to Proposed Rule

AGENCY: Environmental Protection Agency (EPA).

ACTION: Supplemental to proposed rule and notice of public hearing.

SUMMARY: On September 12, 1994, the EPA proposed Standards of Performance for New Stationary Sources: Volatile Organic Compound Emissions from the Synthetic Organic Chemical Manufacturing Industry Wastewater. On October 11, 1995, the EPA issued a supplement to the proposal. The action proposed today clarifies and revises the previously proposed rule and proposes to add Appendix J to part 60.

Volatile organic compounds (VOC), when emitted into the ambient air, are precursors to the formation of tropospheric ozone. A wide variety of acute and chronic respiratory health effects and welfare (e.g., agricultural, ecosystem) effects have been attributed to concentrations of ozone commonly measured in the ambient air throughout the U.S.

Appendix J to part 60, How to Determine Henry's Law Constants, Fm Values, Fr Values, and Fe Values for Organic Compounds, is being proposed today. This appendix provides the methodology for determining Henry's law constants, fraction measured (Fm) values, fraction removed values (Fr), and fraction emitted (Fe) values.

DATES: *Comments.* Comments must be received on or before February 8, 1999. Requests for a hearing must be received on or before December 24, 1998.

Public Hearing. Anyone requesting a public hearing must contact the EPA no later than December 24, 1998. If a hearing is held, it will take place on January 8, 1999, beginning at 10:00 a.m.

ADDRESSES: *Comments.* Comments should be submitted (in duplicate, if possible) to: Air and Radiation Docket and Information Center (6102), Attention Docket Number A–94–32 (see docket section below), Room M–1500, U.S. Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460.

Public Hearing. If a public hearing is held, it will be held at the EPA's Office of Administration Auditorium, Research Triangle Park, North Carolina. Persons interested in attending the hearing or wishing to present oral testimony should notify Ms. JoLynn Collins, U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, telephone (919) 541–5671 or by electronic mail (e-mail) to collins.jolynn@epamail.epa.gov.

Docket. Docket No. A–94–32, containing the supporting information for the proposed NSPS, are available for public inspection and copying between 8:00 a.m. and 5:30 p.m., Monday through Friday, at the EPA's Air and Radiation Docket and Information Center, Waterside Mall, Room M–1500, first floor, 401 M Street SW, Washington, DC 20460, or by calling (202) 260–7548 or 260–7549. A reasonable fee may be charged for copying.

Portions of the HON wastewater docket, Docket No. A–90–23, specifically sections II–A, II–B, II–I, III–B, IV–A, IV–B, IV–J, and VII–B, are incorporated by reference into Docket No. A–94–32 and are available at the Air and Radiation Docket and Information Center as well.

FOR FURTHER INFORMATION CONTACT: For questions about this proposed rule, contact Ms. Mary Tom Kissell, Waste and Chemical Processes Group, telephone (919) 541–4516 or e-mail to kissell.mary@epamail.epa.gov. Her mailing address is Emission Standards Division (MD–13), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711. For questions about Fm, Fr, Fe, Henry's law constants, or WATER8, contact the Air Emissions Models Hotline, telephone (919) 541–5610. For questions about applicability, contact the appropriate EPA regional office or Ms. Marcia Mia, Office of Enforcement and Compliance Assurance, telephone (202) 564–7042.

SUPPLEMENTARY INFORMATION: Comments on the revisions to the proposal may also be submitted electronically by sending e-mail to: a-and-r-docket@epamail.epa.gov. Electronic comments must be submitted as an ASCII file avoiding the use of special characters and any form of encryption. Comments will also be accepted on diskette in WordPerfect 6.1 or ASCII file format. All comments in electronic form must be identified by the docket number A–94–32. No Confidential Business Information (CBI) should be submitted through e-mail. Electronic comments may be filed online at many Federal Depository Libraries.

I. Regulated Entities and Background Information

A. Regulated Entities

The regulated category and entities affected by this action are included in Table 1 of this preamble.

TABLE 1.—EXAMPLES OF REGULATED ENTITIES

Category	Examples of regulated entities
Industry	Synthetic organic chemical manufacturing industry (SOCMI) units, e.g., producers of benzene, toluene, or any other chemical listed in Table 1 of 40 CFR part 60, subpart YYY.

Table 1 is not intended to be exhaustive but, rather, provides a guide for readers regarding entities likely to be interested in the revisions to the regulation affected by this action. Entities potentially regulated by the SOCMI wastewater NSPS are those which produce as primary products any of the chemicals listed in table 1 of 40 CFR part 60, subpart YYY. To determine whether your facility is regulated by this action, you should carefully examine all of the applicability criteria in § 60.770. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

B. Health and Welfare Effects of VOC

VOC, when emitted into the ambient air, are precursors to the formation of ozone at ground-level, where it can be harmful to breathe. It is the prime component of smog in cities. Exposure to ozone is associated with health effects and damage to vegetation. Ozone impairs normal functioning of the lungs and reduces the ability to perform physical exercise; the effects are more severe in individuals with sensitive respiratory systems. Symptoms associated with ozone exposure include cough, chest pain, and throat irritation. Emerging health effects information suggests some healthy adults engaged in moderate exercise for 6 to 8 hours may experience symptoms and reduction in lung function even at exposure levels below the current ozone health standard. Of perhaps greater concern are the potential chronic health effects that may result from repeated exposure to ozone over many seasons or a lifetime, such as inflammation of lung tissue, which precedes permanent scarring of lung tissue. Animal studies have shown that chronic ozone exposures of months to years do indeed cause permanent

reductions in lung function and lung tissue damage.

Children are at a higher risk from ozone exposure than adults. They breathe more air per pound of body weight than adults and they spend more time outdoors, especially in the summer, when exposure to ozone is more prevalent. Because children's respiratory systems are still developing, they are more susceptible than adults to environmental threats.

Studies of the major cash crops in the U.S. indicate that ozone is responsible for several billion dollars in agricultural crop yield loss each year. Ozone also causes noticeable foliar damage in many crops which reduces marketability and value. Finally, it appears that ozone is responsible for forest and ecosystem damage, which may be exhibited as foliar damage, reduced growth rate, and increased susceptibility to insects and disease.

Some VOC that would be regulated by this rule, including benzene, hexane, methyl ethyl ketone, toluene, and naphthalene, are also organic hazardous air pollutants. These organic hazardous air pollutants are known to cause a range of adverse health effects such as: increased risk of cancer, aplastic anemia, pancytopenia, chromosomal breakages, weakening of bone marrow, polyneuropathy (muscle weakness and numbness), and cataracts and anemia in infants.

C. Background on the Rule

On September 12, 1994 (59 FR 46780), the EPA proposed the NSPS for SOCMI wastewater in the **Federal Register**. On October 11, 1995 (60 FR 52889), the EPA published a supplement to the proposed NSPS for SOCMI wastewater in the **Federal Register**. Both of these notices are also available on EPA's Technology Transfer Network (TTN) via the Internet. The Internet address is http://www.epa.gov/ttn/. Select the CHIEF Bulletin Board once you access the TTN and then select the menu item Title I. The file names are socmireg.zip and suplprop.zip, respectively.

II. Overview of Changes to the Proposed Rule

Today the Agency is proposing revisions that are designed to clarify provisions of the proposed 40 CFR, part 60, subpart YYY. These proposed revisions address some of the public comments received in response to the September 1994 and October 1995 notices and incorporate some of the provisions promulgated in the HON, published on January 17, 1997 (62 FR 2721). If promulgated, the proposed revisions retain the same basic control requirements and best demonstrated technology as the proposed rule. Best demonstrated technology for this rule was discussed in the September 12, 1994 preamble, 59 FR 46733. A summary of the revisions is provided in the following paragraphs.

The applicability and date of compliance section (§ 60.770) has been revised to improve clarity and incorporate certain concepts relevant to applicability of the rule. Concepts such as designated chemical process unit and primary product have been added. The requirement that an affected facility must generate a wastewater stream has been removed. Modified facilities will have to be in compliance by initial startup or promulgation, whichever is later. In addition, provisions have been added to § 60.772 to clarify how to determine whether an affected facility has been modified.

Seven sections have been substantially revised in today's amendments to improve clarity and to incorporate the new ''point of determination'' concept discussed in section VI. of this preamble. The seven sections address the following topics: criteria for determining the Group 1 and Group 2 wastewater streams (§ 60.773); compliance options for wastewater tanks, surface impoundments, containers, individual drain systems, and oil-water separators (§ 60.774); performance standards for process wastewater (§ 60.779); procedures for determining Group 1 and Group 2 wastewater streams (§ 60.782); procedures for demonstrating compliance (§ 60.783); alternative monitoring and recordkeeping systems, one excursion per control device per day, excused excursions, clarification of monitoring parameter value violations, and Notification of Compliance Status (§ 60.784); and recordkeeping provisions (§ 60.785). Also, sections addressing aqueous in-process streams (§ 60.775); maintenance wastewater (§ 60.776); and, start-up, shutdown, and other provisions (§ 60.787) have been added.

Changes are also proposed to the sections governing control devices, delay of repair, monitoring, recordkeeping, and reporting, and the proposed rule's relationship to other rules. The list of SOCMI chemicals that trigger the rule's applicability was previously in § 60.788; it is now in Table 1 to subpart YYY. Other tables have been added to the subpart, and all the tables have been renumbered.

As a result, today's provisions are being proposed in §§ 60.770 through 60.789, in Tables 1 through 14, and in appendix J to part 60. This preamble is organized in the order of the proposed rule sections.

III. Revisions to Requirements for Determining Applicability and Date of Compliance (§ 60.770)

A. Applicability and Affected Facility Determination

1. Overview of Applicability and Affected Facility Determination

The application of the NSPS to SOCMI wastewater facilities under both the September 1994 proposal and today's revisions is predicated on a chemical process unit (CPU) that produces a chemical on the list of SOCMI chemicals in Table 1, and that commences construction or reconstruction, or is modified after September 12, 1994. However, today's revisions add the designated CPU concept, remove the requirement that an affected facility must generate a wastewater, add the primary product concept, provide a list of processes which are not considered SOCMI processes, clarify how storage vessels are assigned to a CPU, and include other clarifying edits.

2. Chemical Process Unit and Designated Chemical Process Unit

The term ''chemical process unit'' is used instead of ''process unit,'' which was used in the September 1994 proposal. These two terms and the term ''chemical manufacturing process unit'' used in the HON have essentially the same meaning. The difference is that the definition of chemical process unit does not include transfer racks. Transfer racks were removed from the definition because the amount of wastewater they generate is insignificant and more difficult to control as compared to individual drain systems and storage vessels.

The chemical process unit (CPU) is the basis for determining whether the process equipment is SOCMI as it was for the original proposal. As explained in section IV.D. of the September 12, 1994 preamble, using the CPU as the basis for the applicability determination has several advantages including maintaining consistency with the HON and reflecting industry construction practices.

While the CPU is the basis for determining SOCMI, today's revisions propose using the ''designated CPU'' as the basis for determining whether construction, reconstruction, or modification has occurred. The designated CPU is either the entire CPU, a process line within the CPU, or a combination of process lines within the CPU. The owner or operator may assign

either a process line, or combination of process lines, within the CPU as a designated CPU. However, once the assignment of process lines and associated storage vessels has been made, it is irrevocable.

EPA believes incorporating the designated CPU concept would add flexibility for industry while supporting EPA's long-term goals of protecting human health and the environment. Industry commented that the cost of compliance with the rule would, in some cases, be many times greater than the cost of the change. This could result in unintended consequences, such as reluctance to make process improvements, that would be damaging to industry's ability to compete in the world market. In addition, EPA believes that changes in SOCMI are on-going and that most designated CPU's would meet the applicability criteria of the rule over time.

The proposed rule excludes certain processes from the definition of CPU because they are not SOCMI processes, but are sometimes associated with SOCMI. Other SOCMI rules have also excluded these processes. The processes excluded are as follows: (1) research and development facilities; (2) petroleum refining processes (but not CPU located at petroleum refinery plant sites); (3) chemical process units located in coke by-product recovery plants; (4) solvent reclamation, recovery, or recycling operations at hazardous waste treatment, storage, and disposal facilities (TSDF) requiring a permit under 40 CFR 270 that are not part of a CPU; and, (5) organic chemicals extracted from natural sources or totally produced from biological synthesis such as pinene and beverage alcohol. Determinations for excluding processes must be based on the designation for the process unit, in contrast to the plant site.

3. CPU Must Manufacture a SOCMI Product as its Primary Product

Today's action incorporates the concept of ''primary product'' into the rule's applicability determination. The primary product determination is made for a CPU. If the product(s) of the CPU, on a mass basis, are comprised of 50 percent or more of the SOCMI chemicals listed in Table 1 of the rule, the CPU's primary product is SOCMI. For purposes of this rule, ''product'' includes products, co-products, and by-products manufactured by the CPU. ''Product'' does not include isolated intermediates, impurities, wastes, and trace contaminants.

The primary product determination is dependent upon the quantity of each chemical produced by the CPU and whether expected use of the CPU is known. The primary product provisions address both cases: (1) the expected use of the CPU is known for a 12-month period and (2) the expected use of the CPU is unknown for a 12-month period. When owners or operators know the expected use of the CPU, the primary product determination is based on the mass of product produced. If a CPU produces 50 percent or more, by mass, of the chemicals listed in Table 1, the primary product is SOCMI.

For some contract manufacturing units, the owner or operator may not be able to predict production sufficiently to make a primary product determination. In these cases, the primary product of the CPU is SOCMI once the facility begins producing a SOCMI chemical or has a contract to produce a SOCMI chemical.

EPA adopted the primary product approach to simplify applicability determinations, to limit the applicability of the rule to those CPU that produce mostly the chemicals listed in Table 1 of the rule, and to make the proposed rule more like the HON.

The revised proposed rule simplifies the determination of SOCMI in two ways. First, together with the definition of ''product,'' it clarifies the meaning of the terms ''product'' and ''to produce'' and the correct way to decide whether a source ''produces'' a listed chemical. Second, the primary product concept provides clear criteria for making a determination.

The primary product concept also limits the applicability of the rule to CPU that produce mostly SOCMI products. In the September 1994 proposal, by-products, co-products, and intermediates produced by the CPU and listed in Table 1 of the rule, in any amount, made the CPU a SOCMI unit. This could have resulted in numerous non-SOCMI process units, such as pharmaceutical units, being designated SOCMI and being subject to the SOCMI Wastewater NSPS. The proposal addresses this by establishing the 50 percent threshold. Although this change will reduce the number of CPU affected by the rule, it more accurately reflects the SOCMI source category.

EPA believes that making the SOCMI Wastewater NSPS as much like the HON as possible will facilitate implementation of the rule. The HON and the SOCMI Wastewater NSPS will regulate the same types of process units and treatment processes, and in some cases, the same process units and treatment processes. Thus, the primary product concept was adopted for the proposal.

Today's revisions use expected annual production as the basis for determining the mass for each product. Expected annual production is proposed instead of annual design capacity to accommodate CPU designed and operated to manufacture more than one chemical. Typically these facilities are contract manufacturing facilities, also known as tolling or multi-purpose facilities or flexible operations facilities. Using expected annual production allows a facility to more closely represent actual production rather than basing the primary product decisions for each chemical on annual design capacity. The facility would also have to report the CPU's annual design capacity. However, EPA is concerned whether this approach creates potential burden for regulating agencies and requests comment on whether expected production or design capacity should be used.

4. Designated CPU Must Have Been Constructed, Reconstructed or Modified After September 12, 1994

To be subject to this proposed rule, a designated CPU must have been constructed, reconstructed, or modified after September 12, 1994.

5. Affected Facility Must Generate a Process Wastewater, a Maintenance Wastewater, and/or an Aqueous In-Process Stream for Control Requirements To Apply

In the original proposal, an affected facility had to be a process unit that generated wastewater. ''Wastewater'' included process wastewater and maintenance wastewater. Today's revised proposal removes ''generating wastewater'' as a criteria for determining applicability.

This change to the applicability determination was done for two reasons. First, to remove maintenance wastewater from triggering applicability of the rule to a designated CPU. Maintenance wastewater is generally more difficult to quantify and EPA believes is a less significant source of VOC emissions than process wastewater for this source category. Second, in the September 1994 proposal, ''wastewater'' was defined as ''an organic containing water . . .,'' without regard to the concentration of VOC in the wastewater. Today's revised proposal, adds a concentration of 50 part per million, by weight, (ppmw) into the wastewater definition. Thus, low concentration wastewater streams that would have triggered applicability in the original proposal would not do so with the revised wastewater definition. EPA intends that a designated CPU that is

new or reconstructed or modified after September 12, 1994 and that is part of a CPU that produces SOCMI as its primary product control process wastewater streams, maintenance wastewater streams, and aqueous in-process streams when the streams are generated.

EPA recognizes that affected facilities that do not generate wastewater or aqueous in-process streams should not be subject to all the reporting and recordkeeping requirements. Therefore, EPA has specified that affected facilities that do not generate process wastewater streams, maintenance wastewater streams, or aqueous in-process streams are exempt from most of the provisions of the subpart. If the affected facility began generating a process wastewater stream, a maintenance wastewater stream, or aqueous in-process stream, it would have to comply with all applicable provisions of the subpart at the time of the change.

6. Applicability of Part 60 and Part 63 General Provisions

Today's proposal adds table 2 and table 2A, which clarify the 40 CFR part 60 and part 63 general provisions that apply to this rule. There was a need for selected part 63 general provisions to apply to this part 60 rule because the part 60 general provisions do not contain certain provisions that were used by the HON and are necessary for compliance with this rule. The applicable part 63 general provisions pertain to the start-up, shutdown, and malfunction plan, performance testing requirements, control device requirements, and delegated authority.

B. Date of Compliance

In October 1995 the Agency proposed to allow modified sources undergoing significant capital improvements an additional three years to come into compliance with the SOCMI Wastewater NSPS. The additional time would have been subject to the Administrator's approval and would have required documentation of the need for more time.

Today's revised proposal would require that all affected facilities be in compliance with the NSPS no later than initial start-up of an affected facility or promulgation of the rule, whichever is later.

In response to the September 1994 proposal, several commenters wrote that the applicability and compliance provisions were unclear making it difficult for them to implement any requirements. In addition, EPA recognizes that some facilities may require several months or years lead time to complete large capital projects such as retrofitting sewers and designing and installing steam strippers. Facilities need time to determine whether the rule applies to them, familiarize themselves with the rule, choose a compliance option, design the necessary equipment, and construct and renovate as needed.

To provide time for facilities that commenced construction, reconstruction, or modification between September 12, 1994 and the promulgation date, EPA is proposing to promulgate this rule no earlier than spring 2000. Appendix J to part 60 may be promulgated earlier.

Facilities commencing construction, reconstruction, or modification after the promulgation date will be required to be in compliance upon initial start-up. As is the case under all other NSPS, facilities will have to plan ahead to complete any necessary construction at a facility so as to be in compliance with the NSPS upon start-up of operations.

Today's revised proposed rule would limit modifications to changes costing 12.5 percent or more of the cost of the existing facility. This is discussed in section V. of this preamble. Because the cost test precludes relatively smaller changes from triggering the NSPS, only larger projects will be modifications. The larger projects take more time to plan and implement, giving the facility time to plan for compliance. Therefore, the facilities that become modified after the promulgation date will have adequate notice of the requirements and sufficient time to plan for compliance.

IV. Revisions to the Definitions (§ 60.771)

A. Overview of Changes to the Definitions

1. Definitions Added

Significant changes were made to the definition section of the rule. The following definitions were added to § 60.771: aqueous in-process stream; automated monitoring and recording system; chemical process unit; closed biological treatment process; designated chemical process unit or designated CPU; enhanced biological treatment system or enhanced biological treatment process; flexible operation unit; Fbio; Fe; Fr;, Fr; fuel gas; fuel gas system; incinerator; initial start-up; modification; non-automated monitoring and recording system; on-site or onsite; open biological treatment process; petroleum refining process or petroleum refining process unit; plant site; point of determination; product; recapture device; recovery device; research and development facility; shutdown; specific gravity monitoring device; start-up; start-up, shutdown, and malfunction plan; steam jet ejector; storage vessel; tank drawdown; unit operation; volatile organic compound or VOC; and wastewater tank.

2. Definitions Removed

The following definitions were removed from § 60.771: mass flow rate, operating parameter value, point of generation, process unit, process unit shutdown, tank, and volatile organic concentration.

3. Definitions Changed

The following definitions were changed: annual average concentration, annual average flow rate, boiler, closed-vent system, container, continuous record, continuous recorder, continuous seal, control device, cover, duct work, flame zone, flow indicator, hard-piping, individual drain system, oil-water separator or organic water separator, process wastewater, residual, sewer line, temperature monitoring device, treatment process, waste management unit, wastewater, and wastewater seal controls. Most of these revisions were to make the definitions in today's proposed rule consistent with those in the HON.

B. Significant Definitional Changes

Significant definitional changes proposed are as follows: revisions to the ''wastewater'' definition; revisions to the ''product'' definition; replacement of the ''point of generation'' (POG) definition with ''point of determination'' (POD) definition; addition of ''closed'' and ''open biological treatment process'' definitions; addition of the ''enhanced biological treatment system'' definition; revisions to the ''individual drain system'' definition; and, revisions to the ''VOC'' definition.

The definitions of ''wastewater,'' ''recovery device,'' and ''point of generation'' were revised to clarify EPA's intent concerning which VOC-containing waters are in-process fluids regulated by the provisions in § 60.775 and which are wastewater and regulated by the provisions in § 60.773 and § 60.779 through § 60.783.

1. Revised Wastewater Definition

The most significant change proposed today to the ''wastewater'' definition is the addition of the concept of ''discard.'' This concept is fundamental to distinguishing which fluids exiting the CPU are subject to the SOCMI Wastewater NSPS provisions in § 60.773. Adding ''discard'' to the definitions provides a clear demarcation

between those fluids no longer useful to that production process, i.e., discarded, and those fluids that add value to that production process. Together with the point of determination and aqueous in-process stream concepts, the revised definition of wastewater makes it easier for facilities and regulatory authorities to implement the rule.

2. Replaced Point of Generation With Point of Determination

Today's revised proposal changes the definition of ''point of generation'' to ''point of determination.'' The change is to reflect a conceptual difference. ''Point of generation'' was defined in the September 1994 proposed rule as ''the location where process wastewater exits the process unit equipment.'' In today's revised proposal, it has been replaced by ''point of determination'', which is defined as ''each point where the process wastewater exits the chemical process unit,'' often the last recovery device. The need for and significance of this change is discussed in more detail in section VI.B. of this preamble.

3. Recovery Device

Today's revised proposed rule includes a revised definition of ''recovery device.'' The proposed definition of ''recovery device'' differs from the existing definition in order to reflect the revised approach to the definition of ''wastewater'' and to reflect the fact that deviations from normal operations do occur. This was discussed in the HON preamble of August 26, 1996 (61 FR 43710).

The revised definition of ''recovery device'' is intended to eliminate the potential for sham transactions involving the ''sale'' of wastewater by limiting the concept of sales to sales for the same general purposes for which chemicals may be recovered and used within the facility (i.e., use, reuse, or burning as fuel). The EPA believes that the revised definition is broad enough to encompass any sale that is not a sham since ''use'' and ''reuse'' are very general concepts. The definition also differs from the existing definition in that the word ''normally'' now modifies the phrase ''used for the purpose of recovering. . . .'' This change was made to recognize that occasional exceptions to normal usage can and will arise.

4. Added Definitions for Closed Biological Treatment Process, Open Biological Treatment Process, and Enhanced Biological Unit

Definitions for closed biological treatment process, open biological treatment process, and enhanced biological treatment system were added to the definitions in § 60.771. The new definitions are necessary to make distinctions among biological treatment processes which allow the incorporation of more flexible and less burdensome compliance demonstrations for some facilities. This is discussed in more detail in the discussion of changes to § 60.783 in section XI. of this preamble.

5. Modified Individual Drain System Definition

The definition for individual drain system would be modified to clarify three key concepts and incorporate minor wording changes. The definition in today's proposal would clarify that only stationary systems are included in the definition; that individual drain systems are used to convey residuals as well as wastewater streams; and that the individual drain system does not include in-process equipment as described in § 60.775.

6. Modified VOC Definition

VOC, for the purposes of this subpart, are defined to be those substances already defined as volatile organic compounds in 40 CFR section 51.100(s) and that are not excluded or exempted by that section, except that any substance with a Henry's law constant less than or equal to 0.1 y/x atmosphere per mole fraction as determined according to Appendix J of this subpart is not a VOC for the purposes of this subpart.

This definition of VOC reflects EPA's belief that chemicals with lower Henry's law constants are not a significant source of VOC emissions from wastewater. A Henry's law constant of 0.1 y/x at 25°C is similar to the lowest Fe value for the HAP controlled by the HON. In selecting which compounds to control, EPA also considered a compound's biodegradability and Fr value. In general, lower volatility compounds are already significantly biodegraded and are not removed to a significant extent by steam stripping.

V. Revisions to Requirements for Determining Modification (§ 60.772)

1. Modification

Today's proposed rule revises § 60.772 to clarify how to determine whether a designated CPU has been modified such that it is subject to the SOCMI Wastewater rule. The revisions add a definition of ''modification'' in § 60.771; clarify that the designated CPU is used as the basis of modification determinations; provide exclusions to modification; and, provide procedures to determine increases from process wastewater and aqueous in-process streams.

Modification, as defined in § 60.771, means ''any physical change in, or change in the method of operation of, an existing designated CPU which increases or creates emissions to the atmosphere of VOC from process wastewater and/or aqueous in-process streams generated by the designated CPU, except as provided in § 60.772(c).'' This definition supersedes for the purposes of subpart YYY the definition in § 60.2 of the General Provisions to 40 CFR, part 60. The proposed definition incorporates the concept that only process wastewater and aqueous in-process streams are considered for modification determinations; maintenance wastewater is not considered. It also states that the basis of the modification is the designated CPU, making the modification provisions consistent with the applicability provisions for subpart YYY.

Today's revisions also replace the exclusions to what constitutes a modification in § 60.14(e) of the general provisions with four exclusions. Three of these are similar to exclusions provided by § 60.14(e)—maintenance, repair, and replacement, including replacement of spent catalyst with the same catalyst; increase in hours of operation; and, relocation or change in ownership of an existing facility.

The fourth exclusion is for changes that cost less than 12.5 percent of the cost of the existing designated CPU. This concept is also used in the SOCMI rule for equipment leaks, subpart VV to part 60. It is meant to encompass any change, including, an increase of production rate, environmental control, and bottleneck removal. One reason a percent cost exclusion was added is in recognition that SOCMI equipment routinely undergoes small changes and that EPA does not intend small changes to constitute a modification for this rule. Another reason is that this exclusion provides a clear and simple statement of what is not a modification. EPA chose 12.5 percent because 12.5 percent was used in the SOCMI rule for equipment leaks, subpart VV to part 60. In addition, the General provisions to part 60 use the 12.5 percent level in an exclusion for an increase in production rate (see § 60.14(e)(2), § 60.14(2), definition of ''capital expenditure, and Internal Revenue Service Publication 534). When two or more physical or operational changes are reasonably viewed as a project, the cost of the entire project should be considered when determining the 12.5 percent.

Today's proposed revisions add provisions for determining whether an increase in VOC emissions from process

wastewater or aqueous in-process streams has occurred or will occur. The proposed provisions make a distinction between flexible operations units and non-flexible operations units. The flexible operations units, which manufacture more than one product, choose one product as a baseline against which to compare emissions that occur due to changes. This approach was outlined in a memo entitled ''Clarification of Methodology for Calculating Potential to Emit (PTE) for Batch Chemical Production Operations' which was issued by John S. Seitz, the director of EPA's Office of Air Quality Planning and Standards, to the 10 EPA Regional Offices on August 29, 1996.

For both flexible operation units and non-flexible operation units, the owner or operator would calculate VOC emissions before and after a physical or operational change. The owner or operator may elect to determine the amount of VOC emissions by calculating VOC mass flow rate in the wastewater as a surrogate for VOC emissions or by calculating VOC emissions using a fraction emitted, Fe, value. The Fe value may be either a default Fe value or a site-specific Fe value. The default Fe values are listed in Table 2 of the proposed appendix J to this part. The site-specific Fe values are determined according to the procedures and forms specified in the proposed appendix J to this part.

Once the VOC mass flow rate or VOC emissions have been determined both before and after the change, they must be compared to determine whether the change caused an increase in VOC emissions to the atmosphere. When emissions are determined using mass flow rate as a surrogate for emissions, the VOC mass flow rate before the change for all process wastewater streams affected by the change are compared to the VOC mass flow rate after the change for all process wastewater streams affected by the change. The same comparison is done for aqueous in-process streams. If either comparison, i.e., the process wastewater comparison or the aqueous in-process streams comparison, demonstrates that VOC mass flow rate has increased after the change, the designated CPU is modified and becomes an affected facility. In contrast, when emissions are determined using Fe values, the sum of all affected process wastewater streams and all affected aqueous in-process streams before the change are compared to the sum of all affected aqueous in-process streams and all affected process wastewater streams after the change.

2. Reconstruction

Today's revisions clarify when costs begin accumulating for purposes of reconstruction, clarify the accumulation period, and add a requirement for documentation. The reconstruction of an affected facility subjects it to the NSPS because the replacement of the components of an existing facility eventually results in a new facility. The general provisions to 40 CFR, part 60 sets the level of replacement that constitutes reconstruction at 50 percent or greater of the cost of constructing a comparable new facility. EPA is proposing that the first day replacement costs for actual work, i.e., dismantling of equipment or construction, on the facility are incurred, the costs are ''charged'' to the designated CPU for the purpose of determining reconstruction. When replacement of components is reasonably viewed as a project, the cost of the entire project would be charged to the first day expenses were incurred. All replacement costs must be counted toward the reconstruction cost, regardless of whether costs arise from different projects.

The September 12, 1994 proposal set a time period of two years as the period that project costs should be aggregated and counted toward reconstruction. Today's notice clarifies that the two year period is a rolling two year period. A rolling two year period is not based on a specific set of dates. A rolling two year period allows any day to be used as the beginning point for the two year period. Thus, the two year period can be considered to any 730 consecutive days. The rolling two year period should be examined to see if all combined replacements to the facility cost 50 percent or more of the cost of constructing a new facility that would be comparable in cost to the existing facility. The cost of all projects incurred within a two year period would be added together.

VI. Revisions to the General Requirements for Process Wastewater (§ 60.773)

The EPA is proposing changes to the general process wastewater provisions in § 60.773. These provisions provide instructions on how to determine if a process wastewater stream requires control and the general outline of requirements for process wastewater streams. These changes are consistent with the changes made to the wastewater provisions in the HON rule. Significant changes proposed include the following: requirements for determining whether wastewater streams require control by determining Group 1 or Group 2 status, replacement of point of generation with point of determination, addition of prohibition of discarding certain organic material into water or wastewater, and the addition of off-site treatment requirements. The off-site treatment provisions require that an owner or operator may only ship to a facility that has certified that it will treat the wastewater to the standard required by the rule.

A. Group 1/Group 2 Status Determination

The EPA is proposing using Group 1 and Group 2 terminology to determine whether a process wastewater stream requires control for VOC. Determination of whether a process wastewater stream is Group 1 or Group 2 is based on annual average concentration and flow rate criteria. Control requirements for Group 1 wastewater streams require that VOC emissions be controlled until the VOC are either removed from the wastewater or destroyed. Group 2 wastewater streams are required to comply with certain recordkeeping and reporting requirements. The proposed control criteria of 500 ppmw at a flow rate of 1 liter per minute (lpm) or 10,000 ppmw at any flow rate have not changed.

B. Change From Point of Generation to Point of Determination

Today's revised proposed rule predicates the determination of the applicability of control requirements to a wastewater stream on its characteristics at the point where the wastewater stream exits the last piece of processing equipment. The new location for determining the characteristics of a wastewater stream is being called the point of determination (POD) to distinguish it from the POG concept used in other air rules for waste and wastewater such as the Benzene Waste NESHAP. In instances where the wastewater stream exits the process equipment and is not sent to a recovery device that recovers chemicals for fuel value, use, reuse, or for sale (for fuel value, use, or reuse) the POD would be the same as the POG location. The POD concept proposed for this rule is the same as used in the HON.

The EPA's intent in developing the POD approach is to have a clear decision criterion that specifies the location for evaluation of a wastewater stream for the purposes of control. The POD encompasses each point where process wastewater exits the last piece of process equipment, often the last recovery device. There can be multiple POD associated with a CPU or

designated CPU. This proposed definition of POD would allow a facility to recover chemicals for fuel value, use, reuse or for sale (for fuel value, use, or reuse). As with the POG, under the POD approach owners and operators would not be allowed to mix streams together for the purpose of escaping compliance by the diluting of wastewater streams. Under the POD approach, process units conveying process fluids in the chemical process unit are subject to the requirements established in Table 6 of the rule. Table 6 is consistent with the suppression requirements for a wastewater stream requiring control. Again, the intent is to allow process fluids that have recovery potential to be sent to recovery devices; however, these fluids are required to be managed to limit VOC emissions to the atmosphere. Process fluids that do not have recovery potential are considered wastewater streams at the point where the stream exits the process equipment. A more detailed discussion is available in section IV.D. of the HON preamble published on August 26, 1996 (61 FR 43698).

C. Prohibition of Discarding Certain Organic Materials into Water or Wastewater

Language that prohibits discarding of certain organic material into water or wastewater has been added to § 60.773. Specifically, liquid or solid organic materials containing greater than 10,000 parts per million of VOC may not be discarded into water or wastewater unless the receiving stream is managed and treated as a Group 1 wastewater stream. The prohibition would exclude equipment leaks; activities included in maintenance or start-up/shutdown/malfunction plans; spills; and samples. This paragraph was added to ensure that high concentration organic streams, such as off-specification product, are discarded only to individual drain systems and treatment processes meeting the requirements for Group 1 wastewater streams.

D. Addition of Off-Site or Third-Party Treatment Requirements

Today's proposed rule would allow owners and operators to transfer Group 1 wastewater streams or residuals off-site for treatment provided the transferee certifies to EPA (and provides a copy to the owner or operator) that it will manage and treat the wastewater streams or residuals in accordance with this rule's provisions. These provisions were revised to provide a means to allow transfers of treatment responsibility without holding the owner or operator responsible for the actions of another and are consistent with the HON provisions.

VII. Revisions to Requirements for Wastewater Tanks, Surface Impoundments, Containers, Individual Drain Systems, and Oil-Water Separators (§ 60.774)

Today's revised proposed rule adds additional compliance options for wastewater tanks, surface impoundment, containers, individual drain systems, and oil-water separators. The six compliance options that may be selected are as follows: HON, part 63, subparts F and G; Standard-standards, part 63, subparts QQ, PP, RR, and VV; Petroleum Refinery, part 60, subpart QQQ; RCRA, part 264, subpart CC; RCRA, part 265, subpart CC; and Benzene Waste, part 61, subpart FF.

Table 3 was added to today's revised proposed rule in order to indicate which of the six compliance options may be used as a control option for wastewater tanks, surface impoundment, containers, individual drain systems, and oil-water separators. Table 5 was added to today's revised proposed rule in order to identify the control requirements, monitoring provisions, recordkeeping provisions, reporting provisions, control device provisions, leak detection provisions, and delay of repair provisions for each of the six compliance options.

As shown in Table 3, the owner or operator must comply with the control requirements for one of the six compliance options. If an owner or operator has a waste management unit that is subject to any of the six compliance options, then the owner or operator may choose to comply with the delay of repair provisions, monitoring provisions, recordkeeping provisions, reporting provisions, control device provisions, and leak detection provisions in the selected compliance option or in this subpart. If an owner or operator was not subject to the control requirements for any of the six compliance options, then the owner or operator must comply with the delay of repair provisions, monitoring provisions, recordkeeping provisions, reporting provisions, control device provisions, and leak detection provisions of this subpart.

VIII. Addition of Requirements for Control of Certain Aqueous In-Process Streams (§ 60.775)

The revisions adding a new § 60.775 and Table 6 are an outgrowth of the change from the point of generation (POG) concept of the September 1994 rule to the point of determination (POD) concept in these revisions. As discussed in Section XI. of this preamble, the point of the determination concept is replacing the point of generation concept. The purpose of this new section is to ensure that VOC-containing fluids are properly managed in closed systems. Table 6 lists the applicable requirements for a drain or drain hub, manhole, lift station, trench, oil-water separator, and a tank.

In developing the point of determination approach, the EPA assumed that fluids containing organic compounds within the process would be managed in closed systems to minimize losses of a recoverable material. The provisions in Table 6 and the new § 60.775 were designed to ensure that conveyance and handling of process fluids containing volatile organic compounds would be handled in a manner consistent with the requirements for wastewater streams subject to control.

IX. Addition of Requirements for Maintenance Wastewater (§ 60.776)

The EPA is proposing changes to the maintenance wastewater requirements in the proposed rule. In the September 1994 proposal, maintenance wastewater and process wastewater were subject to the same provisions in § 60.773 and § 60.779. The maintenance wastewater provisions, which can now be found in § 60.776 of the rule, were changed to be consistent with the HON maintenance wastewater provisions. The provisions require the owner or operator to provide a description of their procedures for managing wastewater generated from the emptying and purging of equipment in the process during temporary shutdowns for inspections, maintenance, and repair and during non-shutdown periods such as routine maintenance. A description of these procedures will be included in a facility's start-up, shutdown, and malfunction plan.

X. Addition of Requirements for Determining Stream-Specific List of VOC (§ 60.778)

Today's revised proposed rule provides a procedure that would allow a facility to develop a stream-specific list of VOC. The stream-specific list of VOC could be used to estimate changes in emissions for modification determinations, to make Group 1 and Group 2 determinations, and to make compliance demonstrations. EPA believes adding these provisions provides flexibility without sacrificing compliance assurance. EPA is proposing to add these requirements as § 60.778.

A. Group 1 and Group 2 Determinations and Modification Determinations

When a stream-specific list of VOC is needed to make a Group 1 determination, the owner or operator must identify up to 75 chemicals (those with the greatest mass). The chemicals on the stream-specific list must represent at least 90 percent of the total VOC in the process wastewater stream. Chemicals with a concentration less than 1 ppmw can be excluded from the list. Method 25 D in appendix A to part 60 must be used when at least 90 percent of the total VOC in the wastewater stream cannot be identified. The same procedures are used when a stream-specific list of VOC is needed to estimate changes for modification determinations.

B. Compliance Determinations

When a stream-specific list is needed to make a compliance determination, three cases exist. The first case is when an owner or operator knows at least 90 percent of the total VOC in the wastewater stream. In this case, each chemical that has a mass of 5 percent or greater, must be included on the list. If less than half of the total VOC in the wastewater stream are represented by chemicals with a mass of 5 percent or greater, each chemical, up to 75 chemicals, must be on the stream-specific list. The second case is when an owner or operator knows at least 50 percent of the total VOC in the wastewater stream. In this case, the chemicals with the greatest mass that can be identified up to 75 chemicals are required to be included on the stream-specific list. For both of these cases, the owner or operator must: (1) ensure the stream-specific list of VOC is adequate to demonstrate compliance, and (2) document the method used to determine concentration and total VOC in the wastewater stream.

The third case is for all other streams. An owner or operator who cannot identifiy at least 50 percent of the total VOC in the wastewater stream must choose a compliance option that does not require speciation. Three compliance options do not require speciation: (1) the design steam stripper option (§ 60.779(d)); the 95 percent and outlet reduction of 50 ppmw mass removal/destruction option for nonbiological treatment process (§ 60.779(e)(2)); and, the steam stripper three compound option (§ 60.779(e)(3)).

XI. Revisions to Requirements for—Performance Standards for Process Wastewater (§ 60.779)—Procedures for Determining Which Process Wastewater Streams Require Control (§ 60.782)—Procedures for Determining Compliance (§ 60.783)

A. General

Three sections of today's proposed rule, §§ 60.779, 60.782, and 60.783, were revised to incorporate the point of determination concept and to add flexibility in the compliance demonstration for facilities using biological treatment processes to meet the requirements of subpart YYY. These revisions are based mostly on the HON. Revisions to § 60.782 include the addition of methods and an alternative validation procedure. The three sections referenced above are discussed together because a change made to one has generally also been made to the other sections. A specific change will be discussed where it first appears or has the most impact.

B. Changes to § 60.779, Process Wastewater Provisions—Performance Standards for Treatment Processes Managing Group 1 Wastewater Streams and/or Residuals Removed From Group 1 Wastewater Streams

Section 60.779 contains provisions for control of Group 1 wastewater streams and residuals from Group 1 wastewater streams. The most significant changes proposed to § 60.779 are: adoption of the Group 1/Group 2 terminology from the HON; deletion of the recycling control options; clarification on how to use speciated options within the existing compliance option framework; technical corrections to the design steam stripper specifications and removal of unnecessary specification of steam quality; clarification of compliance demonstration procedures that may be used for biological treatment processes; clarification that treatment in series is allowed; addition of provisions for a 1 megagram facility-wide exemption; and clarification of when design evaluations may be used to demonstrate compliance instead of performance tests.

1. Deletion of Recycling Options From § 60.779

The recycling option is unnecessary under the POD concept which replaces the POG concept. The recycling option allowed an owner or operator to achieve compliance by recycling a process stream to a process unit. The recycling provisions in paragraph (d) of the September 1994 proposed rule would have required that the wastewater or residual not be exposed to the atmosphere and that waste management units in contact with the wastewater streams or residual comply with control and inspection and monitoring requirements. With the proposed point of determination concept, the recycling option would become redundant because as long as a fluid stays in the process, it would not be a wastewater subject to the provisions of § 60.779; instead, it would be an aqueous in-process stream subject to the provisions of § 60.775.

2. Addition of Simplified Compliance Demonstration for Steam Strippers

Today's revisions include a compliance option for steam strippers that bases compliance on three VOC—methanol, ethylene glycol monobutyl ether acetate, and methyl ethyl ketone. This compliance option requires that the Fr value, expressed as a percentage, be achieved for each of the three compounds. This simplifies compliance demonstration by requiring a demonstration for three compounds instead of up to 75 compounds. This option could be used by a facility without identifying the compounds in the wastewater stream that are going to the steam stripper.

The EPA has defined design and operating specifications for a steam stripper, called the design steam stripper. The design steam stripper is the basis of the wastewater control requirements. Other steam strippers may provide equivalent or superior performance to the design steam stripper. Equivalent performance to the design steam stripper can be demonstrated based on compounds not present in the wastewater stream.

EPA chose methanol, ethylene glycol monobutyl ether acetate, and methyl ethyl ketone because they cover a range of volatilities. Methanol is only partially removed by the design steam stripper, and methyl ethyl ketone is removed at levels greater than 95 percent. The methanol removal is used to verify the steam rate. The methyl ethyl ketone removal is used to verify the separation performance of the steam stripper. The Henry's law constant of ethylene glycol monobutyl ether acetate is in between the Henry's law constant of methanol and methyl ethyl ketone. Consequently, the percent of ethylene glycol monobutyl ether acetate removed by the steam stripper should be in between the percents removed for the other two compounds. This helps provide verification of steam stripper performance.

When design evaluations are used to demonstrate compliance, the design

evaluation is based on the three compounds. The proposal specifies Henry's law constants at a 100 °C, expressed in atmosphere per mole fraction, that must be used in the design evaluation. These Henry's law constants and the Fr values for each compound are listed in Table 2 of this preamble.

Any computer model that can be used for accurate prediction of the steam stripper system of concern can be used. Depending on the complexity of the steam stripper system, some computer models may not be appropriate. Some examples of computer model failures include particulate buildup in the column, lack of ability to predict liquid phase separation, inability to partition compounds into oil and emulsified oil, and inadequate thermodynamic properties for the system of interest.

TABLE 2.—THREE COMPOUNDS USED FOR NEW COMPLIANCE OPTION AND ASSOCIATED HENRY'S LAW CONSTANTS AND FR VALUES

Compound	Fraction removed (Fr value)	Henry's law constant at 100° C (atm per mole fraction)
Methanol	0.31	7.73
Ethylene glycol monobutyl ether	0.76	24.96
Methyl ethyl ketone	0.95	59.2

When performance tests are used to demonstrate compliance, if the wastewater stream entering the steam stripper does not contain all three compounds, the wastewater stream must be spiked so that the percent removal of the compounds can be determined.

Today's revisions include two other compliance options that do not require speciation. They are the 95 percent mass removal with an outlet VOC concentration of 50 ppmw option and the design steam stripper option. EPA is aware that some in the regulated community are working to develop a nonspeciated method to demonstrate compliance with biological treatment units. If this procedure is demonstrated to be effective, EPA will consider adding it to these provisions.

3. Clarification That Treatment in Series is Allowed

The September 1994 proposed rule intended that more than one treatment process could be used to comply with the rule. Today's revised proposed rule explicitly provides for treatment in series in §§ 60.779 and 60.783 and clarifies EPA's intent on this issue. Although all Group 1 wastewater streams or residuals must be conveyed in controlled individual drain systems, treatment in series may be used whether or not treatment processes are connected by hard-piping. However, inlet and outlet mass flow rate determination for compliance demonstration differ, depending on whether hard-piping is used to connect treatment processes and whether a biological treatment process is part of the series.

4. Revised Provisions for the One Megagram Source-wide Exemption

The provisions for the 1 megagram option were clarified and revised and were moved from § 60.770 into § 60.779. In the September 1994 proposed rule, the 1 megagram exception could have been applied to each affected process at the plant site. The 1 megagram exemption in today's revised proposed rule is a source-wide exemption that is to be shared among affected facilities at the plant site. This change makes the rule more consistent with the HON.

C. Alternative Methods to Method 25D Used in § 60.782

Today's revised proposed rule would allow use of alternative methods for Group 1 or Group 2 determinations for process wastewater streams in lieu of Method 25D for all compliance options. The EPA reviewed Methods 624, 625, 1624, and 1625 and has determined that these methods may be used with certain additional requirements. These requirements are specified in § 60.782(b) of today's proposed rule. Other methods may be used if they are validated by the Method 301 validation procedure. EPA's review of these methods was discussed in section IV.F. of the HON preamble of 26 August 1996 (61 FR 43698).

D. Changes to § 60.783, Process Wastewater—Test Methods and Procedures To Determine Compliance

Section 60.783 indicates how to demonstrate compliance with the performance standards in § 60.779. Several significant changes are proposed to this section.

1. Reorganization of § 60.783

In today's proposal, three clarifications to § 60.783 are of particular note: (1) conditions under which a performance test or design evaluation is allowed or under which neither is required are specified in paragraphs (a)(1) and (a)(2); (2) new paragraphs (a)(3)–(a)(7) specify the following performance test and compliance determination guidance: performance tests and compliance determinations are to be conducted according to 63.7(a) of subpart A of 40 CFR part 63 and this subpart, the Administrator should be notified of the intention to conduct a performance test at least 30 calendar days before the performance test is scheduled, certain operating conditions apply when conducting tests, data should be reduced and validated, and how to apply for a performance test waiver; and (3) ''representative operating conditions'' for treatment processes and control devices are specified in paragraphs (a)(8) and (a)(9) of § 60.783. The reorganized section would also make provisions for measuring concentration and flow rate consistent throughout the section.

2. Demonstrating Compliance for Biological Treatment Processes and Addition of ''Enhanced Biological Treatment Process'' Concept

Today's revised proposed rule would add paragraph (h) which (1) describes how to determine the site-specific fraction of VOC biodegradated (Fbio); (2) clarify that biological treatment processes must use one of the required mass removal options to comply with the rule; (3) add flexibility in demonstrating compliance for biological treatment processes; and (4) add provisions that allow a subset of VOC to be used to demonstrate compliance.

Paragraph (h)—how to determine Fbio—is added to make the provisions easier to locate. In addition, § 60.783(h), together with appendix C to part 63, provide more flexibility to the owner or operator to demonstrate compliance for biological treatment processes. The September 1994 proposed rule required owners and operators using biological treatment processes to demonstrate compliance using appendix C to part 63 to determine Fbio. Today's revisions recognize that for some biological treatment processes, those EPA has designated ''enhanced biological treatment processes,'' a less rigorous determination of Fbio is sufficient to demonstrate compliance. This concept is discussed below.

When a biological treatment process is used, one of the required mass removal options, § 60.779(f) or (g), must be chosen as the compliance option. The provisions that may be used to demonstrate compliance depend on whether the biological treatment process is open or closed. In each case, the proposed rule specifies which compliance demonstration provisions may be used.

For open biological treatment processes, volatilization is an important

concern. Therefore, to demonstrate compliance, the owner or operator must determine the mass of VOC that are removed due to biodegradation rather than volatilization. If the open biological treatment process is an enhanced biological treatment process, the source would have more flexibility in demonstrating compliance.

3. Performance Requirements for Open Biological Treatment Processes

Today's revised proposed rule lists 24 compounds in Table 14. This list of compounds would be used together with other provisions to specify how the source may demonstrate compliance. Table 14 may only be used for wastewater streams treated in an enhanced biological treatment system as defined by the proposed revisions to the rule. The basis of the list is discussed in detail in the HON preamble of 26 August 1996 (61 FR 43698), in the HON preamble of January 17, 1997 (62 FR 2722), in the HON preamble of August 22, 1997 (62 FR 44608), and in Docket A–90–23.

A performance demonstration would not be required for enhanced biological treatment systems that receive wastewater streams that require control and that contain only Table 14 compounds. An example would be an activated sludge unit that meets the proposed enhanced biological treatment system definition and treats Group 1 wastewater streams that contain only methanol and nitrobenzene (proposed Table 14 compounds). For enhanced biological treatment systems treating wastewater containing compounds other than those on proposed Table 14, a performance demonstration is required.

Today's revisions offer several techniques for demonstrating compliance for an open biological treatment unit meeting the proposed definition of an enhanced biological treatment system. The demonstration is performed by estimating the Fbio for the system using the first order biodegradation constant (K1) and the forms in appendix C to part 63. The owner or operator may use any of the procedures specified in 40 CFR part 63, appendix C to calculate the site-specific K1s for VOC. The owner or operator may elect not to calculate site-specific biodegradation rate constants but instead to calculate Fbio for the Table 14 compounds using the defaults for K1s in Table 14 and to follow the procedure explained in Form IIA of appendix C. For all other VOC treated in a unit meeting the definition of ''enhanced biological treatment system,'' the owner or operator is allowed to use any of the procedures specified in 40 CFR part 63, appendix C, to calculate the site-specific K1. Biological treatment units not meeting the definition of an enhanced biological treatment system are allowed to determine the Fbio using the site-specific K1 values determined by any of the procedures in appendix C to part 63 except procedure 3 (inlet and outlet concentration measurements).

The EPA believes that today's proposed revisions to the biological treatment option adds additional flexibility without sacrificing reduction of emissions. By separating VOC into the proposed Table 14 compounds and all other VOC and allowing different performance requirements depending on the properties of the compounds on proposed Table 14, additional options have been made available to the owner/operator. The flexibility allowed by not requiring that the site-specific fraction biodegraded be determined for all VOC in the wastewater stream is predicated on the underlying assumption that the wastewater is treated in an enhanced biological treatment system.

4. Meaning of Enhanced Biological Treatment Unit

The definition of ''enhanced biological treatment system or enhanced biological treatment process'' is intended to reflect the basis for the simplified compliance approach for some systems. The list of compounds in Table 14 were developed by modeling performance of an activated sludge system that was a thoroughly mixed biological treatment unit (Docket number A–90–23, item VII–B–8). The definition of enhanced biological treatment process includes a description of a ''thoroughly mixed treatment unit.'' ''Thoroughly mixed treatment unit'' is intended to convey the concept of an activated sludge system that is designed and operated to approach or achieve the characteristics of a completely back mixed system. Because the EPA does not intend the definition to only allow systems with perfect uniformity in characteristics, a ''thoroughly mixed treatment unit'' would be described as a unit that is ''designed and operated to approach or achieve uniform biomass distribution and organic compound concentration throughout the aeration unit by quickly dispersing the recycled biomass and the wastewater entering the unit.'' This description is intended to recognize that well-designed complete mix systems may still have small insignificant stagnant zones or other minor deviations from complete mixing. The meaning of enhanced biological treatment system in this subpart is meant to be exactly the same as its meaning in the HON.

The EPA realizes that many units have varying degrees of uniformity in biomass distribution and organic compound concentration throughout the biological unit. The EPA is developing additional information to assist in determining whether a biological treatment unit is thoroughly mixed and meets the enhanced biological treatment system definition. When finished, the additional information will be available from the Air and Radiation Docket and Information Center and on the EPA's Technology Transfer Network (TTN).

5. Equations in § 60.783

Many of the equations in § 60.783 were revised to make mathematical corrections or to make the equations consistent with the rest of the rule and with the HON. The terms in the equations were changed to make them consistent as well.

6. Compounds not Required To Be Considered in Performance Tests

Today's revised proposed rule adds § 60.783(a)(6) which specifies when compounds can be excluded from in a performance test. These provisions were added because EPA recognizes that not all VOC are present in a wastewater stream; and not all compounds need to be measured to demonstrate compliance, i.e., measuring a predominant compound may be enough to show the mass removal necessary to achieve compliance. These provisions would also provide that compounds present at concentrations less than 1 ppmw at the POD or compounds present at the POD at concentrations less than the lower detection limit where the lower detection limit is greater than 1 ppmw may be excluded from the performance test. This provision was added to avoid imposing an unnecessary analytical burden.

XII. Revisions to Requirements for Delay of Repair (§ 60.777) and Control Devices (§ 60.780)

Today's revised proposed rule changes the control device provisions in § 60.780. The delay of repair provisions previously included in this section have been moved to § 60.777. The delay of repair provisions in § 60.777 reflect changes and clarifications made to the HON delay of repair provisions for process wastewater in the January 17, 1997 HON rule amendments. The revised provisions allow delay of repair for any of the following situations: (1) the repair is technically infeasible without a shutdown, or the emissions of purged material from immediate repair

would be greater than emissions likely to result from delay of repair, (2) the equipment has been emptied or is no longer used to treat or manage Group 1 wastewater streams, and (3) additional time is necessary to obtain parts.

XIII. Revisions to Requirements for Inspections and Monitoring (§ 60.781)

Today's revised proposed rule changes the inspection and monitoring provisions in § 60.781. The changes clarify that for each excursion, except for excused excursions, the owner or operator has failed to apply control in a manner that achieves the required operating conditions. Failure to achieve the required operating conditions is a violation of the standard.

XIV. Revisions to Reporting Requirements (§ 60.784)

Today's revised proposed rule changes the reporting provisions in § 60.784. These changes are consistent with the reporting provisions in the HON rule. Significant changes proposed include: allowing alternative monitoring and recordkeeping systems, including non-automated systems and data compression systems; clarifying that only one excursion per control device per day can occur; the addition of one excused excursion per control device per semiannual period; clarification of monitoring parameter value violations; and the addition of a report name, the Notification of Compliance Status, to describe compliance demonstration information that must be reported.

A. Alternative Monitoring and Recordkeeping Systems

Today's revised proposed rule would allow owners or operators the option to request approval to use alternative monitoring and recordkeeping systems. This change will allow owners or operators to use existing systems. Alternative monitoring systems specifically discussed in the rule include non-automated systems and data compression systems. These systems will be allowed on a site-specific basis and requests for approval of alternative monitoring must be submitted prior to the implementation of the alternative monitoring system for which approval is being requested.

Another type of alternative monitoring system allows reduced recordkeeping. Under this alternative, the owner or operator may use a monitoring system capable of detecting unrealistic or impossible data. The monitoring system must be equipped with an alarm or other means for alerting the owner or operator when unrealistic or impossible data is generated. Use of such a monitoring system allows the owner or operator to retain only the daily average value and would not require retention of more frequent monitored operating parameter values. Additional monitoring system requirements and recordkeeping requirements for this program are specified in § 60.785.

If after 6 months no excursions have occurred, the owner or operator is no longer required to record the daily average value for any operating day when the daily average value is less than the maximum or greater than the minimum established limit. If an excursion occurs after the owner or operator has ceased recording daily average values, the owner or operator must resume retaining the daily average value for each operating day until another period of 6 consecutive months has passed without an excursion.

B. One Excursion per Control Device

Commenters requested that the rule specifically state that not more than one excursion per control device per operating day is possible. The rule was clarified to say that if one parameter meets the excursion criteria of the rule, then that is considered a single excursion for the control device. If the control device has multiple parameters that are monitored, and more than one of the parameters meets the excursion criteria, it is still considered a single excursion for the control device.

C. Excused Excursions

Commenters stated that excused excursions were necessary to account for the inevitable and unanticipated operating parameter fluctuations that occur during normal operation of control devices. The commenters stated that a certain number of excursions could be expected even with properly operated pollution control devices. The proposed rule requires the owner or operator to record a daily average for each control device with continuously monitored parameters. The EPA is proposing to allow one excused excursion per control device per six month reporting period. Excused excursions may be appropriate when a technology standard, such as the standard mandated in section 111 of the CAA, is predicated on the best demonstrated control. EPA has determined that even properly operated and maintained control equipment may not perform perfectly over time and that this may be taken into account when determining best demonstrated control.

The proposed one excused excursion per semiannual reporting period equates to roughly one-half percent of the days in the reporting period. As discussed in the HON preamble, the time allowed as excused excursions was selected based on information about the types of events that cause parameter excursions; the duration of the typical excursions; and, the frequency of the events that create excursions. In addition, the proposed approach to excused excursions would provide consistency with the HON.

Examples of events that could cause excursions that would count toward the number of excused excursions are as follows: a thermocouple failure in an incinerator; water contamination in a condenser; off-specification feedstocks; electrical problems; control valve problems such as leaky pneumatic drivers; and extreme environmental conditions. Events that are considered malfunctions under the Start-up, Shut-down, and Malfunction Plan required by this subpart are to be handled separately and would not be counted toward the allowed number of excused excursions. In addition, the provisions for excused excursions are not meant to allow actions that are specifically disallowed by other sections of the NSPS or the General Provisions, such as bypass of a control device.

D. Monitoring Parameter Value Violations

Under earlier NSPS and NESHAP programs, parameter monitoring has traditionally been used as a tool in determining whether control devices are being maintained and operated properly. However, section 114(a)(3) of the Act and § 70.6(c) of the operating permit rule (57 FR 32251, July 21, 1992) require the submissions of ''compliance certifications'' from sources subject to the operating permit program. Affected facilities would be subject to the operating permit program. Sources must certify whether compliance was continuous or intermittent, as well as their compliance status at the end of the reporting period. In light of these requirements, the Agency has considered how sources subject to this rule would demonstrate compliance.

EPA has considered several approaches for monitoring requirements and has determined that one or more continuous monitoring systems provide the best compliance assurance. EPA has developed a hierarchy for selecting monitoring requirements. The hierarchy is: (1) continuous emissions monitoring; (2) continuous emissions monitoring for surrogate emissions; (3) operating parameters monitoring; and, (4) work practice requirements. The choice of monitoring system selected should be based on availability, cost, and effectiveness.

For many waste management units, today's revisions specify good work practices, including periodic inspections. For control devices and treatment processes, today's revisions either specify, or require the owner or operator to establish appropriate monitoring parameter values.

Today's revisions specify that operating above the approved maximum value or below the approved minimum value for monitoring parameter values is a violation of the standard.

E. Notification of Compliance Status

The term ''Notification of Compliance Status'' has been added to the rule to provide a report name for compliance demonstration information that must be submitted to the EPA. Most of the information required to be submitted in the Notification of Compliance Status was already required under the September 1994 proposed rule. Types of information that would be included in the Notification of Compliance Status include results of emission point group determinations, performance tests, inspections, continuous monitoring system performance evaluations, values of monitored parameters established during performance tests, and other information used to demonstrate compliance. The Notification of Compliance Status is a one time report submitted for each affected facility. The term ''Notification of Compliance Status'' was chosen because it is also used in the HON.

In addition, the rule was revised to clarify that when performance tests and group determinations based on measurements are performed, only one complete test report is necessary for each test method used for a particular kind of emission point. Results and other required information still must be submitted.

A time frame for submittal of the Notification of Compliance Status was added to the rule. The rule was revised to say that the Notification of Compliance Status is due within 150 days after the compliance dates for the rule. This time frame is consistent with the time frame for the Notification of Compliance Status in the HON.

Tables 9 through 12 were also revised to reflect changes made to the HON tables and to require that the information in the tables be submitted as part of the Notification of Compliance Status. Tables 5, 7, 8, and 13 were also revised to reflect HON table changes.

XV. Revisions to Recordkeeping Requirements (§ 60.785)

Today's revised proposed rule changes the recordkeeping provisions in § 60.785. The changes clarify the periods during which monitoring data should not be included in the daily average: monitoring system breakdowns, repairs, calibration checks, and zero (low-level) and high-level adjustments; start-ups; shutdowns; malfunctions; periods of non-operation of the chemical process unit (or portion thereof), resulting in cessation of the emissions to which the monitoring applies.

The EPA also added data retention provisions. Under these provisions, records and reports required by the rule must be kept and must be accessible for 5 years.

Provisions for keeping continuous records and calculating daily averages have been clarified in the proposed rule. Provisions were added to clarify the frequency with which monitoring systems should record data and which of this data are necessary to demonstrate continuous compliance. The provisions require the monitoring system to measure data values at least once every 15 minutes. Each measured data value or block average values for 15-minute or shorter periods are used to calculate hourly average data values. The hourly average values are used to calculate daily average values. For days when all recorded values for a monitored parameter are below the minimum or above the maximum established value, the owner or operator may record that all values were below the maximum or above the minimum established operating parameter value. The 15-minute value must be retained for operating days when the daily average value of the monitored parameter is above the maximum or below the minimum established value. These provisions are consistent with the continuous record provisions in the HON.

XVI. Revisions to Additional Requirements—Start-up, Shutdown, Malfunction, and Non-Operation, and Alternative Means of Emission Limitation, and Permits (§ 60.787)

Today's revised proposed rule adds provisions for proper operation and maintenance of the affected facility during periods of start-up, shutdown, malfunction, and non-operation. The provisions require that the owner or operator of each affected facility develop a written start-up, shutdown, and malfunction plan, to be kept on-site, which would describe procedures for operating and maintaining the affected facility during periods of start-up, shutdown, and malfunction, and a program for corrective action for malfunctioning process and air pollution control equipment used to comply with this subpart. Appropriate reporting and recordkeeping of periods of start-up, shutdown, and malfunction are specified in this section. This change makes the rule more consistent with the HON.

New provisions have also been added for approval of an alternative means of emission limitation if the alternative achieves a reduction in VOC emissions at least equivalent to the reduction achieved under this subpart. Approved alternatives are published in the **Federal Register**. This change makes the rule more consistent with the HON.

Provisions directing owners or operators to obtain a permit under the operating permit program are also included in this section.

XVII. Revisions to Leak Inspection Requirements (§ 60.786)

Today's revised proposed rule changes the leak inspection provisions in § 60.786. These changes mirror the changes made to § 63.148, Leak inspection provisions, of the HON rule in the January 17, 1997 amendments (62 FR 2775).

XVIII. Revisions to List of SOCMI Chemicals (Table 1)

EPA reviewed the list of proposed SOCMI chemicals on Table 1 of the rule and made spelling corrections and removed some duplicate compounds. EPA is considering removing other chemicals from Table 1 and requests comment on whether any chemicals should be added to or deleted from Table 1.

XIX. Addition of Appendix J to Part 60

Today's revised proposed rule adds Appendix J to part 60, How to Determine Henry's Law Constants, Fm Values, Fr Values, and Fe Values for Organic Compounds. This appendix provides the methodology for determining Henry's law constants, fraction measured (Fm) values, fraction removed values (Fr), and fraction emitted (Fe) values.

The development of these values is discussed in ''Correction to the report dated February 2, 1994 ''Estimation of Air Emissions from model wastewater collection and treatment plants'' and ''Estimation of Compound Properties: Correlations for Fm, Fr, Fe, and Fet.'' (Docket item A–90–23, IV–B–4 and Docket item A–94–32, IV–A–1)

The proposed appendix has four sections. Section 2 contains the procedures for determining Henry's law constants, Fm values, Fr values, and Fe values. Section 3 describes how to

locate certain resources. Section 4 contains five tables and thirteen forms.

The appendix would be used to:

1. Determine whether a chemical has a Henry's law constant at 25° C that is less than 0.1 y/x atmosphere per mole fraction.

2. Determine a fraction measured (Fm) value for a chemical.

3. Subtract the concentration of a chemical from a Method 25D concentration.

4. Determine the fraction removed (Fr) value for a chemical that has a Henry's law constant at 25° C that is greater than or equal to 0.1 y/x atmosphere per mole fraction.

5. Determine the fraction emitted (Fe) value for a chemical that has a Henry's law constant at 25° C that is greater than or equal to 0.1 y/x atmosphere per mole fraction.

6. Calculate a Henry's law constant at a specific temperature using a Henry's law constant at a different temperature for the same chemical.

XX. Administrative Requirements

A. Paperwork Reduction Act

The information collection requirements in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the *Paperwork Reduction Act,* 44 U.S.C. 3501 *et seq.* An Information Collection Request (ICR) document has been prepared by EPA (ICR No. 1697.02) and a copy may be obtained from Sandy Farmer, Regulatory Information Division; U.S. Environmental Protection Agency (2137); 401 M St., SW; Washington, DC 20460 or by calling (202) 260–2740.

Information will be collected as required in the General Provisions to part 60 and the requirements in the reporting and recordkeeping sections of the proposed rule. The information will be used to ensure compliance with the standard.

The changes included in today's revised proposed rule do not affect the information collection burden estimates prepared for the September 1994 proposal. The changes consist of revised definitions, alternative test procedures, and clarifications of requirements. The proposed changes do not include new or additional requirements. Consequently, the ICR has not been revised for this rule, although it has been resubmitted to OMB.

The estimated annual cost and hour burden per respondent is about $4,830 and 150 hours, per respondent. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a federal agency. This includes the time needed to review instructions; develop, acquire, install, and use technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

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

The Agency requests comments on the need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing the respondent burden, including through the use of automated collection techniques. Send comments on the ICR to the Director, Regulatory Information Division; U.S. Environmental Protection Agency (2137); 401 M St., S.W.; Washington, D.C. 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th St., N.W., Washington, D.C. 20503, marked ''Attention: Desk Officer for EPA.'' Include the ICR number in any correspondence. Since OMB is required to make a decision concerning the ICR between 30 and 60 days after [insert date of publication in **Federal Register**], a comment to OMB is best assured of having its full effect if OMB receives it by [insert date 30 days after publication in the **Federal Register**]. The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

B. Executive Order 12866 Review

Under Executive Order 12866, the EPA must determine whether the proposed regulatory action is ''significant'' and, therefore, subject to OMB review and the requirements of the Executive Order. The Order defines ''significant'' regulatory action as one that is likely to lead to a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety in State, local, or tribal governments or communities;

(2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

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

The September 1994 proposal was considered ''not significant'' under Executive Order 12866. The revisions proposed today clarify the September 1994 proposed rule. As revised the proposed rule does not add any new control requirements. Therefore, this regulatory action is considered ''not significant'' and was not reviewed by OMB.

C. Regulatory Flexibility

The Regulatory Flexibility Act (RFA) provides that, whenever an agency promulgates a proposed rule under 5 U.S.C. § 553, an agency must prepare an initial regulatory flexibility analysis unless the head of the agency certifies that the proposed rule will not have a significant economic impact on a substantial number of small entities. The EPA has evaluated the impact of this proposed regulation on small entities. Based upon the analysis, and pursuant to section 605(b) of the Regulatory Flexibility Act, 5 U.S.C. 605 (b), I certify that this rule will not have a significant impact on a substantial number of small entities.

The SOCMI Wastewater NSPS applies to new and modified sources. Existing sources may be subject to the NSPS in the event these facilities are modified. Since the regulation is applicable to new sources or existing sources that modify facilities, the actual entities impacted by the regulation are not known precisely. This is particularly true with regard to new sources. Due to the difficulties in predicting those facilities that will be subject to the rule, the EPA looked at two data sources for information: the regulatory flexibility analysis performed for the HON and the SOCMI wastewater database.

The EPA analyzed SOCMI for impacts on small business when the HON was developed. Since the HON and the SOCMI wastewater NSPS will affect the same and similar facilities and the emission control requirements are similar, the EPA believes that the analysis done for the HON is valid for this rule as well. The HON analysis, which was based on 66 firms, concluded that fewer than 15 percent of

the firms were small firms and that they do not constitute a substantial number. Furthermore, the economic analysis for the HON projected generally small impacts (87 percent of the analyzed sample were projected to have output changes of less than 2 percent). Therefore, the HON was not expected to have a significant economic impact on a substantial number of small firms. The regulatory flexibility analysis for the HON is discussed in 59 FR 19449 (April 22, 1994).

The EPA next considered a database created from surveys sent to industry under the authority of section 114 of the Act. This database, called the SOCMI 114 database, includes information on SOCMI-generated wastewater streams. The EPA used the database as another way to assess potential impacts on small entities.

The 25 facilities in the SOCMI 114 database used to make this assessment are owned by 9 companies. All of these facilities produce chemicals in either Standard Industrial Classification (SIC) 2869 (Industrial Chemicals, N.E.C.) or SIC 2821 (Plastic Materials, Synthetic Resins, and Nonvulcanizable Elastomers). The Small Business Administration (SBA) defines a small business for SIC 2869 and SIC 2821 to be companies with less than 1000 and 750 employees, respectively. Each of the 9 companies in the SOCMI 114 database are not small businesses within the SBA definition. Based upon this database, no small businesses are expected to be directly impacted by the SOCMI Wastewater NSPS. The economic impacts of this regulation for the facilities in the SOCMI 114 database are also anticipated to be minimal with price and quantity impacts of less than 1 percent.

The small business analysis conducted for this regulation indicates that companies potentially affected by the NSPS are large companies (SOCMI 114 database) or are not anticipated to be significantly impacted by the regulation (HON regulatory flexibility analysis). Thus, the EPA concludes that this regulation will not have a significant impact on a substantial number of small entities as specified in the RFA.

D. Unfunded Mandates Reform Act

Under Section 202 of the Unfunded Mandates Reform Act of 1995 (Unfunded Mandates Act), the EPA must prepare a budgetary impact statement to accompany any proposed or final rule that includes a Federal mandate that may result in estimated costs to State, local, or tribal governments in the aggregate or to the private sector, of $100 million or more in any one year. Under Section 205, the EPA must select the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule and is consistent with statutory requirements. Section 203 requires the EPA to establish a plan for informing and advising any small governments that may be significantly or uniquely impacted by the rule. The EPA has determined that today's proposed rule contains no regulatory requirements that might significantly or uniquely affect small governments.

The EPA has determined that today's proposed rule does not include a Federal mandate that may result in estimated costs of $100 million or more to either State, local, or tribal governments in the aggregate or to the private sector. Therefore, the requirements of the Unfunded Mandates Act do not apply to this action.

E. Executive Orders 12875 and 13084

Today's action does not impose any unfunded mandate upon any State, local, or tribal government; therefore, Executive Orders 12875 and 13084 do not apply to this rulemaking.

Under E.O. 12875 and E.O. 13084, EPA may not issue a regulation that is not required by statute and that creates a mandate upon a State, local or Tribal government unless the Federal Government provides the necessary funds to pay the direct costs incurred by the State, local or Tribal government or EPA provides to the Office of Management and Budget a description of the extent of the prior consultation and written communications with representatives of affected State, local and Tribal governments and an Agency statement supporting the need to issue the regulation. In addition, E.O. 12875 and E.O. 13084 require EPA to develop an effective process permitting elected officials and other representatives of State, local and Tribal governments ''to provide meaningful and timely input in the development of regulatory proposals containing significant unfunded mandates.''

F. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (the NTTAA), Pub. L. No. 104–113, sec. 12(d) (15 U.S.C. 272 note), directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, business practices, etc.) that are developed or adopted by voluntary consensus standard bodies. The NTTAA requires EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This proposed rulemaking includes technical standards and requirements for taking measurements. Consequently, the EPA searched for applicable voluntary consensus standards by searching the National Standards System Institute (NSSN) database. The NSSN is an automated service provided by the American National Standards Institute for identifying available national and international standards.

EPA searched for methods and tests required by this proposed rule, all of which are methods or tests previously promulgated. The proposed rule includes methods that measure: (1) Volatile organic compound concentration in wastewater (EPA Methods 25D, 305, 624, 625, 1624, or 1625); (2) biodegradation rates (EPA Methods 304A and B, aerated reactor test (i.e., BOX test) serum bottle test, performance data with and without biodegradation, or inlet and outlet concentration measurements); (3) vapor leak detection (EPA Method 21); (4) volatile organic compound concentration in vented gas stream (EPA Method 18); (5) volumetric flow rate of the vented gas stream (EPA Methods 2, 2A, 2C, or 2D); (6) sampling site location (Method 1 or 1A); (7) validation of chemical methods (EPA Method 301); (8) determination of actual oxygen concentration (percent O2d) (EPA Method 3B); and (9) visible emissions (EPA Method 22). These EPA methods are found in Appendix A to parts 60, 63, and 136. The biodegradation tests are found in Appendix C to part 63.

Except for EPA Methods 2 and 2C (Appendix A to part 60), no other potentially equivalent methods for the methods and tests in the proposal were found in the NSSN database search. EPA identified one Chinese (Taiwanese) National Standard (CNS) which may potentially be an equivalent method to EPA Methods 2 and 2C. The CNS method is CNS K9019 for measuring velocity and flow rates in stack gases.

However, EPA does not believe that CNS K9019 is a voluntary consensus method. It is unlikely that CNS K9019 was considered by industry groups or national setting standards organizations because it was not developed in the United States (U.S.) and there is no available information about it in the U.S.

To confirm EPA's belief, EPA is asking for comment on whether any U.S. industry has adopted CNS K9019 as a voluntary consensus method. EPA is also asking for comment on whether any potential voluntary consensus methods exist that could be allowed in addition to the methods in the proposal. Methods submitted for evaluation should be accompanied with a basis for the recommendation, including method validation data and the procedure used to validate the candidate method (if a method other than Method 301, 40 CFR part 63, Appendix A was used).

G. Executive Order 13045

This proposed rule is not subject to Executive Order 13045 (E.O. 13045), entitled ''Protection of Children from Environmental Health Risks and Safety Risks'' (62 FR 19885, April 23, 1997), because this is not an economically significant regulatory action as defined by Executive Order 12866 (E.O. 12866).

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

List of Subjects in 40 CFR Part 60

Environmental protection, Air pollution control, Volatile organic compounds, Reporting and recordkeeping requirements.

Dated: September 29, 1998.

Carol M. Browner,

Administrator.

For the reasons stated in the preamble, title 40, chapter I, part 60 of the Code of Federal Regulations is amended as follows:

1. The authority citation for part 60 continues to read as follows:

Authority: 42 U.S.C. 7401, 7411, 7413, 7414, 7416, 7429, 7601 and 7602.

2. Part 60 is amended by adding subpart YYY to read as follows:

Subpart YYY—Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Wastewater

Sec.

60.770 Applicability and date of compliance.
60.771 Definitions.
60.772 Modification and reconstruction.
60.773 Process wastewater provisions—General.
60.774 Wastewater tank, surface impoundment, container, individual drain system, and oil-water separator provisions.
60.775 Control requirements for aqueous in-process streams.
60.776 Maintenance wastewater requirements.
60.777 Delay of repair.
60.778 Stream-specific list of VOC determination.
60.779 Process wastewater provisions—Performance standards for treatment processes managing Group 1 wastewater streams and/or residuals removed from Group 1 wastewater streams.
60.780 Standards—Control devices.
60.781 Monitoring of operations.
60.782 Process wastewater provisions—Test methods and procedures for determining applicability and Group 1 and Group 2 determinations (determining which process wastewater streams require control).
60.783 Process wastewater provisions—Test methods and procedures to determine compliance.
60.784 Reporting requirements.
60.785 Recordkeeping requirements.
60.786 Leak inspection provisions.
60.787 Additional requirements—Start-up, shutdown, malfunction, or nonoperation; Alternative means of emission limitation; and permits.
60.788 [Reserved]
60.789 Relationship to other regulations.
Table 1 to subpart YYY—List of SOCMI chemicals
Table 2 to subpart YYY—Applicability of 40 CFR part 60 general provisions to subpart YYY
Table 2A to subpart YYY—Applicability of 40 CFR part 63 general provisions to subpart YYY
Table 3 to subpart YYY—Control requirement options for wastewater tanks, surface impoundment, containers, individual drain systems, and oil-water separators
Table 4 to subpart YYY—Wastewater tanks requiring controls and control requirements
Table 5 to subpart YYY—Compliance options for wastewater tanks, surface impoundments, containers, individual drain systems, and oil-water separators
Table 6 to subpart YYY—Control requirements for items of equipment that meet the criteria of § 60.775
Table 7 to subpart YYY—Monitoring requirements for treatment processes
Table 8 to subpart YYY—Monitoring requirements for control devices
Table 9 to subpart YYY—Information on process wastewater streams to be submitted with notification of compliance status
Table 10 to subpart YYY—Information for treatment processes to be submitted with Notification of Compliance Status
Table 11 to subpart YYY—Information for waste management units to be submitted with Notification of Compliance Status
Table 12 to subpart YYY—Information on residuals to be submitted with Notification of Compliance Status
Table 13 to subpart YYY—Semiannual reporting requirements for control devices [§ 60.784(f)]
Table 14 to subpart YYY—Compound and default biorates used for compliance demonstrations for enhanced biological treatment processes (see § 60.783(h))

Subpart YYY—Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Wastewater

§ 60.770 Applicability and date of compliance.

(a) The provisions of this subpart apply to each affected facility and any devices or systems required by this subpart. An affected facility is a designated chemical process unit (CPU) in the synthetic organic chemical manufacturing industry which commences or commenced construction, reconstruction or modification after September 12, 1994. An affected facility that does not generate a process wastewater stream, a maintenance wastewater stream, or an aqueous in-process stream, is not subject to the control requirements of this subpart.

(1) *Initial determination of applicability.* Determine applicability to this subpart as specified in paragraphs (b) through (g) of this section. For an affected facility, determine if the affected facility generates a process wastewater stream, maintenance wastewater stream, or aqueous in-process stream as specified in paragraph (h) of this section. The owner or operator of an affected facility that generates a process wastewater stream, a maintenance wastewater stream, or an aqueous in-process stream shall comply with requirements of this subpart. The owner or operator of an affected facility that does not generate a process wastewater stream, a maintenance wastewater stream, or an aqueous in-process stream is exempt from the requirements specified in this subpart, except for the requirements specified in § 60.770(a)(2), § 60.770(h)(2), § 60.784(d)(12), and § 60.785(c)(8) of this subpart.

(2) *Reevaluation of applicability criteria.* When one or both of the applicability criteria in paragraph (a)(2)(i) or (a)(2)(ii) of this section changes, the owner or operator shall reevaluate the applicability as specified in this paragraph (a). A CPU or designated CPU shall not be evaluated more than once every 12 months. If the

designated CPU is an affected facility and subject to the provisions of this subpart, the owner or operator may elect not to reevaluate applicability.

(i) *Produces SOCMI as a primary product.* If a CPU begins manufacturing chemicals not used in the primary product determination or ceases manufacturing chemicals listed in the primary product determination, the primary product determination is no longer in effect and shall be reevaluated as specified in paragraph (f) of this section.

(ii) *Is Modified or Reconstructed.* If a designated CPU that is not an affected facility is modified or reconstructed after September 12, 1994, then the applicability determination shall be evaluated as specified in § 60.772 of this subpart.

(3) Each affected facility shall be in compliance with the provisions of this subpart no later than initial start-up or [DATE OF PUBLICATION OF FINAL RULE], whichever is later.

(b) The designated CPU is in the synthetic organic chemical manufacturing industry (SOCMI) if the conditions of either paragraph (b)(1) or (b)(2) of this section are met.

(1) The designated CPU is a combination of all process lines within a CPU, i.e., an entire CPU, and the primary product of the designated CPU is a SOCMI chemical; or

(2) The designated CPU is a process line, or combination of process lines within a CPU, and the primary product of the CPU is a SOCMI chemical.

(3) The primary product of a CPU shall be determined as provided in paragraph (f) of this section.

(4) The SOCMI chemicals are listed in Table 1 of this subpart.

(5) Each storage vessel that is part of the CPU shall be assigned to one designated CPU that it services. Storage vessels shall be assigned to the CPU as specified in paragraph (g) of this section.

(c) The designated CPU shall be an entire CPU except as otherwise provided in this paragraph (c).

(1) The owner or operator may designate each process line or combination of process lines within a CPU to be a designated CPU for purposes of this subpart, at any time before commencing construction, reconstruction or modification.

(i) If the owner or operator designates each process line, or combination of process lines, within a CPU to be a designated CPU, the installation of an additional process line may constitute construction of a designated CPU, but shall not in itself be considered modification or reconstruction of the existing process lines.

(ii) If the entire CPU is the designated CPU, the installation of an additional process line may constitute modification or reconstruction of the designated CPU, but shall not in itself be considered construction of a designated CPU.

(2) The owner or operator shall assign all equipment that is part of the CPU to one or more designated CPU.

(3) Any designation under paragraph (c)(1) of this section shall be reported to the Administrator as provided in § 60.784 of this subpart and shall be irrevocable.

(d) *General Provisions applicability.* The owner or operator shall comply with the provisions of subpart A of this part and subpart A of 40 CFR part 63 as specified in Table 2 and 2A of this subpart.

(e) The provisions of this subpart do not apply to the processes listed in paragraphs (e)(1) through (e)(5) of this section. This subpart does not require these processes to comply with the provisions of subpart A of this part.

(1) Research and development facilities.

(2) Petroleum refining process units, regardless of whether the units supply feedstocks that include chemicals listed in Table 1 of this subpart to chemical process units that are subject to the provisions of this subpart.

(3) Chemical process units that are located in coke by-product recovery plants.

(4) Solvent reclamation, recovery, or recycling operations at a hazardous waste treatment, storage, and disposal facility (TSDF) requiring a permit under 40 CFR part 270 that are not part of a SOCMI chemical process unit.

(5) Organic chemicals extracted from natural sources or totally produced from biological synthesis, such as pinene, coconut oil acids, sodium salt, fatty acids, tall oil, tallow acids, potassium salt, and beverage alcohol.

(f) *Primary product determinations.* The primary product of a CPU is determined according to the procedures specified in paragraphs (f)(1) and (f)(2) of this section. With respect to CPU for which the expected use is known, the owner or operator shall use paragraph (f)(1) of this section. With respect to CPU for which the expected use is unknown, the owner or operator shall use paragraph (f)(2) of this section.

(1) *Expected use is known.* The primary product determination for a CPU, where the expected use is known for the 12 months following initial startup shall be determined according to the procedures in paragraphs (f)(1)(i) through (f)(1)(iii) of this section.

(i) If a chemical process unit produces none of the chemical products listed in Table 1 of this subpart, the primary product is not a SOCMI product.

(ii) If a chemical process unit produces only chemical products listed in Table 1 of this subpart, the primary product is a SOCMI product.

(iii) If a chemical process unit produces one or more chemical products listed in Table 1 of this subpart and one or more chemical products not listed in Table 1 of this subpart, the owner or operator shall sum the expected annual production, on a mass basis, for the chemical products listed in Table 1 of this subpart and sum the expected annual production, on a mass basis, for the chemical products not listed in Table 1 of this subpart. If the sum of the chemical products listed in Table 1 of this subpart is greater than or equal the sum of the chemical products not listed in Table 1 of this subpart, the primary product is a SOCMI product. If not, the primary product is not a SOCMI product.

(2) *Expected use is unknown.* Where the expected use of the CPU is unknown for the 12 months following initial startup and the CPU will manufacture one or more of the chemical products listed in Table 1 of this subpart, the primary product of the CPU is a SOCMI product.

(g) *Storage vessel assignment.* The owner or operator shall follow the procedures specified in paragraphs (g)(1) through (g)(4) of this section to determine whether a storage vessel is part of the CPU to which this subpart applies, either in part or in whole.

(1) Where a storage vessel is dedicated to a chemical process unit, the storage vessel shall be considered part of that chemical process unit.

(2) If a storage vessel is not dedicated to a single chemical process unit, then the applicability of this subpart shall be determined according to the provisions in paragraphs (g)(2)(i) through (g)(2)(iii) of this section.

(i) If a storage vessel is shared among chemical process units and one of the process units has the predominant use, as determined by paragraphs (g)(2)(i)(A) and (g)(2)(i)(B) of this section, then the storage vessel is part of that chemical process unit.

(A) If the greatest input into the storage vessel is from a chemical process unit that is located on the same plant site, then that chemical process unit has the predominant use.

(B) If the greatest input into the storage vessel is provided from a chemical process unit that is not located

on the same plant site, then the predominant use is the chemical process unit on the same plant site that receives the greatest amount of material from the storage vessel.

(ii) If a storage vessel is shared among chemical process units so that there is no single predominant use, and at least one of those chemical process units is subject to this subpart, in part or whole, the storage vessel shall be considered to be part of the chemical process unit that is subject to this subpart, in part or whole. If more than one chemical process unit is subject to this subpart, in part or whole, the owner or operator may assign the storage vessel to any of the chemical process units subject to this subpart.

(iii) If the predominant use of a storage vessel varies from year to year, then the applicability of this subpart shall be determined based on the use that occurred during the year preceding [date final rule is published]. This determination shall be reported as part of an operating permit application or as otherwise specified by the permitting authority.

(3) Where a storage vessel is located at a plant site that includes one or more chemical process units which place material into, or receive materials from the storage vessel, but the storage vessel is located in a tank farm (including a marine tank farm), the applicability of this subpart shall be determined according to the provisions in paragraphs (g)(3)(i) through (g)(3)(iv) of this section.

(i) The storage vessel may only be assigned to a chemical process unit that utilizes the storage vessel and does not have an intervening storage vessel for that product (or raw material, as appropriate). With respect to any chemical process unit, an intervening storage vessel means a storage vessel connected by hard-piping to the chemical process unit and to the storage vessel in the tank farm so that product or raw material entering or leaving the chemical process unit flows into (or from) the intervening storage vessel and does not flow directly into (or from) the storage vessel in the tank farm.

(ii) If there is no chemical process unit at the plant site that meets the criteria of paragraph (g)(3)(i) of this section with respect to a storage vessel, this subpart does not apply to the storage vessel.

(iii) If there is only one chemical process unit at the plant site that meets the criteria of paragraph (g)(3)(i) of this section with respect to a storage vessel, the storage vessel shall be assigned to that chemical process unit.

(iv) If there are two or more chemical process units at the plant site that meet the criteria of paragraph (g)(3)(i) of this section with respect to a storage vessel, the storage vessel shall be assigned to one of those chemical process units according to the provisions of paragraph (g)(2) of this section. The predominant use shall be determined among only those chemical process units that meet the criteria of paragraph (g)(3)(i) of this section.

(4) If the storage vessel begins receiving material from (or sending material to) another chemical process unit, or ceasing to receive material from (or send material to) a chemical process unit, or if there is a significant change in the use of a storage vessel whose predominant use was determined according to paragraph (g)(2)(i) of this section that could reasonably change the predominant use, the owner or operator shall reevaluate the applicability of this subpart to the storage vessel.

(h) *Process Wastewater, maintenance wastewater, and aqueous in-process stream determination.*

(1) The owner or operator shall determined whether an affected facility generates a process wastewater stream, a maintenance wastewater stream, or an aqueous in-process stream. The owner or operator of an affected facility that generates a process wastewater stream, maintenance wastewater stream, or aqueous in-process stream shall comply with the provisions of this subpart. The owner or operator of an affected facility that does not generate a process wastewater stream, maintenance wastewater stream, or aqueous in-process stream is exempt from the requirements specified in this subpart, except for the requirements specified in §§ 60.770(a)(2), 60.770(h)(2), 60.784(d)(12), and 60.785(c)(8) of this subpart.

(2) If an affected facility begins to or ceases to generate a process wastewater stream, maintenance wastewater stream, or aqueous in-process stream, the owner or operator shall reevaluate the applicability of this subpart to the affected facility. If an affected facility is subject to the provisions of this subpart, the owner or operator may elect not to reevaluate applicability.

(3) The affected facility includes the water and wastewater streams listed in paragraphs (h)(3)(i) through (h)(3)(vi) of this section, but they are not subject to the requirements of this subpart or the provisions of subpart A of this part.

(i) Stormwater managed in segregated sewers.

(ii) Water from fire-fighting and deluge systems in segregated sewers.

(iii) Spills.

(iv) Water from safety showers.

(v) Water from testing of deluge systems.

(vi) Water from testing of firefighting systems.

§ 60.771 Definitions.

As used in this subpart, all terms not defined here shall have the meaning given them in the Act and in subpart A of this part. The following terms shall have the specific meanings given them in this section.

Annual average concentration means the flow-weighted annual average concentration, as determined according to the procedures specified in § 60.782(b) of this subpart.

Annual average flow rate means the annual average flow rate, as determined according to the procedures specified in § 60.782(c) of this subpart.

Aqueous in-process stream means a stream comprised of water and VOC within a CPU and prior to the point of determination that is conveyed, or otherwise handled, in equipment controlled less stringently than required in Table 6 to this subpart. An aqueous in-process stream has a concentration of at least 500 part per million by weight (ppmw)and a flowrate of at least 1 liter per minute.

Automated monitoring and recording system means any means of measuring values of monitored parameters and creating a hard copy or computer record of the measured values that does not require manual reading of monitoring instruments and manual transcription of data values. Automated monitoring and recording systems include, but are not limited to, computerized systems and strip charts.

Boiler means any enclosed combustion device that extracts useful energy in the form of steam and is not an incinerator. Boiler also means any industrial furnace as defined in 40 CFR 260.10.

Car-seal means a seal that is placed on a device that is used to change the position of a valve (e.g., from opened to closed) in such a way that the position of the valve cannot be changed without breaking the seal.

Chemical process unit or CPU means the equipment assembled and connected by hard-piping or ductwork to process raw materials and to manufacture a product. A chemical process unit consists of more than one unit operation. For the purpose of this subpart, chemical process unit includes air oxidation reactors and their associated product separators and recovery devices; reactors and their associated product separators and recovery devices; distillation units and

their associated distillate receivers and recovery devices; associated unit operations; associated recovery devices; and any feed, intermediate and product storage vessels, and connected ductwork and hard-piping. A chemical process unit includes pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems. A chemical process unit is identified by its primary product.

Closed biological treatment process means a tank or surface impoundment where biological treatment occurs and VOC emissions from the treatment process are routed either to a control device by means of a closed vent system or to a fuel gas system by means of hard-piping. The tank or surface impoundment has a fixed roof, as defined in this section, or a floating flexible membrane cover that meets the requirements specified in 40 CFR 63.134.

Closed-vent system means a system that is not open to the atmosphere and is composed of hard-piping, ductwork, connections, and, if necessary, flow inducing devices that transport gas or vapor from an emission point to a control device.

Combustion device means an individual unit of equipment, such as a flare, incinerator, process heater, or boiler, used for the combustion of volatile organic compound emissions.

Container means any portable waste management unit that has a capacity greater than or equal to 0.1 m^3 in which a material is stored, transported, treated, or otherwise handled. Examples of containers are drums, barrels, tank trucks, barges, dumpsters, tank cars, dump trucks, and ships.

Continuous record means documentation, either in hard copy or computer readable form, of data values measured at least once every 15 minutes and recorded at the frequency specified in § 60.785 of this subpart.

Continuous recorder means a data recording device recording an instantaneous data value or an average data value at least once every hour.

Continuous seal means a seal that forms a continuous closure that completely covers the space between the wall of the storage vessel and the edge of the floating roof. A continuous seal may be a vapor-mounted, liquid-mounted, or metallic shoe seal. A continuous seal may be constructed of fastened segments so as to form a continuous seal.

Control device means any combustion device, recovery device for vapor vents, or recapture device. Such equipment includes, but is not limited to, absorbers, carbon adsorbers, condensers, incinerators, flares, boilers, and process heaters. For a steam stripper, a primary condenser is not considered a control device.

Cover means a device or system which is placed on or over a waste management unit containing wastewater or residuals so that the entire surface area is enclosed to minimize air VOC emissions. A cover may have openings necessary for operation, inspection, and maintenance of the waste management unit such as access hatches, sampling ports, and gauge wells provided that each opening is closed when not in use. Examples of covers include a fixed roof installed on a wastewater tank, a lid installed on a container, and an air-supported enclosure installed over a waste management unit.

Designated chemical process unit or designated CPU means an individual process line within a CPU or a combination of some or all of the process lines within a CPU.

Ductwork means a conveyance system such as those commonly used for heating and ventilation systems. It is often made of sheet metal and often has sections connected by screws or crimping. Hard-piping is not ductwork.

Enhanced biological treatment system or enhanced biological treatment process means an aerated, thoroughly mixed treatment unit(s) that contains biomass suspended in water followed by a clarifier that removes biomass from the treated water and recycles recovered biomass to the aeration unit. The mixed liquor volatile suspended solids (biomass) is greater than 1 kilogram per cubic meter throughout each aeration unit. The biomass is suspended and aerated in the water of the aeration unit(s) by either submerged air flow or mechanical agitation. A thoroughly mixed treatment unit is a unit that is designed and operated to approach or achieve uniform biomass distribution and organic compound concentration throughout the aeration unit by quickly dispersing the recycled biomass and the wastewater entering the unit.

External floating roof means a pontoon-type or double-deck-type cover that rests on the liquid surface in a storage vessel or waste management unit with no fixed roof.

Fill or *filling* means the introduction of a wastewater stream or residual into a waste management unit (e.g., storage tank), but not necessarily to complete capacity.

Fixed roof means a cover that is mounted on a waste management unit or storage vessel in a stationary manner and that does not move with fluctuations in liquid level.

Flame zone means the portion of the combustion chamber in a boiler or process heater occupied by the flame envelope.

Flexible operation unit means a chemical process unit that manufactures different chemical products periodically by alternating raw materials or operating conditions. These units are also referred to as multi-purpose units, multiple product units, campaign plants, or blocked operations.

Floating roof means a cover consisting of a double deck, pontoon single deck, internal floating cover or covered floating roof, which rests upon and is supported by the liquid being contained, and is equipped with a closure seal or seals to close the space between the roof edge and waste management unit or storage vessel wall.

Flow indicator means a device which indicates whether gas flow is, or whether the valve position would allow gas flow to be, present in a line.

Fbio means site-specific fraction of VOC biodegraded, unitless.

Fe means fraction emitted value, unitless.

*Fm m*eans compound-specific fraction measured factor, unitless.

Fr means fraction removed value for VOC, unitless.

Fuel gas means gases that are combusted to derive useful work or heat.

Fuel gas system means the offsite and onsite piping and control system that gathers gaseous stream(s) generated by onsite operations, may blend them with other sources of gas, and transports the gaseous stream for use as fuel gas in combustion devices or in in-process combustion equipment such as furnaces and gas turbines, either singly or in combination.

Hard-piping means pipe or tubing that is manufactured and properly installed using good engineering judgment and standards, such as ANSI B31–3.

HON means the National Emissions Standards for Hazardous Air Pollutants for Source Categories: Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry and Other Processes Subject to the Negotiated Regulation for Equipment Leaks, 40 CFR part 63, subparts F and G.

Incinerator means an enclosed combustion device that is used for destroying organic compounds. Auxiliary fuel may be used to heat waste gas to combustion temperatures. Any energy recovery section present is not physically formed into one manufactured or assembled unit with

the combustion section; rather, the energy recovery section is a separate section following the combustion section and the two are joined by ducts or connections carrying flue gas. The above energy recovery section limitation does not apply to an energy recovery section used solely to preheat the incoming vent stream or combustion air.

Individual drain system means the stationary system used to convey wastewater streams or residuals to a waste management unit or to discharge or disposal. The term includes hard-piping, all process drains and junction boxes, together with their associated sewer lines and other junction boxes, manholes, sumps, and lift stations, conveying wastewater streams or residuals. A segregated storm water sewer system, which is a drain and collection system designed and operated for the sole purpose of collecting rainfall-runoff at a facility, and which is segregated from all other individual drain systems, is excluded from this definition.

Initial start-up means the first time a new or reconstructed affected facility begins production, or the first time a modified affected facility is put into production. Initial start-up does not include operation solely for testing equipment. For purposes of this subpart, initial start-up does not include subsequent start-ups (as defined in this section) of chemical process units following malfunctions or shutdowns or following changes in product for flexible operation units or following recharging of equipment in batch operation.

Internal floating roof means a cover that rests or floats on the liquid surface (but not necessarily in complete contact with it) inside a storage vessel or waste management unit that has a fixed roof.

Junction box means a manhole or a lift station, or access point to a wastewater sewer line.

Liquid-mounted seal means a foam-or liquid-filled seal mounted in contact with the liquid between the wall of the storage vessel or waste management unit and the floating roof. The seal is mounted continuously around the circumference of the vessel or unit.

Maintenance wastewater means wastewater generated by the draining of process fluid from components in the chemical process unit into an individual drain system prior to or during maintenance activities. Maintenance wastewater can be generated during planned and unplanned shutdowns and during periods not associated with a shutdown. Examples of activities that can generate maintenance wastewaters include descaling of heat exchanger tubing bundles, cleaning of distillation column traps, draining of low legs and high point bleeds, draining of pumps into an individual drain system, and draining of portions of the chemical process unit for repair.

Maximum true vapor pressure means the equilibrium partial pressure exerted by the organics in the stored or transferred liquid at the temperature equal to the highest calendar-month average of the liquid storage or transfer temperature for liquids stored or transferred above or below the ambient temperature or at the local maximum monthly average temperature as reported by the National Weather Service for liquids stored or transferred at the ambient temperature, as determined:

(1) In accordance with methods described in American Petroleum Institute Bulletin 2517, Evaporation Loss From External Floating Roof Tanks; or

(2) As obtained from standard reference texts; or

(3) As determined by the American Society for Testing and Materials Method D2879–83; or

(4) Any other method approved by the Administrator.

Metallic shoe seal or *mechanical shoe seal* means metal sheets that are held vertically against the wall of the storage vessel by springs, weighted levers, or other mechanisms and connected to the floating roof by braces or other means. A flexible coated fabric (envelope) spans the annular space between the metal sheet and the floating roof.

Modification means any physical change in, or change in the method of operation of, an existing designated CPU which increases or creates emissions to the atmosphere of VOC from process wastewater and/or aqueous in-process streams generated by the designated CPU, except as provided in § 60.772(c) of this subpart.

Non-automated monitoring and recording system means manual reading of values measured by monitoring instruments and manual transcription of those values to create a record. Non-automated systems do not include strip charts.

Oil-water separator or *organic-water separator* means a waste management unit, 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.

On-site or onsite means, with respect to records required to be maintained by this subpart, that the records are stored at a location within a major source which encompasses the affected facility. On-site includes, but is not limited to, storage at the designated chemical process unit to which the records pertain, or storage in central files elsewhere at the major source.

Open biological treatment process means a biological treatment process that is not a closed biological treatment process as defined in this section.

Operating permit means a permit required by 40 CFR part 70 or part 71.

Organic monitoring device means a unit of equipment used to indicate the concentration level of organic compounds exiting a recovery device based on a detection principle such as infra-red, photo ionization, or thermal conductivity.

Petroleum refining process, also referred to as a *petroleum refining process unit,* means a process that for the purpose of producing transportation fuels (such as gasoline and diesel fuels), heating fuels (such as fuel gas, distillate, and residual fuel oils), or lubricants; separates petroleum; or separates, cracks, or reforms unfinished derivatives. Examples of such units include, but are not limited to, alkylation units, catalytic hydrotreating, catalytic hydrorefining, catalytic hydrocracking, catalytic reforming, catalytic cracking, crude distillation, and thermal processes.

Plant site means all contiguous or adjoining property that is under common control, including properties that are separated only by a road or other public right-of-way. Common control includes properties that are owned, leased, or operated by the same entity, parent entity, subsidiary, or any combination thereof.

Point of determination means each point where process wastewater exits the chemical process unit.

Note to Definition: This subpart allows determination of the characteristics of a wastewater stream: (1) At the point of determination or (2) downstream of the point of determination if corrections are made for changes in flow rate and annual average concentration of VOC as determined in § 60.783 of this subpart. Such changes include losses by air VOC emissions; reduction of annual average concentration or changes in flow rate by mixing with other

water or wastewater streams; and reduction in flow rate or annual average concentration by treating or otherwise handling the wastewater stream to remove or destroy VOC.

Primary fuel means the fuel that provides the principal heat input to the device. To be considered primary, the fuel shall be able to sustain operation without the addition of other fuels.

Process heater means a device that transfers heat liberated by burning fuel directly to process streams or to heat transfer liquids other than water.

Process line means a group of unit operations and other equipment assembled and connected by hard-piping or ductwork to process raw materials and to manufacture a product, and that can operate independently of other unit operations in the CPU if supplied with sufficient raw materials and if equipped with sufficient product storage capacity. Two or more process lines may share recovery and ancillary equipment such as utilities. A process line is either an entire CPU, or one of multiple process lines which, together, are an entire CPU. All CPU have at least one process line, and some CPU have more than one process line.

Process wastewater means wastewater which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, by-product, or waste product. Examples are tank drawdown or feed tank drawdown; water formed during a chemical reaction or used as a reactant; water used to wash impurities from organic products or reactants; water used to cool or quench organic vapor streams through direct contact; water used to wash equipment between batches; and condensed steam from jet ejector systems pulling vacuum on vessels containing VOC.

Process wastewater stream means a stream that contains process wastewater as defined in this section.

Product means a compound or chemical which is manufactured by the chemical process unit. Isolated intermediates, impurities, wastes, and trace contaminants are not considered products.

Recapture device means an individual unit of equipment capable of and used for the purpose of recovering chemicals, but not normally for use, reuse, or sale. For example, a recapture device may recover chemicals primarily for disposal. Recapture devices include, but are not limited to, absorbers, carbon adsorbers, and condensers.

Recovery device means an individual unit of equipment capable of and normally used for the purpose of recovering chemicals for fuel value (i.e., net positive heating value), use, reuse or for sale for fuel value, use, or reuse. Examples of equipment that may be recovery devices include absorbers, carbon adsorbers, condensers, oil-water separators or organic-water separators, or organic removal devices such as decanters, strippers, or thin-film evaporation units. For purposes of the monitoring, recordkeeping, and reporting requirements of this subpart, recapture devices are considered recovery devices.

Relief valve means a valve used only to release an unplanned, non-routine discharge. A relief valve discharge can result from an operator error, a malfunction such as a power failure or equipment failure, or other unexpected cause that requires immediate venting of gas from process equipment in order to avoid safety hazards or equipment damage.

Research and development facility means laboratory and pilot plant operations whose primary purpose is to conduct research and development into new processes and products, where the operations are under the close supervision of technically trained personnel, and is not engaged in the manufacture of products for commercial sale, except in a *de minimis* manner.

Residual means any liquid or solid material containing VOC that is removed from a wastewater stream by a waste management unit or treatment process that does not destroy organic compounds (nondestructive unit). Examples of residuals from nondestructive wastewater management units are: the organic layer and bottom residue removed by a decanter or organic-water separator and the overheads from a steam stripper or air stripper. Examples of materials which are not residuals are: silt; mud; leaves; bottoms from a steam stripper or air stripper; and sludges, ash, or other materials removed from wastewater being treated by destructive devices such as biological treatment units and incinerators.

Secondary fuel means a fuel fired through a burner other than the primary fuel burner that provides supplementary heat in addition to the heat provided by the primary fuel.

Sewer line means a lateral, trunk line, branch line, or other conduit including, but not limited to, grates, trenches, etc., used to convey wastewater streams or residuals to a downstream waste management unit.

Shutdown means for purposes including, but not limited to, periodic maintenance, replacement of equipment, or repair, the cessation of operation of a chemical process unit or a reactor, air oxidation reactor, distillation unit, waste management unit, equipment required or used to comply with this subpart, or emptying and degassing of a storage vessel. Shutdown does not include the routine rinsing or washing of equipment in batch operation between batches.

Single-seal system means a floating roof having one continuous seal that completely covers the space between the wall of the storage vessel and the edge of the floating roof. This seal may be a vapor-mounted, liquid-mounted, or metallic shoe seal.

Specific gravity monitoring device means a unit of equipment used to monitor specific gravity and having a minimum accuracy of ±0.02 specific gravity units.

Start-up means the setting into operation of a chemical process unit or a reactor, air oxidation reactor, distillation unit, waste management unit, or equipment required or used to comply with this subpart or a storage vessel after emptying and degassing. Start-up includes initial start-up, operation solely for testing equipment, the recharging of equipment in batch operation, and transitional conditions due to changes in product for flexible operation units.

Start-up, shutdown, and malfunction plan means the plan required under § 60.787 of this subpart. This plan details the procedures for operation and maintenance of the affected facility during periods of start-up, shutdown, and malfunction.

Steam jet ejector means a steam nozzle which discharges a high-velocity jet across a suction chamber that is connected to the equipment to be evacuated.

Storage vessel means a tank or other vessel that is used to store organic liquids that contain one or more of VOC and that has been assigned, according to the procedures in § 60.770(f) of this subpart, to a chemical process unit that is subject to this subpart. Storage vessel does not include:

(1) Vessels permanently attached to motor vehicles such as trucks, railcars, barges, or ships;

(2) Pressure vessels designed to operate in excess on 204.9 kilopascals and without VOC emissions to the atmosphere;

(3) Vessels with capacities smaller than 38 cubic meters;

(4) Vessels storing organic liquids that contain VOC only as impurities;

(5) Bottom receivers tanks;

(6) Surge control vessels; or

(7) Wastewater storage tanks.

Surface impoundment means a waste management unit which is a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials (although it may be lined with manmade materials), which is designed to hold an accumulation of liquid wastes or waste containing free liquids. A surface impoundment is used for the purpose of treating, storing, or disposing of wastewater or residuals, and is not an injection well. Examples of surface impoundments are equalization, settling, and aeration pits, ponds, and lagoons.

Tank drawdown means any material or mixture of materials discharged from a product tank, feed tank, or intermediate tank for the purpose of removing water or other contaminants from the tank.

Temperature monitoring device means a unit of equipment used to monitor temperature and having a minimum accuracy of (a) ±1 percent of the temperature being monitored expressed in degrees Celsius or (b) ±0.5 degrees Celsius (°C), whichever number is greater (i.e., has the highest absolute value).

Treatment process means a specific technique that removes or destroys the organics in a wastewater or residual stream such as a steam stripping unit, thin-film evaporation unit, waste incinerator, biological treatment unit, or any other process applied to wastewater streams or residuals to comply with § 60.779 of this subpart. Most treatment processes are conducted in tanks. Treatment processes are a subset of waste management units.

Unit operation means one or more pieces of process equipment used to make a single change to the physical or chemical characteristics of one or more process streams. Unit operations include, but are not limited to, reactors, distillation units, extraction columns, absorbers, decanters, dryers, condensers, and filtration equipment.

Vapor-mounted seal means a continuous seal that completely covers the annular space between the wall of the storage vessel or waste management unit and the edge of the floating roof and is mounted such that there is a vapor space between the stored liquid and the bottom of the seal.

Volatile organic compound, volatile organic compounds, VOC means substances defined as volatile organic compounds in 40 CFR 51.100(s) and not excluded or exempted by that section, except that any substance with a Henry's law constant less than or equal to 0.1 y/x atmosphere per mole fraction as determined according to appendix J of this subpart is not a VOC for purposes of this subpart.

Waste management unit means the equipment, structure(s), or device(s) used to convey, store, treat, or dispose of wastewater streams or residuals. Examples of waste management units include: wastewater tanks, surface impoundments, individual drain systems, and biological wastewater treatment units. Examples of equipment that may be waste management units include containers, air flotation units, oil-water separators or organic-water separators, or organic removal devices such as decanters, strippers, or thin-film evaporation units. If such equipment is used for recovery then it is part of a chemical process unit and is not a waste management unit.

Wastewater is either a process wastewater or a maintenance wastewater and means water that:

(1) Contains either:

(i) An annual average concentration of VOC of at least 50 parts per million by weight at the point of determination and has an annual average flow rate of 0.02 liter per minute or greater; or

(ii) An annual average concentration of VOC of at least 10,000 parts per million by weight at the point of determination at any flow rate, and that

(2) Is discarded from a chemical process unit as defined in this section.

Wastewater stream means a stream that contains wastewater as defined in this subpart.

Wastewater tank means a stationary waste management unit that is designed to contain an accumulation of wastewater or residuals and is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) which provide structural support. Wastewater tanks used for flow equalization are included in this definition.

Water seal controls means a seal pot, p-leg trap, or other type of trap filled with water (e.g, flooded sewers that maintain water levels adequate to prevent air flow through the system) that creates a water barrier between the sewer line and the atmosphere. The water level of the seal shall be maintained in the vertical leg of a drain in order to be considered a water seal.

§ 60.772 Modification and reconstruction.

(a) *General.* The owner or operator shall follow the procedures specified in paragraphs (b), (c), (d), (f), (g), (h) and (j) of this section to determine whether a designated CPU that is neither a flexible operating unit or part of a flexible operating unit has been or will be modified. The owner or operator shall follow the procedures specified in paragraphs (b), (c), (e), (f), (g), (h) and (j) of this section to determine whether a designated CPU that is a flexible operating unit or part of a flexible operating unit has been or will be modified. The owner or operator shall follow the procedures specified in paragraph (k) of this section to determine whether a designated CPU has been or will be reconstructed.

(b) *Determining modification* Modification determinations are based on the designated CPU. To determine whether a modification has occurred or will occur, the owner or operator shall follow the procedures in either paragraph (b)(1) or (b)(2) of this section.

(1) Designate the physical or operational change as a modification.

(2) Determine whether the physical or operational change constitutes a modification by evaluating whether VOC emissions from process wastewater and aqueous in-process streams increased as a result of the physical or operational change. To make this determination, the owner or operator shall follow the procedures specified in paragraph (d) or (e), and in paragraphs (f), (g), (h) and (j) of this section, as appropriate. Physical and operational changes that are not, by themselves, considered modifications under this subpart are listed in paragraph (c) of this section.

(c) *Physical or operational changes that are not modifications.* The changes listed in this paragraph (c) shall not, by themselves, be considered modifications under this subpart. Section 60.14(e) does not apply for the purposes of this subpart.

(1) Maintenance, repair, and replacement which the Administrator determines to be routine for a source category, subject to the provisions of § 60.15 of this part. Replacement of spent catalyst with like catalyst is not a modification.

(2) An increase in the hours of operation.

(3) Physical or operational changes that cost less than 12.5 percent of the original cost of the existing designated CPU as adjusted to reflect capital improvements, casualty losses, and defunct equipment. Neither account depreciation or deflation is an allowable adjustment. The owner or operator shall keep a record or shall provide documentation on demand documenting that the cost was less than 12.5 percent.

(4) The relocation or change in ownership of an existing facility.

(d) *Determining VOC emissions generated by a designated CPU that is neither a flexible operation unit or part of a flexible operation unit.* For a

designated CPU that is neither a flexible operation unit or part of a flexible operation unit, the owner or operator shall follow the procedures specified in paragraphs (d)(1) through (d)(4) of this section to determine whether VOC emissions from process wastewater and aqueous in-process streams have increased or will increase after a physical or operational change has occurred. The owner or operator is required to evaluate only those process wastewater and aqueous in-process streams that are affected (i.e., changed or created) by the physical or operational change. For the purposes of this section, ''affected process wastewater stream'' and ''affected aqueous in-process stream'' mean process wastewater streams and aqueous in-process streams changed or created by a physical or operational change. The owner or operator shall keep a record or shall provide documentation on demand showing how it was determined that a process wastewater or aqueous in-process stream was not affected by a physical or operational change. At a minimum this documentation shall document concentration and flow rate of affected process wastewater and aqueous in-process streams both before and after a physical or operational change.

(1) *Identify the designated CPU.* Identify the designated CPU that has undergone or will undergo a physical or operational change.

(2) *Determine VOC emissions before a physical or operational change.* For each affected process wastewater and aqueous in-process stream, the owner or operator shall determine VOC emissions before a physical or operational change, i.e., baseline emissions, using VOC emissions or VOC mass flow rate as a surrogate for VOC emissions. VOC emissions and mass flow rate shall be determined as specified in paragraph (f) of this section. The baseline VOC emissions or baseline VOC mass flow rate for process wastewater and aqueous in-process streams shall be summed as specified in paragraph (j) of this section.

(3) *Determine VOC emissions after a physical or operational change.* For each affected process wastewater or aqueous in-process stream, the owner or operator shall determine VOC emissions after a physical or operational change, using VOC emissions or VOC mass flow rate as a surrogate for VOC emissions. VOC emissions and mass flow rate shall be determined as specified in paragraph (f) of this section. The VOC emissions or VOC mass flow rate for process wastewater and aqueous in-process streams shall be summed as specified in paragraph (j) of this section.

(4) *Compare the sum of baseline VOC emissions and the sum of VOC emissions after a physical or operational change.*

(i) *VOC emissions.* The owner or operator shall compare the sum of baseline VOC emissions to the sum of VOC emissions after the physical or operational change. If the sum of VOC emissions from process wastewater and aqueous in-process streams after the physical or operational change are greater than the sum of baseline VOC emissions from process wastewater and aqueous in-process streams, the VOC emissions from process wastewater and aqueous in-process streams have increased for the designated CPU.

(ii) *VOC mass flow rate as a surrogate for VOC emissions.* For process wastewater streams, the owner or operator shall compare the sum of baseline VOC mass flow rate at the point of determination to the sum of VOC mass flow rate at the point of determination after the physical or operational change. The owner or operator shall compare the sum of baseline VOC mass flow rate for aqueous in-process streams to the sum of VOC mass flow rate for aqueous in-process streams after the physical or operational change. If the sum of VOC mass flow rate at the point of determination after the physical or operational change is greater than the sum of baseline VOC mass flow rate at the point of determination, the VOC mass flow rate has increased and the VOC emissions have increased for the designated CPU. If the sum of VOC mass flow rate for aqueous in-process streams after the physical or operational change is greater than the sum of baseline VOC mass flow rate of aqueous in-process streams, the VOC mass flow rate has increased and the VOC emissions increased for the designated CPU. Once a determination has been made that VOC mass flow rate has increased, either at the point of determination or for aqueous in-process streams, the owner or operator may elect not to make the other comparison.

(e) *Determining VOC emissions generated by a designated CPU that is a flexible operation unit or part of a flexible operation unit.* For a designated CPU that is a flexible operation unit or part of a flexible operation unit, the owner or operator shall follow the procedures specified in paragraphs (e)(1) through (e)(5) of this section to determine whether VOC emissions from process wastewater and aqueous in-process streams have increased or will increase after a physical or operational change has occurred. The owner or operator is required to evaluate only those process wastewater and aqueous in-process streams that are affected (i.e., changed or created) by the physical or operational change.

(1) Identify the designated CPU that has undergone or will undergo a physical or operational change.

(2) *Select the baseline product.* The owner or operator shall select a baseline product from those products that the designated CPU is capable of producing without a change in physical or operational design. The owner or operator shall use best engineering judgement and consider the information specified in paragraphs (e)(2)(i)(A) through (e)(2)(i)(D) of this section in identifying these products. Products the owner or operator shall not consider are specified in paragraphs (e)(2)(ii)(A) through (e)(2)(ii)(C) of this section.

(i) *Products that could be produced by the designated CPU.*

(A) Products the designated CPU currently produces.

(B) Products that the designated CPU has produced in the past, provided that a change in physical or operational design has not occurred since the product was last produced.

(C) Products that the designated CPU reasonably can produce without having to change the physical or operational design.

(D) Products that similar designated CPU have produced.

(ii) *Products that could not be produced by the CPU.*

(A) Products that would require a change in the physical or operational design of the designated CPU.

(B) Products which cannot reasonably be produced, including products which cannot be reasonably produced in commercially viable quantities, products which are not sold in commerce, and products for which no commercial market is reasonably foreseeable or for which there is no known use in commerce.

(C) Products for which the designated CPU may have the theoretical physical capacity to produce, but for which the owner or operator does not have the technical knowledge necessary to produce that product and cannot, through exercise of reasonable due diligence, obtain the requisite technical knowledge.

(3) *Determine VOC emissions before a physical or operational change.* For each affected process wastewater and aqueous in-process stream, the owner or operator shall determine VOC emissions before a physical or operational change, i.e., baseline emissions, using VOC emissions or VOC mass flow rate as a surrogate for VOC emissions. VOC emissions and mass flow rate shall be

determined as specified in paragraph (f) of this section. Baseline VOC emissions shall be based on production of the baseline product. The VOC emissions or VOC mass flow rate for each process wastewater or aqueous in-process stream shall be summed as specified in paragraph (j) of this section.

(4) *Determine VOC emissions after a physical or operational change.* For each process wastewater and aqueous in-process stream, the owner or operator shall determine the sum of VOC emissions after a physical or operational change using VOC emissions or VOC mass flow rate as a surrogate for VOC emissions. VOC emissions and mass flow rate shall be determined as specified in paragraph (f) of this section. The VOC emissions or VOC mass flow rate for each process wastewater or aqueous in-process stream shall be summed as specified in paragraph (j) of this section. VOC emissions after the physical or operational change shall be based on the production of the product or products that are produced after the physical or operational change. The owner or operator may consider only the new product(s).

(5) *Compare baseline VOC emissions and VOC emissions after a physical or operational change.*

(i) *VOC emissions.* The owner or operator shall compare the sum of baseline VOC emissions to the sum of VOC emissions after the physical or operational change. If the sum of VOC emissions from process wastewater and aqueous in-process streams after the physical or operational change are greater than the sum of baseline VOC emissions from process wastewater and aqueous in-process streams, the VOC emissions from process wastewater and aqueous in-process streams have increased for the designated CPU.

(ii) *VOC mass flow rate as a surrogate for VOC emissions.* The owner or operator shall compare baseline VOC mass flow rate at the point of determination to VOC mass flow rate at the point of determination after the physical or operational change. The owner or operator shall compare baseline VOC mass flow rate for aqueous in-process streams to VOC mass flow rate for aqueous in-process streams after the physical or operational change. If the VOC mass flow rate at the point of determination after the physical or operational change is greater than the baseline VOC mass flow rate at the point of determination, the VOC mass flow rate has increased and the VOC emissions have increased for the designated CPU. If the VOC mass flow rate for aqueous in-process streams after the physical or operational change is greater than the baseline VOC mass flow rate of aqueous in-process streams, the VOC mass flow rate has increased and the VOC emissions have increased for the designated CPU. Once a determination has been made that VOC mass flow rate has increased, either at the point of determination or for aqueous in-process streams, the owner or operator may elect not to make the other comparison.

(f) *Determining VOC emissions.* VOC emissions shall be determined using either VOC emissions or mass flow rate as a surrogate for VOC emissions. VOC emissions and mass flow rate shall be determined on an annual average basis. To determine VOC emissions using the default fraction emitted value, Fe, for the individual drain system and the treatment process, the owner or operator shall use the procedures specified in paragraph (f)(1) of this section. To determine VOC emissions using site-specific modeling for the individual drain system and either the default Fe values for the treatment process or VOC emissions for the treatment process, the owner or operator shall use the procedures specified in paragraph (f)(2) of this section. To determine VOC emissions using annual average mass flow rate as a surrogate for emissions, the owner or operator shall follow the procedures specified in paragraph (f)(3) of this section.

(1) *Calculate VOC emissions using the default fraction emitted value, Fe, for the individual drain system and the treatment process.* For each process wastewater stream and aqueous in-process stream, the owner or operator shall calculate VOC emissions using the default Fe values for the individual drain system and the treatment process and use equation 1 in this paragraph (f)(1). The default Fe values for the individual drain system and the treatment process are listed in table 2 in appendix J of this part. Annual average concentration shall be determined using the procedures specified in paragraph (g)(1) of this section. Annual average flow rate shall be determined using the procedures specified in paragraph (h) of this section. The owner or operator is not required to determine the concentration of VOC that are not reasonably expected to be in the process. The owner or operator is required to consider only VOC included on the stream-specific list of VOC when measuring VOC concentrations. The stream-specific list of VOC shall be as determined as specified in § 60.778 of this subpart.

$$\text{VOC emissions} = \left(6.0 * 10^{-8}\right) * AQ * H \sum_{i=1}^{n} AC_i * Fe_i \qquad \text{(Eqn 1)}$$

Where:

VOC emissions=Annual average emissions of VOC, for a process wastewater or aqueous in-process stream, megagrams per year.

AQ=Annual average flow rate of the process wastewater stream or aqueous in-process stream, liters per minute.

H=Number of hours during the designated 12-month period that the process wastewater stream or aqueous in-process stream was generated, hours per year.

ACi_i=Annual average concentration of VOC i of the process wastewater stream or aqueous in-process stream, parts per million by weight.

Fe_i=Fraction emitted of VOC i for the individual drain system and the treatment process, dimensionless. Fe values for the individual drain system and the treatment process are listed in table 2 in appendix J to this part.

n=Total number of VOC in process wastewater stream or aqueous in-process stream.

$6.0 * 10^{-8}$=Conversion factor, 1000 kilograms per cubic meter, 60 minutes per hour, 10^{-3} cubic meters per liter, 10^{-3} megagrams per kilogram, and 10^{-6} from the parts per million by weight factor (i.e., AC_i)

(2) *Calculate VOC emissions using site-specific modeling for the individual drain system.* For each process wastewater stream and aqueous in-process stream, the owner or operator shall calculate VOC emissions using site-specific modeling for the individual drain system as determined using the procedures specified in appendix J to this part. In addition, for each process wastewater stream and aqueous in-process stream, the owner or operator shall use either the default Fe values for the treatment process or VOC emissions

for the treatment process as specified in this paragraph (f)(2), and use either equation 2 or equation 3 in this paragraph (f)(2). Annual average concentration shall be determined using the procedures specified in paragraph (g)(1) of this section. Annual average flow rate shall be determined using the procedures specified in paragraph (h) of this section. The owner or operator is not required to determine the concentration of VOC that are not reasonably expected to be in the process. The owner or operator is required to consider only VOC included on the stream-specific list of VOC when measuring VOC concentrations. The stream-specific list of VOC shall be determined as specified in § 60.778 of this subpart.

(i) *Determining the Fe value for the treatment process or VOC emissions for the treatment process.* If the treatment process is a biological treatment process, the owner or operator shall use the default Fe values for the treatment process that are listed in table 2 in appendix J of this part. If the treatment process is a non-biological treatment process, the owner or operator shall use performance test data or design evaluations to determine the VOC emissions for all VOC emissions generated by the treatment process as specified in § 60.779(j)(1) of this subpart.

(ii) *Equation 2.* Use equation 2 when the treatment process is a biological treatment process and the default Fe for the treatment process is used. The default Fe values for the treatment process are listed in table 2 in appendix J of this part.

$$\text{VOC emissions} = \text{IDS} + \left[\left(6.0 * 10^{-8}\right) * \text{AQ} * \text{H} \sum_{i=1}^{n} \text{AC}_i * \text{Fet}_i\right] \qquad \text{(Eqn 2)}$$

Where:

VOC emissions=Annual average emissions of VOC for a process wastewater or aqueous in-process stream, megagrams per year.

IDS=VOC emissions from the individual drain system determined as specified in appendix J to part 60, megagram per year.

AQ=Annual average flow rate of the process wastewater stream or aqueous in-process stream, liters per minute.

H=Number of hours during the designated 12-month period that the process wastewater stream or aqueous in-process stream was generated, hours per year.

AC_i=Annual average concentration of VOC i of the process wastewater stream or aqueous in-process stream, parts per million by weight.

Fet_i=Fraction emitted of VOC i for the treatment process, dimensionless. Fe values for the treatment process shall be determined as specified in paragraph (f)(2)(i) of this section.

n=Total number of VOC in process wastewater stream or aqueous in-process stream.

$6.0 * 10^{-8}$=Conversion factor, 1000 kilograms per cubic meter, 60 minutes per hour, 10^{-3} cubic meters per liter, 10^{-3} megagrams per kilogram, and 10^{-6} from the parts per million by weight factor (i.e., Ac_i)

(ii) *Equation 3.* Use equation 3 when the treatment process is a non-biological treatment process and VOC emissions for the treatment process is determined using performance test data or design evaluations.

$$\text{VOC emissions} = \text{IDS} + \text{TP} \qquad \text{(Eqn 3)}$$

Where:

VOC emissions=Annual average emissions of VOC for a process wastewater or aqueous in-process stream, megagrams per year.

IDS=VOC emissions from the individual drain system determined as specified in appendix J to part 60, megagram per year.

TP=VOC emissions from the treatment process determined as specified in paragraph (f)(2)(iii) of this section, megagrams per year.

(3) *Determining annual average VOC mass flow rate as a surrogate for VOC emissions.*

(i) Annual average concentration shall be determined using the procedures specified in paragraph (g)(2) of this section. Method 25D of 40 CFR part 60, appendix A, shall be used to determine annual average concentration.

(ii) Annual average flow rate shall be determined using the procedures specified in paragraph (h) of this section. The owner or operator is not required to determine the concentration of VOC that are not reasonably expected to be in the process. The owner or operator is required to consider only VOC included on the stream-specific list of VOC when measuring VOC concentrations. The stream-specific list of VOC shall be as determined as specified in § 60.778 of this subpart.

(iii) Determine the annual average VOC mass flow rate using equation 2 in paragraph (f)(2) of this section for each individual process wastewater stream at the point of determination and for each aqueous in-process stream.

$$\text{QMW} = \left(6.0 * 10^{-5}\right) * \text{AQ} * \sum_{i=1}^{n} \text{AC}_i \qquad \text{(Eqn 4)}$$

Where:

QMW=Mass flow rate of VOC, for a process wastewater or aqueous in-process stream, kilograms per hour.

AQ=Annual average flow rate of the process wastewater stream or aqueous in-process stream, liters per minute.

AC_i=Annual average concentration of VOC i of the process wastewater stream or aqueous in-process stream, parts per million by weight.

n=Total number of VOC in process wastewater stream or aqueous in-process stream.

p=Density of a process wastewater stream or aqueous in-process stream, kilograms per cubic meter.

$6.0 * 10^{-5}$=Conversion factor, 1000 kilograms per cubic meter, 60 minutes per hour, 10^{-3} cubic meters per liter, and 10^{-6} from the parts per million by weight factor (i.e., AC_i).

(g) *Determining annual average concentration for a process wastewater stream or aqueous in-process stream.* The annual average concentration shall be a flow-weighted average representative of actual or anticipated operation of the designated CPU generating the process wastewater or aqueous in-process stream generated by the designated CPU over the designated 12-month period. Flow-weighted annual average concentration for VOC shall be calculated as the total mass of VOC occurring in the process wastewater stream or aqueous in-process stream during the designated 12-month period divided by the total mass of the process wastewater stream or aqueous in-process stream during the same designated 12-month period. The owner or operator shall determine the annual average concentration using the procedures specified in paragraphs (g)(1)(i) through (g)(1)(iv) of this section. The owner or operator is required to consider only VOC included on the stream-specific list of VOC when measuring VOC concentrations. The stream-specific list of VOC shall be as determined as specified in § 60.778 of this subpart.

(1) *VOC emissions.* When an owner or operator is determining concentration as part of determining annual average VOC emissions under paragraph (f)(1) or paragraph (f)(2) of this section, the procedures in paragraphs (g)(1)(i) through (g)(1)(iv) of this section shall be used.

(i) For process wastewater streams, the annual average concentration shall be determined either at the point of determination or downstream of the point of determination, with adjustment for concentration changes made according to § 60.782(b)(6) of this subpart if a point downstream of the point of determination is used. For aqueous in-process streams, the annual average concentration shall be determined before the point of determination and shall be adjusted for any losses of VOC to the atmosphere and for dilution.

(ii) The procedures specified in § 60.782(b), except for paragraph (b)(5)(i)(A), of this subpart shall be used for determining the annual average concentration. The procedures specified in § 60.782(b) of this subpart may be used in combination, and no one procedure shall take precedence over another.

(iii) A minimum of three wastewater samples from each process wastewater stream or aqueous in-process stream shall be taken. Samples may be grab samples or composite samples.

(iv) Concentration values that are not determined using Method 25D may be adjusted with the chemical's Fm value. Chemical-specific Fm factors shall be determined as specified in appendix J of this part. When Fm adjustments are made, they shall be used for all compounds and in all instances for the purpose of this section.

(2) *VOC mass flow rate.* When an owner or operator is determining concentration as part of determining annual average VOC mass flow rate under paragraph (f)(3) of this section, the procedures specified in paragraph (g)(2)(i) and (g)(2)(ii) of this section shall be used. Measurements shall be taken at the point of determination.

(i) If an owner or operator is measuring concentration as part of determining annual average VOC mass flow rate under paragraph (f)(3) of this section, Method 25D of 40 CFR part 60, appendix A shall be used to determine annual average concentration.

(ii) A minimum of three wastewater samples from each process wastewater stream or aqueous in-process stream shall be taken. Samples may be grab samples or composite samples.

(h) *Determining annual average flow rate for a process wastewater stream or aqueous in-process stream.* The annual average flow rate shall be representative of the process wastewater stream or aqueous in-process stream generated by the designated CPU over the designated 12-month period. The owner or operator shall consider the total annual average wastewater volume generated by the designated CPU. The owner or operator shall determine the annual average flow rate using the procedures specified in paragraphs (h)(1) and (h)(2) of this section.

(1) For process wastewater streams, the annual average flow rate shall be determined either at the point of determination or downstream of the point of determination, with adjustment for flow rate changes made according to § 60.782(c)(4) of this subpart if a point downstream of the point of determination is used. For aqueous in-process streams, the annual average flow rate shall be determined before the point of determination, and the owner or operator shall make corrections if streams are mixed or treated before being measured.

(2) The procedures in § 60.782(c)(1) through (c)(3) of this subpart are considered acceptable procedures for determining flow rate. The procedures in § 60.782(c)(1) through (c)(3) of this subpart may be used in combination, and no one procedure shall take precedence over another.

(i) [Reserved]

(j) *Sum VOC emissions generated by the designated CPU.*—(i) *VOC emissions.* Sum the annual average VOC emissions, as calculated in paragraph (f)(1) or (f)(2) of this section, for each process wastewater stream and each aqueous in-process stream affected by the physical or operational change to determine the annual average VOC emissions for the designated CPU.

(2) *VOC mass flow rate.* Sum the annual average VOC mass flow rate, as calculated in paragraph (f)(3) of this section, for each process wastewater stream affected by the physical or operational change to determine the annual average VOC mass flow rate for the designated CPU. Sum the annual average VOC mass flow rate, as calculated in paragraph (f)(3) of this section, for each aqueous in-process stream affected by the physical or operational change to determine the annual average VOC mass flow rate for the designated CPU. Once a determination has been made that VOC emissions have increased, the owner or operator can elect not to make the other comparison.

(k) *Reconstruction.* (1) For the purposes of this subpart ''fixed capital cost of the new components,'' as used in § 60.15 of this part, includes the fixed capital cost of all depreciable components which are replaced within any 2-year rolling period following September 12, 1994. Replacement costs shall be charged to the first day the owner or operator incurred any expenses involving the actual work of replacement, i.e., the designated CPU has had either components removed in preparation of the replacements or components added as replacements. When replacement of components, e.g., replacing a distillation column, is reasonably viewed as a project, the cost of the entire project shall be charged to the first day the owner or operator incurred any expenses involving the actual work of replacement.

(2) The owner or operator shall either keep a record for the purposes of this subpart or provide on demand documentation kept for financial or tax purposes that documents when costs for replacements were first incurred and the costs of the replacements.

§ 60.773 Process wastewater provisions—General.

(a) *Process wastewater—general.* This paragraph (a) specifies the requirements applicable to process wastewater streams located at affected facilities. The owner or operator shall comply with the requirements in paragraphs (a)(1) through (a)(3) of this section, no later than the applicable dates specified in § 60.770 of this subpart.

(1) *Determine wastewater streams to be controlled.* Determine whether each wastewater stream requires control for VOC by following the requirements in either paragraph (b) of this section, determining Group 1 or Group 2, or paragraph (c) of this section, designating Group 1, and comply with the requirements in paragraph (d) of this section.

(2) *Requirements for Group 1 wastewater streams.* For wastewater streams that are Group 1, comply with paragraphs (a)(2)(i) through (a)(2)(ix) of this section.

(i) Comply with the applicable requirements for wastewater tanks, surface impoundments, containers, individual drain systems, and oil-water separators as specified in § 60.774 of this subpart.

(ii) Comply with the applicable requirements for control of VOC for treatment processes and the test methods and procedures to determine compliance as specified in §§ 60.779 and 60.783 of this subpart. Alternatively, the owner or operator may elect to comply with the treatment provisions specified in paragraph (e) of this section.

(iii) Comply with the applicable control device, leak inspection, and delay of repair provisions as specified in §§ 60.780, 60.786, and 60.777 of this subpart, unless otherwise specified in this subpart.

(iv) Comply with the applicable monitoring requirements specified in § 60.781 of this subpart, unless otherwise specified in this subpart.

(v) Comply with the applicable reporting and recordkeeping requirements specified in §§ 60.784 and 60.785 of this subpart, unless otherwise specified in this subpart.

(3) *Requirements for Group 2 wastewater streams.* For wastewater streams that are Group 2, comply with the applicable reporting and recordkeeping requirements specified in §§ 60.784 and 60.785 of this subpart.

(b) *How to determine Group 1 or Group 2 status.* This paragraph (b) provides instructions for determining whether a process wastewater stream is Group 1 or Group 2. Annual average concentration shall be determined according to the procedures specified in § 60.782(b) of this subpart. Annual average flow rate shall be determined according to the procedures specified in § 60.782(c) of this subpart.

(1) A wastewater stream is a Group 1 wastewater stream if:

(i) The annual average concentration of VOC is greater than or equal to 10,000 parts per million by weight at any flow rate; or

(ii) The annual average concentration of VOC is greater than or equal to 500 parts per million by weight and the annual average flow rate is greater than or equal to 1 liter per minute.

(2) A wastewater stream is a Group 2 wastewater stream if it is not a Group 1 wastewater stream by the criteria in paragraph (b)(1) of this section.

(c) *How to designate a Group 1 wastewater stream.* The owner or operator may elect to designate a wastewater stream as a Group 1 wastewater stream in order to comply with paragraph (a)(1) of this section. To designate a wastewater stream or a mixture of wastewater streams as a Group 1 wastewater stream, the procedures specified in paragraphs (c)(1) and (c)(2) of this section and § 60.782(a)(2) of this subpart shall be followed.

(1) From the point of determination for each wastewater stream that is included in the Group 1 designation to the location where the owner or operator elects to designate such wastewater stream(s) as a Group 1 wastewater stream, the owner or operator shall comply with all applicable emission suppression requirements specified in § 60.774 of this subpart.

(2) From the location where the owner or operator designates a wastewater stream or mixture of wastewater streams to be a Group 1 wastewater stream, such Group 1 wastewater stream shall be managed in accordance with all applicable emission suppression requirements specified in § 60.774 of this subpart and with the treatment requirements in § 60.779 of this subpart.

(d) Owners or operators shall not discard liquid or solid organic materials containing greater than 10,000 parts per million VOC (as determined by analysis of the stream composition, engineering calculations, or process knowledge) from a chemical process unit to water or wastewater, unless the receiving stream is managed and treated as a Group 1 wastewater stream. This prohibition does not apply to materials from the activities listed in paragraphs (d)(1) through (d)(4) of this section.

(1) Equipment leaks;

(2) Activities included in maintenance or startup/shutdown/malfunction plans;

(3) Spills; or

(4) Samples.

(e) *Off-site or third-party treatment.* The owner or operator may elect to transfer a Group 1 wastewater stream or residual removed from a Group 1 wastewater stream to an on-site treatment operation not owned or operated by the owner or operator of the affected facility generating the wastewater stream or residual, or to an off-site treatment operation.

(1) The owner or operator transferring the wastewater stream or residual shall:

(i) Comply with the provisions specified in § 60.774 of this subpart for each waste management unit that receives or manages a Group 1 wastewater stream or residual removed from a Group 1 wastewater stream prior to shipment or transport.

(ii) Include a notice with the shipment or transport of each Group 1 wastewater stream or residual removed from a Group 1 wastewater stream. The notice shall state that the wastewater stream or residual contains VOC that are to be treated in accordance with the provisions of this subpart. When the transport is continuous or ongoing (for example, discharge to a publicly-owned treatment works), the notice shall be submitted to the treatment operator initially and whenever there is a change in the required treatment. These notices shall be retained by the owner or operator as specified in § 60.785(c) of this subpart.

(2) The owner or operator may not transfer the wastewater stream or residual unless the transferee has submitted to EPA a written certification that the transferee will manage and treat any Group 1 wastewater stream or residual removed from a Group 1 wastewater stream received from a affected facility subject to the requirements of this subpart in accordance with the requirements of either §§ 60.774 through 60.786 of this subpart or § 60.787(b) of this subpart if alternative emission limitations have been granted the transferor in accordance with those provisions. The certifying entity may revoke the written certification by sending a written statement to EPA and the owner or operator giving at least 90 days notice that the certifying entity is rescinding acceptance of responsibility for compliance with the regulatory provisions listed in this paragraph (e)(2). Upon expiration of the notice period, the owner or operator may not transfer the wastewater stream or residual to the treatment operation.

(3) By providing this written certification to EPA the certifying entity accepts responsibility for compliance with the regulatory provisions listed in paragraph (e)(2) of this section with respect to any shipment of wastewater or residual covered by the written certification. Failure to abide by any of those provisions with respect to such shipments may result in enforcement action by EPA against the certifying entity in accordance with the enforcement provisions applicable to violations of these provisions by owners or operators of affected facilities.

(4) Written certifications and revocation statements, to EPA from the transferees of wastewater or residuals shall be signed by a responsible official of the certifying entity, provide the name and address of the certifying entity, and be sent to the appropriate EPA Regional Office. Such written certifications are not transferable by the treater.

§ 60.774 Wastewater tank, surface impoundment, container, individual drain system, and oil-water separator provisions.

(a) *Purpose of this section.* (1) This section specifies control requirements for the following waste management units: wastewater tanks, surface impoundments, containers, individual drain systems, and oil-water separators.

(2) For each waste management unit that receives, manages, treats, or otherwise handles a Group 1 wastewater stream or a residual taken from a Group 1 wastewater stream, the owner or operator shall comply with one of the compliance option paragraphs in this section, as appropriate. Paragraphs (a)(2)(i) through (a)(2)(v) of this section list the compliance options and waste management units to which they apply. A waste management unit shall be in compliance with one of the compliance options specified in this section. The same compliance option does not have to be used for all waste management units of the same or different types. A summary of the compliance options available for each waste management unit is provided in Table 3 of this subpart.

(i) *HON.* The provisions of the ''National Emissions Standard for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry,'' also known as the ''HON,'' may be used to comply for all types of waste management units as specified in paragraph (c) of this section. The HON is located in 40 CFR part 63, subparts F and G.

(ii) *Standard-standards.* The provisions of the ''National Emission Standards for Containers,'' the ''National Emission Standards for Surface Impoundments,'' the ''National Emission Standards for Individual Drain Systems,'' and the ''National Emission Standards for Oil-Water Separators and Organic-Water Separators,'' also known as the standard-standards, may be used as a compliance option as specified in paragraph (d) of this section. These standard-standards are located in 40 CFR, part 63, subparts PP, QQ, RR, and VV, respectively.

(iii) *Petroleum Refinery NSPS.* The provisions of the ''Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems'' may be used to comply for individual drain systems as specified in paragraph (e) of this section. The Petroleum Refinery NSPS is located in 40 CFR, part 60, subpart QQQ.

(iv) *RCRA, subpart CC.* The provisions of ''Air Emission Standards for Tanks, Surface Impoundments, and Containers'' may be used to comply for wastewater tanks, surface impoundments, and containers as specified in paragraphs (f) and (g), respectively, of this section. The RCRA, subpart CC rules are located in 40 CFR part 264, subpart CC and 40 CFR, part 265, subpart CC.

(v) *Benzene Waste.* The provisions of the ''National Emission Standard for Benzene Waste Operations'' may be used to comply for all types of waste management units as specified in paragraph (h) of this section. The Benzene Waste rule is located in 40 CFR part 61, subpart FF.

(b) *General requirements.* (1) For each wastewater tank that receives, manages, treats, or otherwise handles a Group 1 wastewater stream or a residual taken from a Group 1 wastewater stream that meets the vapor pressure and capacity cutoffs presented in Table 4 of this subpart. The owner or operator shall choose an appropriate control requirement for wastewater tanks as specified in Table 4 of this subpart.

(2) Table 5 of this subpart provides a summary of the requirements of each compliance option.

(3) *Inspection requirements.* When complying with one of the six control requirement options for waste management units, listed in Table 3 of this subpart, the owner or operator shall comply with the applicable inspection provisions corresponding to the selected control requirement option.

(4) *Definition requirements.* When definitions differ between this subpart and one of the six compliance options, the definitions in this subpart shall apply, unless the specified term in the selected compliance option is not defined in this subpart. In such cases, the definitions from the selected compliance option shall apply.

(5) Owners or operators shall specify the control option used for each waste management unit as specified in § 60.784(c) of this subpart.

(c) *Requirements for Hazardous Organic NESHAP (HON) compliance option.* Owners or operators selecting the HON compliance option shall comply with paragraph (c)(1) of this section and with paragraph (c)(2) or (c)(3) of this section.

(1) The owner or operator of a waste management unit that is subject to both 40 CFR part 63, subparts F and G (HON) and this subpart shall comply with either paragraph (c)(2) or (c)(3) of this section. The owner or operator of a waste management unit that is subject to this subpart but not subject to the HON shall comply with paragraph (c)(3) of this section.

(2) Comply with the applicable requirements specified in 40 CFR 63.133 through 63.137, except as specified in paragraphs (c)(2)(i)(A) through (c)(2)(i)(H) of this section. Comply with the control device provisions, delay of repair provisions, and leak inspection provisions specified in 40 CFR 63.139, 63.140, and 63.148 and with the monitoring, reporting, and recordkeeping provisions specified in 40 CFR 63.143, 63.146, and 63.147, except as specified in paragraphs (c)(2)(ii) through (c)(2)(vii) of this section.

(i) The following exceptions apply to the provisions of 40 CFR 63.133 through 63.137:

(A) Waste management units may be equipped with pressure relief devices that vent directly to the atmosphere, provided the pressure relief device is not used for planned or routine venting of VOC emissions.

(B) All pressure relief devices shall remain in a closed position at all times except when it is necessary for the pressure relief device to open for the purpose of preventing physical damage or permanent deformation of the waste management unit in accordance with good engineering and safety practices.

(C) When the term ''organic HAP emissions'' or ''organic hazardous air pollutants emissions'' is used in 40 CFR 63.133, the term ''VOC emissions'' shall apply for the purposes of this subpart.

(D) When the term ''organic HAP vapors'' or ''organic hazardous air pollutants vapors'' is used in 40 CFR 63.133, 63.135, and 63.137, the term ''VOC vapors'' shall apply for the purposes of this subpart.

(E) When the terms ''Group 1 wastewater stream'' or ''Group 2 wastewater stream'' are used in 40 CFR

63.133, the definitions of these terms contained in § 60.773(b) shall apply for the purposes of this subpart.

(F) When the determination of equivalence criteria in 40 CFR 63.102(b) of subpart F is referred to in 40 CFR 63.133 and 63.137, the provisions in § 60.787(b) of this subpart shall apply for the purposes of this subpart.

(G) When the Notification of Compliance Status requirements in 40 CFR 63.152(b) are referred to in 40 CFR 63.133 and 63.137, the provisions in § 60.784(c) of this subpart shall apply for the purposes of this subpart. In addition, when information is required to be reported according to 40 CFR 63.152(b) in the Notification of Compliance Status, the information shall be reported in the Notification of Compliance Status required by § 60.784(c) of this subpart for the purposes of this subpart.

(H) When the inspection requirements for waste management units in table 11 of the appendix to subpart G of 40 CFR part 63 are referred to in 40 CFR 63.136, table 11 of the appendix to subpart G of 40 CFR part 63 shall apply for the purposes of this subpart.

(ii) The following exceptions apply to the provisions of 40 CFR 63.139:

(A) Waste management units may be equipped with pressure relief devices that vent directly to the atmosphere, provided the pressure relief device is not used for planned or routine venting of VOC emissions.

(B) All pressure relief devices shall remain in a closed position at all times except when it is necessary for the pressure relief device to open for the purpose of preventing physical damage or permanent deformation of the waste management unit in accordance with good engineering and safety practices.

(C) When the term ''organic HAP emissions'' or ''organic hazardous air pollutants emissions'' is used in 40 CFR 63.139, the term ''VOC emissions'' shall apply for the purposes of this subpart.

(D) When the term ''organic HAP concentration'' or ''organic hazardous air pollutants concentration'' is used in 40 CFR 63.139, the term ''VOC concentration'' shall apply for the purposes of this subpart.

(E) When the performance standards for treatment processes managing Group 1 wastewater streams and/or residuals removed from Group 1 wastewater streams provisions in 40 CFR 63.138 are referred to in 40 CFR 63.139, the provisions in § 60.779 shall apply for the purposes of this subpart.

(F) When the test methods and procedures to determine compliance requirements in 40 CFR 63.145(i) are referred to in 40 CFR 63.139, the provisions in § 60.783(i) of this subpart shall apply for the purposes of this subpart.

(G) When the compliance demonstration for flares requirements in 40 CFR 63.145(j) are referred to in 40 CFR 63.139, the provisions in § 60.783(j) of this subpart shall apply for the purposes of this subpart.

(iii) The following exceptions apply to the provisions of 40 CFR 63.140:

(A) Waste management units may be equipped with pressure relief devices that vent directly to the atmosphere, provided the pressure relief device is not used for planned or routine venting of VOC emissions.

(B) All pressure relief devices shall remain in a closed position at all times except when it is necessary for the pressure relief device to open for the purpose of preventing physical damage or permanent deformation of the waste management unit in accordance with good engineering and safety practices.

(iv) The following exceptions apply to the provisions of 40 CFR 63.143:

(A) Waste management units may be equipped with pressure relief devices that vent directly to the atmosphere, provided the pressure relief device is not used for planned or routine venting of VOC emissions.

(B) All pressure relief devices shall remain in a closed position at all times except when it is necessary for the pressure relief device to open for the purpose of preventing physical damage or permanent deformation of the waste management unit in accordance with good engineering and safety practices.

(C) When the definitions in 40 CFR 63.101 of subpart F or in 40 CFR 63.111 are referred to in 40 CFR 63.143, the provisions in § 60.771 of this subpart shall apply for the purposes of this subpart.

(D) When the performance standards for treatment processes managing Group 1 wastewater streams and/or residuals removed from Group 1 wastewater streams provisions in 40 CFR 63.138 are referred to in 40 CFR 63.143, the provisions in § 60.779 shall apply for the purposes of this subpart.

(E) When the request for approval to monitor alternative parameters requirements in 40 CFR 63.151(f) are referred to in 40 CFR 63.143 the provisions in § 60.784(b)(6) of this subpart shall apply for the purposes of this subpart.

(v) The following exceptions apply to the provisions of 40 CFR 63.146:

(A) Waste management units may be equipped with pressure relief devices that vent directly to the atmosphere, provided the pressure relief device is not used for planned or routine venting of VOC emissions.

(B) All pressure relief devices shall remain in a closed position at all times except when it is necessary for the pressure relief device to open for the purpose of preventing physical damage or permanent deformation of the waste management unit in accordance with good engineering and safety practices.

(C) When the Notification of Compliance Status requirements in 40 CFR 63.152(b) are referred to in 40 CFR 63.146, the provisions in § 60.784(c) of this subpart shall apply for the purposes of this subpart. In addition, when information is required to be reported according to 40 CFR 63.152(b) in the Notification of Compliance Status, the information shall be reported in the Notification of Compliance Status required by § 60.784(c) for the purposes of this subpart.

(D) When the inspection requirements for waste management units in table 11 of the appendix to subpart G of 40 CFR part 63 are referred to in 40 CFR 63.146, table 11 of the appendix to subpart G of 40 CFR part 63 shall apply for the purposes of this subpart.

(E) When the performance standards for treatment processes managing Group 1 wastewater streams and/or residuals removed from Group 1 wastewater streams provisions in 40 CFR 63.138 are referred to in 40 CFR 63.146, the provisions in § 60.779 shall apply for the purposes of this subpart.

(F) When the request for approval to monitor alternative parameters requirements in 40 CFR 63.151(f) are referred to in 40 CFR 63.146, the provisions in § 60.784(b)(6) of this subpart shall apply for the purposes of this subpart.

(G) When the Periodic Report requirements in 40 CFR 63.152(c) are referred to in 40 CFR 63.146, the provisions in 40 CFR 63.152(c) of this subpart that are applicable to waste management units shall apply for the purposes of submitting semiannual reports in this subpart. In addition, when information is required to be reported according to 40 CFR 63.152(c) in the Periodic Report, the information shall be reported in the semiannual report required by 40 CFR 63.152(c) for the purposes of this subpart.

(vi) The following exceptions apply to the provisions of 40 CFR 63.147:

(A) Waste management units may be equipped with pressure relief devices that vent directly to the atmosphere, provided the pressure relief device is not used for planned or routine venting of VOC emissions.

(B) All pressure relief devices shall remain in a closed position at all times

except when it is necessary for the pressure relief device to open for the purpose of preventing physical damage or permanent deformation of the waste management unit in accordance with good engineering and safety practices.

(C) When the term ''organic hazardous air pollutants'' is used in 40 CFR 63.147, the term ''VOC'' shall apply for the purposes of this subpart.

(D) When the third-party treatment requirements in 40 CFR 63.132(g) are referred to in 40 CFR 63.147, the provisions in § 60.773(e) shall apply for the purposes of this subpart.

(E) When the process knowledge of the wastewater requirements in 40 CFR 63.144(b)(3) or (c)(1) are referred to in 40 CFR 63.147, the provisions in § 60.782(b)(3) or (c)(1) shall apply for the purposes of this subpart.

(F) When the continuous records requirements in 40 CFR 63.152(f) are referred to in 40 CFR 63.147, the provisions in § 60.785(e) of this subpart shall apply for the purposes of this subpart.

(vii) The following exceptions apply to the provisions of 40 CFR 63.148:

(A) Waste management units may be equipped with pressure relief devices that vent directly to the atmosphere, provided the pressure relief device is not used for planned or routine venting of VOC emissions.

(B) All pressure relief devices shall remain in a closed position at all times except when it is necessary for the pressure relief device to open for the purpose of preventing physical damage or permanent deformation of the waste management unit in accordance with good engineering and safety practices.

(3) Comply with the applicable requirements specified in 40 CFR 63.133 through 63.137, except as specified in paragraphs (c)(3)(i) and (c)(3)(xiii) of this section. Comply with the control device provisions, delay of repair provisions, and leak inspection provisions specified in §§ 60.780, 60.777, and 60.786 of this subpart and with the monitoring, reporting, and recordkeeping provisions specified in §§ 60.781, 60.784, and 60.785 of this subpart.

(i) Waste management units may be equipped with pressure relief devices that vent directly to the atmosphere, provided the pressure relief device is not used for planned or routine venting of VOC emissions.

(ii) All pressure relief devices shall remain in a closed position at all times except when it is necessary for the pressure relief device to open for the purpose of preventing physical damage or permanent deformation of the waste management unit in accordance with good engineering and safety practices.

(iii) When the term ''organic HAP emissions'' or ''organic hazardous air pollutants emissions'' is used in 40 CFR 63.133, the term ''VOC emissions'' shall apply for the purposes of this subpart.

(iv) When the term ''organic HAP vapors'' or ''organic hazardous air pollutants vapors'' is used in 40 CFR 63.133, 63.135, and 63.137, the term ''VOC vapors'' shall apply for the purposes of this subpart.

(v) When the terms ''Group 1 wastewater stream'' or ''Group 2 wastewater stream'' are used in 40 CFR 63.133, the definitions of these terms contained in § 60.773(b) shall apply for the purposes of this subpart.

(vi) When the determination of equivalence criteria in 40 CFR 63.102(b) of subpart F is referred to in 40 CFR 63.133 and 63.137, the provisions in § 60.787(b) of this subpart shall apply for the purposes of this subpart.

(vii) When the control device provisions for process wastewater in 40 CFR 63.139 are referred to in 40 CFR 63.133, 63.134, 63.135, 63.136, 63.137, the provisions in § 60.780 shall apply for the purposes of this subpart.

(viii) When the delay of repair provisions in 40 CFR 63.140 are referred to in 40 CFR 63.133, 63.134, 63.135, 63.136, 63.137, the provisions in § 60.777 shall apply for the purposes of this subpart.

(ix) When the inspection and monitoring of operations provisions in 40 CFR 63.143 are referred to in 40 CFR 63.133, 63.134, 63.135, 63.137, the provisions in § 60.781 shall apply for the purposes of this subpart.

(x) When the leak inspection provisions in 40 CFR 63.148 are referred to in 40 CFR 63.133, 63.134, 63.135, 63.136, and 63.137, the provisions in § 60.786 shall apply for the purposes of this subpart.

(xi) When the Notification of Compliance Status requirements in 40 CFR 63.152(b) are referred to in 40 CFR 63.133 and 63.137, the provisions in § 60.784(c) of this subpart shall apply for the purposes of this subpart. In addition, when information is required to be reported according to 40 CFR 63.152(b) in the Notification of Compliance Status, the information shall be reported in the Notification of Compliance Status required by § 60.784(c) for the purposes of this subpart.

(xii) When the compliance options for wastewater tanks requirements in table 10 of the appendix to subpart G of 40 CFR part 63 are referred to in 40 CFR 63.133, table 4 of this subpart shall apply for the purposes of this subpart.

(xiii) When the inspection requirements for waste management units in table 11 of the appendix to subpart G of 40 CFR part 63 are referred to in 40 CFR 63.136, table 11 of the appendix to subpart G of 40 CFR part 63 shall apply for the purposes of this subpart.

(d) *Requirements for Standard-standards compliance option.* Owners or operators selecting the Standard-standards compliance option shall comply with paragraph (d)(1) or (d)(2) of this section. The Standard-standards compliance option includes requirements for surface impoundments specified in 40 CFR part 63, subpart QQ, containers specified in 40 CFR part 63, subpart PP, individual drain systems specified in 40 CFR part 63, subpart RR, and oil-water separators specified in 40 CFR part 63, subpart VV.

(1) Comply with the applicable requirements specified in paragraphs (d)(1)(i) through (d)(1)(iv) of this section, as applicable.

(i) *Surface impoundments.* Comply with the surface impoundment requirements specified in 40 CFR 63.942 and 63.943, except as specified in paragraph (d)(1)(i)(A) of this section. Comply with the inspection provisions specified in 40 CFR 63.946, the test methods and procedures (i.e., leak inspection provisions) specified in 40 CFR 63.945, the delay of repair provisions specified in 40 CFR 63.946(c), and with the monitoring, reporting, and recordkeeping provisions specified in 40 CFR 63.946, 63.948, and 63.947, except as specified in paragraphs (d)(1)(i)(B) through (d)(1)(i)(E) of this section.

(A) The following exceptions apply to the provisions of 40 CFR 63.942 and 63.943:

(*1*) When the term ''air emissions'' is used in 40 CFR 63.942 and 63.943, the term ''VOC emissions'' shall apply for purposes of this subpart.

(*2*) When the term ''organic vapor permeability'' is used in 40 CFR 63.942 and 63.943, the term ''VOC permeability'' shall apply for purposes of this subpart.

(*3*) For purposes of this subpart, when the provisions of 40 CFR 63.941 are referred to in 40 CFR 63.942 and 63.943, the provisions of § 60.771 shall apply, unless the specified term in 40 CFR 63.942 and 63.943 is not defined in § 60.771, in such cases the provisions of 40 CFR 63.941 shall apply.

(*4*) When the closed-vent system and control device design and operation requirements in 40 CFR 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.943(b)(4), the provisions in

§§ 60.780 and 60.786 shall apply for purposes of this subpart.

(*5*) When the term ''air emission control equipment'' is used in 40 CFR 63.942 and 63.943, the term ''VOC emission control equipment'' shall apply for purposes of this subpart.

(B) The following exceptions apply to the provisions of 40 CFR 63.945:

(*1*) When the term ''organic HAP concentration'' is used in 40 CFR 63.945, the term ''VOC concentration'' shall apply for purposes of this subpart.

(*2*) When the term ''organic constituents'' or ''individual organic constituent'' is used in 40 CFR 63.945, the term ''VOC constituents'' or ''individual VOC constituents'' shall apply for purposes of this subpart.

(*3*) When the term ''maximum organic concentration'' is used in 40 CFR 63.945, the term ''maximum VOC concentration'' shall apply for purposes of this subpart.

(C) The following exceptions apply to the provisions of 40 CFR 63.946:

(*1*) When the term ''air emissions'' is used in 40 CFR 63.946, the term ''VOC emissions'' shall apply for purposes of this subpart.

(*2*) When the term ''air emissions control equipment'' is used in 40 CFR 63.946, the term ''VOC emissions control equipment'' shall apply for purposes of this subpart.

(*3*) When the closed-vent system and control device design and operation requirements in 40 CFR 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.946, the inspection and monitoring requirements in § 60.781 shall apply for purposes of this subpart.

(D) The following exception applies to the provisions of 40 CFR 63.947: When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.947, the recordkeeping requirements for closed-vent systems and control devices specified in 40 CFR 63.785 shall apply for purposes of this subpart.

(E) The following exception applies to the provisions of 40 CFR 63.948: When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.948, the reporting requirements for closed-vent systems and control devices specified in 40 CFR 63.784 shall apply.

(ii) *Containers*. Comply with the container requirements for Level 1 and Level 2 containers specified in 40 CFR 63.922 and 63.923, except as specified in paragraph (d)(1)(ii)(A) of this section. Containers with a design capacity greater than 0.42 m^3 shall be Level 2 containers. Containers with a design capacity greater than or equal to 0.1 m^3 and less than or equal to 0.42 m^3 shall be Level 1 containers. Other storage units with capacities less than 0.1 m^3 are not containers for the purpose of this subpart. The requirements for Level 3 containers do not apply for the purposes of this subpart. Comply with the inspection requirements specified in 40 CFR 63.926, the test methods and procedures (i.e., leak inspection provisions and the procedures for determining a container to be vapor tight) specified in 40 CFR 63.925, the delay of repair provisions specified in 40 CFR 63.926(a)(3), and with the monitoring provisions specified in 40 CFR 63.926, except as specified in paragraph (d)(1)(ii)(B) and (d)(1)(ii)(C) of this section. Comply with the reporting and recordkeeping provisions specified in §§ 60.784 and 60.785 of this subpart.

(A) The following exceptions apply to the provisions of 40 CFR 63.922 and 63.923:

(*1*) When the term ''air emissions'' is used in 40 CFR 63.922 and 63.923, the term ''VOC emissions'' shall apply for purposes of this subpart.

(*2*) When the term ''organic vapor-suppressing barrier'' or ''organic vapor-suppressing foam'' is used in 40 CFR 63.922 and 63.923, the term ''VOC vapor-suppressing barrier'' or ''VOC vapor-suppressing foam'' shall apply for purposes of this subpart.

(*3*) When the term ''organic vapor permeability'' is used in 40 CFR 63.922 and 63.923, the term ''VOC vapor permeability'' shall apply for purposes of this subpart.

(*4*) For purposes of this subpart, when the provisions of 40 CFR 63.921 are referred to in 40 CFR 63.922 and 63.923, the provisions of § 60.771 shall apply, unless the specified term in 40 CFR 63.922 and 63.923 is not defined in § 60.771, in such cases the provisions of 40 CFR 63.921 shall apply.

(B) The following exceptions apply to the provisions of 40 CFR 63.925:

(*1*) When the term ''no detectable organic emissions'' is used in 40 CFR 63.925, the term ''no detectable VOC emissions'' shall apply for purposes of this subpart.

(*2*) When the term ''organic vapor leakage'' is used in 40 CFR 63.925, the term ''VOC leakage'' shall apply for purposes of this subpart.

(*3*) When the term ''organic HAP concentration'' is used in 40 CFR 63.925, the term ''VOC concentration'' shall apply for purposes of this subpart.

(*4*) When the term ''organic constituents'' or ''organic constituent'' is used in 40 CFR 63.925, the term ''VOC constituents'' or ''VOC constituent'' shall apply for purposes of this subpart.

(*5*) When the term ''maximum organic concentration'' is used in 40 CFR 63.925, the term ''maximum VOC concentration'' shall apply for the purposes of this subpart.

(C) The following exception applies to the provisions of 40 CFR 63.926: When the Container Level 3 controls in 40 CFR 63.924 are referred to in 40 CFR 63.926, these provisions do not apply for purposes of this subpart.

(iii) *Individual drain systems*. Comply with the individual drain system requirements specified in 40 CFR 63.962, except as specified in paragraph (d)(1)(iv)(A) of this section. Comply with the inspection provisions in 40 CFR 63.964, the leak inspection provisions in § 60.786 of this subpart, the delay of repair provisions specified in 40 CFR 63.964(b), and with the monitoring, reporting, and recordkeeping provisions specified in 40 CFR 63.964, 63.966, and 63.965, except as specified in paragraph (d)(1)(iv)(B) of this section.

(A) The following exceptions apply to the provisions of 40 CFR 63.962:

(*1*) When the term ''air emissions'' is used in 40 CFR 63.962 , the term ''VOC emissions'' shall apply for purposes of this subpart.

(*2*) When the term ''air emission control equipment'' is used in 40 CFR 63.962, the term ''VOC emission control equipment'' shall apply for purposes of this subpart.

(*3*) When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.962, the provisions in §§ 60.780 and 60.786 shall apply for purposes of this subpart.

(*4*) When the term ''organic vapors'' is used in 40 CFR 63.962, the term ''VOC'' shall apply for purposes of this subpart.

(B) The following exceptions apply to the provisions of 40 CFR 63.964:

(*1*) When the term ''air emissions'' is used in 40 CFR 63.964 , the term ''VOC emissions'' shall apply for purposes of this subpart.

(*2*) When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.964, the provisions in §§ 60.780 and 60.786 shall apply for purposes of this subpart.

(iv) *Oil-water separators*. Comply with the oil-water separator requirements specified in 40 CFR 63.1042, 63.1043, and 63.1044, except as specified in paragraph (d)(1)(iv)(A) of this section. For portions of the separator where it is infeasible to install and operate a floating roof, such as over a weir mechanism, the owner or

operator shall comply with 40 CFR 63.1044. Comply with the inspection provisions specified in 40 CFR 63.1047, test methods and procedures (i.e., leak inspection provisions and floating roof gap seal measurements) specified in 40 CFR 63.1046, the delay of repair provisions specified in 40 CFR 63.1047(d), and with the monitoring, reporting, and recordkeeping provisions specified in 40 CFR 63.1047, 63.1049, and 63.1048, except as specified in paragraphs (d)(1)(iv)(B) through (d)(1)(iv)(E) of this section.

(A) The following exceptions apply to the provisions of 40 CFR 63.1042 through 63.1044:

(*1*) When the term ''air emissions'' is used in 40 CFR 63.1042 through 63.1044, the term ''VOC emissions'' shall apply for purposes of this subpart.

(*2*) When the term ''organic vapor permeability'' is used in 40 CFR 63.942 and 63.943, the term ''VOC permeability'' shall apply for purposes of this subpart.

(*3*) For purposes of this subpart, when the provisions of 40 CFR 63.1041 are referred to in 40 CFR 63.1042 through 63.1044, the provisions of § 60.771 shall apply, unless the specified term in 40 CFR 63.1042 through 63.1044 is not defined in § 60.771, in such cases the provisions of 40 CFR 63.1041 shall apply.

(*4*) When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.1044(b)(4), the provisions in §§ 60.780 and 60.786 shall apply for purposes of this subpart.

(B) The following exceptions apply to the provisions of 40 CFR 63.1046:

(*1*) When the term ''organic HAP concentration'' is used in 40 CFR 63.1046, the term ''VOC concentration'' shall apply for purposes of this subpart.

(*2*) When the term ''organic emissions'' is used in 40 CFR 63.1046, the term ''VOC emissions'' shall apply for purposes of this subpart.

(*3*) When the term ''organic vapor leakage'' is used in 40 CFR 63.1046, the term ''VOC leakage'' shall apply for purposes of this subpart.

(C) The following exceptions apply to the provisions of 40 CFR 63.1047:

(*1*) When the term ''air emissions'' is used in 40 CFR 63.1042 through 63.1044, the term ''VOC emissions'' shall apply for purposes of this subpart.

(*2*) When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.1044(b)(4), the provisions in §§ 60.780 and 60.786 shall apply for the purposes of this subpart.

(D) The following exception applies to the provisions of 40 CFR 63.1048: When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.1048(c), the recordkeeping requirements for closed-vent systems and control devices specified in 40 CFR 63.785 shall apply for purposes of this subpart.

(E) The following exception applies to the provisions of 40 CFR 63.1049: When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.1049(b), the reporting requirements for closed-vent systems and control devices specified in 40 CFR 63.784 shall apply.

(2) Comply with the applicable requirements specified in paragraphs (d)(2)(i) through (d)(2)(iv) of this section, as applicable.

(i) *Surface impoundments.* Comply with the surface impoundment requirements specified in 40 CFR 63.942 and 63.943, except as specified in paragraph (d)(2)(i)(A) of this section. Comply with the inspection provisions specified in 40 CFR 63.946, except as specified in paragraph (d)(2)(i)(B) of this section. Comply with the control device, delay of repair, and leak inspection provisions specified in §§ 60.780, 60.777, and 60.786 of this subpart, and the monitoring, reporting, and recordkeeping provisions specified in §§ 60.781, 60.784, and 60.785.

(A) The following exceptions apply to the provisions of 40 CFR 63.942 and 63.943:

(*1*) When the term ''air emissions'' is used in 40 CFR 63.942 and 63.943, the term ''VOC emissions'' shall apply for purposes of this subpart.

(*2*) When the term ''organic vapor permeability'' is used in 40 CFR 63.942 and 63.943, the term ''VOC permeability'' shall apply for purposes of this subpart.

(*3*) For purposes of this subpart, when the provisions of 40 CFR 63.941 are referred to in 40 CFR 63.942 and 63.943, the provisions of § 60.771 shall apply, unless the specified term in 40 CFR 63.942 and 63.943 is not defined in § 60.771, in such cases the provisions of 40 CFR 63.941 shall apply.

(*4*) When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.943(b)(4), the provisions in §§ 60.780 and 60.786 shall apply for purposes of this subpart.

(*5*) When the term ''air emission control equipment'' is used in 40 CFR 63.942 and 63.943, the term ''VOC emission control equipment'' shall apply for purposes of this subpart.

(*6*) When the requirements for no detectable emissions in 40 CFR 63.945(a) are referred to in 40 CFR 63.943, the provisions in § 60.786 shall apply for purposes of this subpart.

(*7*) When the inspection provisions specified in 40 CFR 63.946(a) are referred to in 40 CFR 63.942, the requirements of 40 CFR 63.946(a)(3) and (a)(4) do not apply for purposes of this subpart.

(*8*) When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.942, the provisions in §§ 60.780 and 60.786 shall apply for the purposes of this subpart.

(*9*) When the inspection provisions specified in 40 CFR 63.946(b) are referred to in 40 CFR 63.943, the requirements of 40 CFR 63.946(b)(1)(iii), (b)(1)(iv), and (b)(2) do not apply for purposes of this subpart.

(B) The following exceptions apply to the provisions of 40 CFR 63.946:

(*1*) When the term ''air emissions'' is used in 40 CFR 63.946, the term ''VOC emissions'' shall apply for purposes of this subpart.

(*2*) When the recordkeeping provisions of 40 CFR 63.947(a)(2) are referred to in § 63.946, the provisions of § 60.785 shall apply.

(*3*) When the term ''air emissions control equipment'' is used in 40 CFR 63.946, the term ''VOC emissions control equipment'' shall apply for purposes of this subpart.

(*4*) When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.946, the inspection and monitoring requirements in § 60.781 shall apply for purposes of this subpart.

(*5*) When the inspection record specified in 40 CFR 63.947(a)(2) is referred to in 40 CFR 63.946, the applicable provisions in § 60.785 shall apply for the purposes of this subpart.

(ii) *Containers.* Comply with the container requirements specified in 40 CFR 63.922 and 63.923, except as specified in paragraph (d)(2)(ii)(A) of this section. Comply with the inspection provisions specified in 40 CFR 63.926, except as specified in paragraph (d)(2)(ii)(B) of this section. Comply with the control device, delay of repair, and leak inspection provisions specified in §§ 60.780, 60.777, and 60.786 of this subpart, and the monitoring, reporting, and recordkeeping provisions specified in §§ 60.781, 60.784, and 60.785.

(A) The following exceptions apply to the provisions of 40 CFR 63.922 and 63.923:

(*1*) When the term ''air emissions'' is used in 40 CFR 63.922 and 63.923, the term ''VOC emissions'' shall apply for purposes of this subpart.

(*2*) When the term ''organic vapor-suppressing barrier'' or ''organic vapor-suppressing foam'' is used in 40 CFR 63.922 and 63.923, the term ''VOC vapor-suppressing barrier'' or ''VOC vapor-suppressing foam'' shall apply for purposes of this subpart.

(*3*) When the term ''organic vapor permeability'' is used in 40 CFR 63.922 and 63.923, the term ''VOC vapor permeability'' shall apply for purposes of this subpart.

(*4*) For purposes of this subpart, when the provisions of 40 CFR 63.921 are referred to in 40 CFR 63.922 and 63.923, the provisions of § 60.771 shall apply, unless the specified term in 40 CFR 63.922 and 63.923 is not defined in § 60.771, in such cases the provisions of 40 CFR 63.921 shall apply.

(*5*) When the requirements for no detectable organic emissions in 40 CFR 63.926(a) are referred to in 40 CFR 63.922, the requirements in § 60.786 shall apply for purposes of this subpart.

(B) The following exception applies to the provisions of 40 CFR 63.926: When the Container Level 3 controls in 40 CFR 63.924 are referred to in 40 CFR 63.926, these provisions do not apply for purposes of this subpart.

(iii) *Individual drain systems.* Comply with the individual drain system requirements specified in 40 CFR 63.962, except as specified in paragraph (d)(2)(iii)(A) of this section. Comply with the inspection provisions specified in 40 CFR 63.964, except as specified in paragraph (d)(2)(iii)(B) of this section. Comply with the control device, delay of repair, and leak inspection provisions specified in §§ 60.780, 60.777, and 60.786 of this subpart, and the monitoring, reporting, and recordkeeping provisions specified in §§ 60.781, 60.784, and 60.785.

(A) The following exceptions apply to the provisions of 40 CFR 63.962:

(*1*) When the term ''air emissions'' is used in 40 CFR 63.962, the term ''VOC emissions'' shall apply for purposes of this subpart.

(*2*) When the term ''air emission control equipment'' is used in 40 CFR 63.962, the term ''VOC emission control equipment'' shall apply for purposes of this subpart.

(*3*) When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.962, the provisions in §§ 60.780 and 60.786 shall apply for purposes of this subpart.

(*4*) When the term ''organic vapors'' is used in 40 CFR 63.962, the term ''VOC'' shall apply for purposes of this subpart.

(B) The following exceptions apply to the provisions of 40 CFR 63.964:

(*1*) When the term ''air emissions'' is used in 40 CFR 63.964, the term ''VOC emissions'' shall apply for purposes of this subpart.

(*2*) When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.964, the provisions in §§ 60.780 and 60.786 shall apply for purposes of this subpart.

(*3*) When the record of inspection specified in 40 CFR 63.965(a) or (a)(3) is referred to in 40 CFR 63.964, the applicable provisions in § 60.785 shall apply for purposes of this subpart.

(iv) *Oil-water separators.* Comply with the oil-water separator requirements specified in 40 CFR 63.1042, 63.1043, and 63.1044, except as specified in paragraphs (d)(2)(iv)(A) through (d)(2)(iv)(H) of this section. For portions of the separator where it is infeasible to install and operate a floating roof, such as over a weir mechanism, the owner or operator shall comply with 40 CFR 63.1044. Comply with the control device, delay of repair, and leak inspection provisions specified in §§ 60.780, 60.777, and 60.786 of this subpart and with the monitoring, reporting, and recordkeeping provisions specified in §§ 60.781, 60.784, and 60.785.

(A) When the term ''air emissions'' is used in 40 CFR 63.1042 through 63.1044, the term ''VOC emissions'' shall apply for purposes of this subpart.

(B) When the term ''organic vapor permeability'' is used in 40 CFR 63.942 and 63.943, the term ''VOC permeability'' shall apply for purposes of this subpart.

(C) For purposes of this subpart, when the provisions of 40 CFR 63.1041 are referred to in 40 CFR 63.1042 through 63.1044, the provisions of § 60.771 shall apply, unless the specified term in 40 CFR 63.1042 through 63.1044 is not defined in § 60.771, in such cases the provisions of 40 CFR 63.1041 shall apply.

(D) When the requirements for no detectable organic emissions in 40 CFR 63.1046(a) are referred to in 40 CFR 63.1042 and 63.1044, the provisions in § 60.786 shall apply for purposes of this subpart.

(E) When the inspection provisions specified in 40 CFR 63.1047(a) are referred to in 40 CFR 63.1042(d), the requirements of 40 CFR 63.1047(a)(3) and (a)(4) do not apply for purposes of this subpart.

(F) When the inspection provisions specified in 40 CFR 63.1047(b) are referred to in 40 CFR 63.1043(d), the requirements of 40 CFR 63.1047(b)(1)(iv), (b)(1)(v), (b)(2)(iii), and (b)(2)(iv) do not apply for purposes of this subpart.

(G) When the inspection and monitoring provisions specified in 40 CFR 63.1047(c) are referred to in 40 CFR 63.1044(d), the requirements of 40 CFR 63.1047(c)(1)(iii), (c)(1)(iv), and (c)(2) do not apply for purposes of this subpart.

(H) When the closed-vent system and control device design and operation requirements in § 63.693 of 40 CFR part 63, subpart DD, are referred to in 40 CFR 63.1044(b)(4), the provisions in §§ 60.780 and 60.786 shall apply for purposes of this subpart.

(e) *Requirements for Petroleum Refinery Wastewater Systems NSPS compliance option.* Owners or operators selecting the Petroleum Refinery compliance option shall comply with paragraph (e)(1) of this section and with paragraph (e)(2) or (e)(3) of this section.

(1) The owner or operator of an individual drain system that is subject to both 40 CFR part 60, subpart QQQ and this subpart shall comply with either paragraph (e)(2) or (e)(3) of this section. The owner or operator of an individual drain system that is subject to this subpart but not subject to 40 CFR part 60, subpart QQQ shall comply with paragraph (e)(3) of this section.

(2) Comply with the applicable requirements specified in 40 CFR 60.693–1(b) and (e). Comply with the closed-vent system and control device provisions, leak inspection provisions, and delay of repair provisions specified in 40 CFR 60.692–5, 60.696(b), and 60.692–6 and with the monitoring, recordkeeping, and reporting provisions specified in 40 CFR 60.695, 60.697, and 60.698, except as specified in paragraphs (e)(2)(i) through (e)(2)(iii) of this section.

(i) The following exceptions apply to the provisions of § 60.692–5:

(A) When the provisions of 40 CFR 60.18 are referred to in 40 CFR 60.692–5(c), owners or operators shall comply with the provisions of Table 2 of this subpart for purposes of this subpart.

(B) When the procedures for acquiring approval to use alternative monitoring provisions are discussed in 40 CFR 60.695 (a) and (c), the provisions of § 60.784(b) shall apply for purposes of this subpart.

(C) When the provisions of 40 CFR 60.18(f)(2) are referred to in 40 CFR 60.695(a)(4), owners or operators shall

comply with the provisions of § 60.783(j) for purposes of this subpart.

(ii) The following exceptions apply to the provisions of § 60.697:

(A) When complying with the recordkeeping provisions specified in 40 CFR 60.697, the provisions of paragraphs (a), (b)(1), (b)(2), (c), (g), (h), (i), and (j) of 40 CFR 60.697 shall not apply because the provisions of these paragraphs are not related to individual drain systems or closed vent systems and control devices.

(B) When complying with § 60.697(f)(3)(iv), owners or operators shall use the procedures specified in § 60.787 for purposes of this subpart.

(iii) The following exceptions apply to the provisions of § 60.698:

(A) When complying with the reporting provisions specified in 40 CFR 60.698, the provisions of paragraphs (a) of 40 CFR 60.698 shall not apply because complying with 40 CFR 60.693 is not an alternative standard for purposes of this subpart.

(B) When complying with the reporting provisions specified in 40 CFR 60.698, the provisions of paragraphs (b) of 40 CFR 60.698 shall not apply because paragraph (b) of 40 CFR 60.698 relates to compliance demonstration information that is required to be submitted under 60.784.

(C) When complying with the reporting provisions specified in 40 CFR 60.698, the provisions of paragraphs (e) of 40 CFR 60.698 shall not apply because owners or operators are not subject to 40 CFR 60.692–7.

(3) Comply with the applicable requirements specified in 40 CFR 60.693–1(b) and (e), except as specified in paragraphs (e)(3)(i) through (e)(3)(ii) of this section. Comply with the control device, leak inspection, and delay of repair provisions specified in §§ 60.780, 60.786, and 60.777 of this subpart and with the monitoring, reporting, and recordkeeping provisions specified in §§ 60.781, 60.784, and 60.785 of this subpart.

(i) When the standards for closed-vent systems and control devices in § 60.692–5 are referred to in § 60.693–1(b), the provisions in §§ 60.780 and 60.786 shall apply for purposes of this subpart.

(ii) When the delay of repair provisions in § 60.692–6 are referred to in § 60.693–1(e), the provisions in § 60.777 shall apply for purposes of this subpart.

(f) *Requirements for RCRA 40 CFR part 264, subpart CC compliance option.* Owners or operators selecting the RCRA 40 CFR part 264, subpart CC compliance option shall comply with paragraph (f)(1) of this section and with paragraph (f)(2) or (f)(3) of this section.

(1) The owner or operator of a wastewater tank, surface impoundment, or container that is subject to both 40 CFR part 264, subpart CC and this subpart shall comply with either paragraph (f)(2) or (f)(3) of this section. The owner or operator of a wastewater tank, surface impoundment, or container that is subject to this subpart but not subject to 40 CFR part 264, subpart CC shall comply with paragraph (f)(3) of this section.

(2) Comply with the applicable requirements specified in 40 CFR 264.1084 through 264.1086, except as specified in paragraph (f)(2)(i) of this section. Comply with the closed-vent system and control device provisions in 40 CFR 264.1087, with the delay of repair provisions in 40 CFR 264.1084(k), 264.1085(f), and 264.1086(c)(4)(iii) and (d)(4)(iii), and with the inspection and monitoring, recordkeeping, and reporting provisions specified in 40 CFR 264.1088, 264.1089, and 264.1090, except as specified in paragraphs (f)(2)(ii) through (f)(2)(v) of this section.

(i) The following exceptions apply to the provisions of 40 CFR 264.1084 through 264.1086:

(A) For purposes of this subpart, 40 CFR 264.1084(a) and (j), 264.1085(a) and (e), and 264.1086(a) and (d)(2) do not apply.

(B) For purposes of this subpart, when the provisions of 40 CFR 264.1081 are referred to in 40 CFR 264.1084 through 264.1086, the provisions of § 60.771 shall apply, unless the specified term in 40 CFR 264.1084 through 264.1086 is not defined in § 60.771, in such cases the provisions of 40 CFR 264.1081 shall apply.

(C) When the term ''hazardous waste'' is used in 40 CFR 264.1084 through 264.1086, the term ''wastewater or residual'' shall apply for purposes of this subpart.

(D) When the term ''tank'' is used in 40 CFR 264.1084 through 264.1086, the term ''wastewater tank'' shall apply for purposes of this subpart.

(E) When the terms ''air pollutant emissions'' or ''organic emissions'' are used in 40 CFR 264.1084 through 264.1086, the term ''VOC emissions'' shall apply for purposes of this subpart.

(F) When the term ''maximum organic vapor pressure'' is used in 40 CFR 264.1084, the term ''maximum true vapor pressure'' shall apply for purposes of this subpart, and the maximum true vapor pressure shall be determined as specified in § 60.771 for purposes of this subpart.

(ii) The following exceptions apply to the provisions of 40 CFR 264.1087:

(A) When the provisions of 40 CFR 264.1033(e) are referred to in 40 CFR 264.1087(c)(5)(ii), the provisions of § 60.783(j) shall apply for purposes of this subpart.

(B) When the provisions of 40 CFR 264.1034(c)(1) through (c)(4) are referred to in 40 CFR 265.1087(c)(5)(iii), the provisions of § 60.783 shall apply for purposes of this subpart.

(C) When the terms ''organic'' or ''organics'' are used in 40 CFR 264.1087, the term ''VOC'' shall apply for purposes of this subpart.

(iii) The following exception applies to the provisions of 40 CFR 264.1088: When 40 CFR 264.1088(b) requires that ''the owner or operator shall incorporate this plan and schedule into the facility inspection plan required under 40 CFR 264.15,'' the written plan and schedule required by this paragraph 40 CFR 264.1088(b) shall be submitted as part of the Notification of Compliance Status required by § 60.784(c) for purposes of this subpart.

(iv) The following exceptions apply to the provisions of 40 CFR 264.1089:

(A) When complying with the recordkeeping provisions specified in 40 CFR 264.1089, the provisions of paragraphs (a), (e)(1)(iii), (f), (h), (i), and (j) of 40 CFR 264.1089 shall not apply because the provisions of these paragraphs are not related to waste management units or closed vent systems and control devices.

(B) When the term ''hazardous waste'' is used in 40 CFR 264.1089, the term ''wastewater or residual'' shall apply for purposes of this subpart.

(C) When the term ''maximum organic vapor pressure'' is used in 40 CFR 264.1089, the term ''maximum true vapor pressure'' shall apply for purposes of this subpart, and the maximum true vapor pressure shall be determined as specified in § 60.771 for purposes of this subpart.

(v) The following exceptions apply to the provisions of 40 CFR 264.1090:

(A) When complying with the reporting provisions specified in 40 CFR 264.1090, the provisions of paragraph (a) of 40 CFR 264.1090 shall not apply because the provisions of this paragraph are not related to waste management units or closed vent systems and control devices.

(B) [Reserved]

(3) Comply with the applicable requirements specified in 40 CFR 264.1084 through 264.1086, except as specified in paragraphs (f)(3)(i) through (f)(3)(xi) of this section. Comply with the control device, leak detection, and delay of repair provisions specified in §§ 60.780, 60.786, and 60.777 of this subpart and with the monitoring,

reporting, and recordkeeping provisions specified in §§ 60.781, 60.784, and 60.785 of this subpart.

(i) For purposes of this subpart, 40 CFR 264.1084(a) and (j), 264.1085(a) and (e), and 264.1086(a) and (d)(2) do not apply.

(ii) For purposes of this subpart, when the provisions of 40 CFR 264.1081 are referred to in 40 CFR 264.1084 through 264.1086, the provisions of § 60.771 shall apply, unless the specified term in 40 CFR 264.1084 through 264.1086 is not defined in § 60.771, in such cases the provisions of 40 CFR 264.1081 shall apply.

(iii) When the term ''hazardous waste'' is used in 40 CFR 264.1084 through 264.1086, the term ''wastewater or residual'' shall apply for purposes of this subpart.

(iv) When the term ''tank'' is used in 40 CFR 264.1084 through 264.1086, the term ''wastewater tank'' shall apply for purposes of this subpart.

(v) When the terms ''air pollutant emissions'' or ''organic emissions'' are used in 40 CFR 264.1084 through 264.1086, the term ''VOC emissions'' shall apply for purposes of this subpart.

(vi) When the term ''maximum organic vapor pressure'' is used in 40 CFR 264.1084, the term ''maximum true vapor pressure'' shall apply for purposes of this subpart, and the maximum true vapor pressure shall be determined as specified in § 60.771 for purposes of this subpart.

(vii) When the closed-vent systems and control devices provisions in 40 CFR 264.1087 are referred to in 40 CFR 264.1084 through 264.1086, the provisions in §§ 60.780 and 60.786 shall apply for purposes of this subpart.

(viii) For purposes of this subpart, the delay of repair provisions in 40 CFR 264.1084(k), 264.1085(f), and 264.1086(c)(4)(iii) and (d)(4)(iii) shall not apply, and the provisions in § 60.777 shall apply.

(ix) When the inspection and monitoring requirements are referred to in 40 CFR 264.1088, the provisions in § 60.781 shall apply for purposes of this subpart.

(x) When the recordkeeping provisions in 40 CFR 264.1089 are referred in 40 CFR 264.1084 through 264.1086, the provisions in § 60.785 shall apply for purposes of this subpart.

(xi) When the leak inspection provisions of 40 CFR 264.1083(d) are referred to in 40 CFR 264.1084(h)(2), 264.1085(d)(1)(ii), and 264.1086(g), the provisions in § 60.786 shall apply for purposes of this subpart.

(g) *Requirements for RCRA 40 CFR part 265, subpart CC compliance option.* Owners or operators selecting the RCRA 40 CFR part 265, subpart CC compliance option shall comply with paragraph (g)(1) of this section and with paragraph (g)(2) or (g)(3) of this section.

(1) The owner or operator of a wastewater tank, surface impoundment, or container that is subject to both 40 CFR part 265, subpart CC and this subpart shall comply with either paragraph (g)(2) or (g)(3) of this section. The owner or operator of a wastewater tank, surface impoundment, or container that is subject to this subpart but not subject to 40 CFR part 265, subpart CC shall comply with paragraph (g)(3) of this section.

(2) Comply with the applicable requirements specified in 40 CFR 265.1085 through 265.1087, except as specified in paragraph (g)(2)(i) of this section. Comply with the closed-vent system and control device provisions in 40 CFR 265.1088, with the delay of repair provisions in 40 CFR 265.1085(k), 265.1086(f), and 265.1087(d)(4)(iii), and with the inspection and monitoring and recordkeeping provisions specified in 40 CFR 265.1089 and 265.1090, except as specified in paragraphs (g)(2)(ii) through (g)(2)(iv) of this section. Comply with the reporting provisions specified in § 60.784 of this subpart.

(i) The following exceptions apply to the provisions of 40 CFR 265.1085 through 265.1087:

(A) For purposes of this subpart, 40 CFR 265.1085(a) and (j), 265.1086(a) and (e), and 265.1087(a) and (d)(2) do not apply.

(B) For purposes of this subpart, when the provisions of 40 CFR 265.1081 are referred to in 40 CFR 265.1085 through 265.1087, the provisions of § 60.771 shall apply, unless the specified term in 40 CFR 265.1085 through 265.1087 is not defined in § 60.771, in such cases the provisions of 40 CFR 265.1081 shall apply.

(C) When the term ''hazardous waste'' is used in 40 CFR 265.1085 through 265.1087, the term ''wastewater or residual'' shall apply for purposes of this subpart.

(D) When the term ''tank'' is used in 40 CFR 265.1085 through 265.1087, the term ''wastewater tank'' shall apply for purposes of this subpart.

(E) When the terms ''air pollutant emissions'' or ''organic emissions'' are used in 40 CFR 265.1085 through 265.1087, the term ''VOC emissions'' shall apply for purposes of this subpart.

(F) When the term ''maximum organic vapor pressure'' is used in 40 CFR 265.1085, the term ''maximum true vapor pressure'' shall apply for purposes of this subpart, and the maximum true vapor pressure shall be determined as specified in § 60.771 for purposes of this subpart.

(ii) The following exceptions apply to the provisions of 40 CFR 265.1088:

(A) When the provisions of 40 CFR 265.1033(e) are referred to in 40 CFR 265.1088(c)(5)(ii), the provisions of § 60.783(j) shall apply for purposes of this subpart.

(B) When the provisions of 40 CFR 265.1034(c)(1) through (c)(4) are referred to in 40 CFR 265.1088(c)(5)(iii), the provisions of § 60.783 shall apply for purposes of this subpart.

(C) When the terms ''organic'' or ''organics'' are used in 40 CFR 265.1088, the term ''VOC'' shall apply for purposes of this subpart.

(iii) The following exception applies to the provisions of 40 CFR 265.1089: When 40 CFR 265.1089(b) requires that ''the owner or operator shall incorporate this plan and schedule into the facility inspection plan required under 40 CFR 265.15,'' the written plan and schedule required by this paragraph 40 CFR 265.1089(b) shall be submitted as part of the Notification of Compliance Status required by § 60.784(c) for purposes of this subpart.

(iv) The following exceptions apply to the provisions of 40 CFR 265.1090:

(A) When complying with the recordkeeping provisions specified in 40 CFR 265.1090, the provisions of paragraphs (a), (e)(1)(iii), (f), (h), (i), and (j) of 40 CFR 265.1090 shall not apply because the provisions of these paragraphs are not related to waste management units or closed vent systems and control devices.

(B) When the term ''hazardous waste'' is used in 40 CFR 265.1090, the term ''wastewater or residual'' shall apply for purposes of this subpart.

(C) When the term ''maximum organic vapor pressure'' is used in 40 CFR 265.1090, the term ''maximum true vapor pressure'' shall apply for purposes of this subpart, and the maximum true vapor pressure shall be determined as specified in § 60.771 for purposes of this subpart.

(3) Comply with the applicable requirements specified in 40 CFR 265.1085 through 265.1087, except as specified in paragraphs (g)(3)(i) through (g)(3)(ix) of this section. Comply with the control device, leak detection, and delay of repair provisions specified in §§ 60.780, 60.786, and 60.777 of this subpart and with the monitoring, reporting, and recordkeeping provisions specified in §§ 60.781, 60.784, and 60.785 of this subpart.

(i) For purposes of this subpart, 40 CFR 265.1085(a) and (j), 265.1086(a) and (e), and 265.1087(a) and (d)(2) do not apply.

(ii) For purposes of this subpart, when the provisions of 40 CFR 265.1081 are referred to in 40 CFR 265.1085 through 265.1087, the provisions of § 60.771 shall apply, unless the specified term in 40 CFR 265.1085 through 265.1087 is not defined in § 60.771, in such cases the provisions of 40 CFR 265.1081 shall apply.

(iii) When the term ''hazardous waste'' is used in 40 CFR 265.1085 through 265.1087, the term ''wastewater or residual'' shall apply for purposes of this subpart.

(iv) When the term ''tank'' is used in 40 CFR 265.1085 through 265.1087, the term ''wastewater tank'' shall apply for purposes of this subpart.

(v) When the terms ''air pollutant emissions'' or ''organic emissions'' are used in 40 CFR 265.1085 through 265.1087, the term ''VOC emissions'' shall apply for purposes of this subpart.

(vi) When the term ''maximum organic vapor pressure'' is used in 40 CFR 265.1085, the term ''maximum true vapor pressure'' shall apply for purposes of this subpart, and the maximum true vapor pressure shall be determined as specified in § 60.771 for purposes of this subpart.

(vii) When the closed-vent systems and control devices provisions in 40 CFR 265.1088 are referred to in 40 CFR 265.1085 through 265.1087, the provisions in §§ 60.780 and 60.786 shall apply for purposes of this subpart.

(viii) For purposes of this subpart, the delay of repair provisions in 40 CFR 265.1085(k), 265.1086(f), and 265.1087 (d)(4)(iii) shall not apply, and the provisions in § 60.777 shall apply.

(ix) When the inspection and monitoring requirements are referred to in 40 CFR 265.1089, the provisions in § 60.781 shall apply for purposes of this subpart.

(x) When the recordkeeping provisions in 40 CFR 265.1090 are referred to in 40 CFR 265.1085 through 265.1087, the provisions in § 60.785 shall apply for purposes of this subpart.

(xi) When the leak inspection provisions of 40 CFR 265.1084(d) are referred to in 40 CFR 265.1085(h)(2), 265.1086(d)(1)(ii), and 265.1087(g), the provisions in § 60.786 shall apply for purposes of this subpart.

(h) *Requirements for benzene waste option.* Owners or operators selecting the Benzene Waste compliance option shall comply with paragraph (h)(1) of this section and with paragraph (h)(2) or (h)(3) of this section.

(1) The owner or operator of a waste management unit that is subject to both 40 CFR part 61, subpart FF and this subpart shall comply with either paragraph (h)(2) or (h)(3) of this section. The owner or operator of a waste management unit that is subject to this subpart but not subject to 40 CFR part 61, subpart FF shall comply with paragraph (h)(3) of this section.

(2) Comply with the applicable requirements specified in 40 CFR 61.343 through 61.347, except as specified in paragraphs (h)(2)(i) of this section. Comply with the closed-vent system and control device provisions, leak inspection provisions, and delay of repair provisions in 40 CFR 61.349, 61.355(h), and 61.350 and with the monitoring provisions, recordkeeping, and reporting provisions specified in 40 CFR 61.354, 61.356, and 61.357, except as specified in paragraphs (h)(2)(ii) through (h)(2)(v) of this section.

(i) The following exceptions apply to the provisions of 40 CFR 61.343 through 61.347:

(A) When the term ''waste stream'' is used in 40 CFR 61.343 through 61.347, the term ''wastewater or residual'' shall apply for purposes of this subpart.

(B) When the term ''maximum organic vapor pressure'' is used in 40 CFR 61.343, the term ''maximum true vapor pressure'' shall apply for purposes of this subpart.

(C) The provisions of 40 CFR 61.342(c)(1)(ii), as cited in the phrase ''in which the waste stream is placed in accordance with 40 CFR 61.342(c)(1)(ii)'' in 40 CFR 61.343 through 61.347, shall not apply for purposes of this subpart.

(ii) The following exceptions apply to the provisions of 40 CFR 61.349:

(A) When the term ''waste'' is used in 40 CFR 61.349(b), the term ''wastewater or residual'' shall apply for purposes of this subpart.

(B) When the term ''total organic compound concentration'' is used in 40 CFR 61.349, the term ''total VOC concentration'' shall apply for purposes of this subpart.

(C) When the term ''organic emissions'' is used in 40 CFR 61.349, the term ''VOC emissions'' shall apply for purposes of this subpart.

(D) When 40 CFR 61.349(a)(2)(i)(B) cites the use of Method 18, the test methods specified in § 60.783 shall apply for purposes of this subpart.

(E) When the provisions of 40 CFR 60.18 are referred to in 40 CFR 61.349(a)(2)(iii), owners or operators shall comply with the provisions of § 60.783(j) for purposes of this subpart.

(F) When cited in 40 CFR 61.349(a)(iv)(A), the phrase ''or shall recover or control the benzene emissions vented to it with an efficiency of 98 weight percent or greater'' shall not apply for purposes of this subpart.

(G) When cited in 40 CFR 61.349(a)(iv)(B), the phrase ''or 98 percent or greater for benzene'' shall not apply for purposes of this subpart.

(H) When complying with 40 CFR 61.349(c)(ii), owners or operators shall use the procedures specified in § 60.783 for purposes of this subpart.

(I) When the test methods and compliance procedures specified in 40 CFR 61.355 are referred to in 40 CFR 61.349, the provisions of § 60.783 shall apply for purposes of this subpart.

(iii) The following exceptions apply to the provisions of 40 CFR 61.354:

(A) When complying with the monitoring provisions specified in 40 CFR 61.354, the provisions of paragraphs (a) and (b) of 40 CFR 61.354 shall not apply because the provisions of these paragraphs are related to the monitoring of treatment processes, and treatment process monitoring shall be conducted following the procedures specified in § 60.781.

(B) When the provisions of 40 CFR 60.18 are referred to in 40 CFR 61.354(c)(3), owners or operators shall comply with the provisions of § 60.783(j) for purposes of this subpart.

(C) When the terms ''organic compounds,'' ''organic'', or ''benzene'' are used in 40 CFR 61.354(c) or (d), the term ''VOC'' shall apply for purposes of this subpart.

(iv) The following exceptions apply to the provisions of 40 CFR 61.356:

(A) When complying with the recordkeeping provisions specified in 40 CFR 61.356, the provisions of paragraphs (a), (b), (c), (e), (f), (i), (k), and (l) of 40 CFR 61.356 shall not apply because the provisions of these paragraphs are not related to waste management units or closed vent systems and control devices.

(B) When the term ''organics'' or the term ''benzene'' is used in 40 CFR 61.356(j)(8) or (j)(9), the term ''VOC'' shall apply for purposes of this subpart.

(C) When the term ''benzene emissions'' is used in 40 CFR 61.356(g), the term ''VOC emissions'' shall apply for purposes of this subpart.

(v) The following exceptions apply to the provisions of § 61.356:

(A) When complying with the reporting provisions specified in 40 CFR 61.357, the provisions of paragraphs (a), (b), (c), (d)(1) through (d)(5), (d)(7)(i) through (d)(7)(iii), (e), (f), and (g) of 40 CFR 61.357 shall not apply because the provisions of these paragraphs are not related to waste management units or closed vent systems and control devices.

(B) When the term ''organics'' or the term ''benzene'' is used in § 61.357(d)(7)(iv)(D), the term ''VOC'' shall apply for purposes of this subpart.

(C) When the term ''benzene emissions'' is used in § 61.357(d)(8), the term ''VOC emissions'' shall apply for purposes of this subpart.

(3) Comply with the applicable requirements specified in 40 CFR 61.343 through 61.347, except as specified in paragraphs (h)(3)(i) through (h)(3)(viii) of this section. Comply with the control device, leak detection, and delay of repair provisions specified in §§ 60.780, 60.786, and 60.777 of this subpart and with the monitoring, reporting, and recordkeeping provisions specified in §§ 60.781, 60.784, and 60.785 of this subpart.

(i) When the term ''waste stream'' is used in §§ 61.343 through 61.347, the term ''wastewater or residual'' shall apply for purposes of this subpart.

(ii) When the term ''maximum organic vapor pressure'' is used in § 61.343, the term ''maximum true vapor pressure'' shall apply for purposes of this subpart.

(iii) When the closed-vent systems and control devices provisions in § 61.349 are referred to in § 61.343 through 61.347, the provisions in §§ 60.780 and 60.786 shall apply for purposes of this subpart.

(iv) When the delay of repair provisions in § 61.350 are referred to in §§ 61.343 through 61.347, the provisions in § 60.777 shall apply for purposes of this subpart.

(v) When the leak inspection provisions specified in § 61.355(h) are referred to in §§ 61.343 through 61.347, the provisions of § 60.786 shall apply for purposes of this subpart.

(vi) The provisions of § 61.342(c)(1)(ii), as cited in the phrase ''in which the waste stream is placed in accordance with § 61.342(c)(1)(ii)'' in §§ 61.343 through 61.347, shall not apply for purposes of this subpart.

§ 60.775 Control requirements for aqueous in-process streams.

(a) The owner or operator shall comply with the provisions of Table 6 of this subpart, for each item of equipment meeting all the criteria specified in paragraphs (b) through (d) of this section and either paragraphs (e)(1) or (e)(2) of this section.

(b) The item of equipment is of a type identified in Table 6 of this subpart;

(c) The item of equipment is part of an affected facility subject to this subpart;

(d) The item of equipment is controlled less stringently than in Table 6 and is not listed in § 60.770(h) of this subpart, and the item of equipment is not otherwise exempt from controls by the provisions of this subpart or subpart A of this part; and

(e) The item of equipment:

(1) Is a drain, drain hub, manhole, lift station, trench, pipe, or oil/water separator that conveys water with an annual average concentration greater than or equal to 10,000 parts per million by weight of VOC at any flowrate; or an annual average concentration greater than or equal to 500 parts per million by weight of VOC at an annual average flow rate greater than or equal to 1 liter per minute; or

(2) Is a tank that receives one or more streams that contain water with an annual average concentration greater than or equal to 500 parts per million by weight of VOC at an annual average flowrate greater than or equal to 1 liter per minute. The owner or operator of the affected facility shall determine the characteristics of the stream as specified in paragraphs (e)(2)(i) and (ii) of this section.

(i) The characteristics of the stream being received shall be determined at the inlet to the tank.

(ii) The characteristics shall be determined according to the procedures in § 60.782(b) and (c) of this subpart.

§ 60.776 Maintenance wastewater requirements.

(a) Each owner or operator of an affected facility subject to this subpart shall comply with the requirements of paragraphs (b) through (e) of this section for maintenance wastewaters containing VOC.

(b) The owner or operator shall prepare a description of maintenance procedures for management of maintenance wastewaters generated from the emptying and purging of equipment in the process during temporary shutdowns for inspections, maintenance, and repair (i.e., a maintenance-turnaround) and during periods which are not shutdowns (i.e., routine maintenance). The descriptions shall be as follows:

(1) Specify the process equipment or maintenance tasks that are anticipated to create wastewater during maintenance activities.

(2) Specify the procedures that will be followed to properly manage the wastewater and control VOC emissions to the atmosphere; and

(3) Specify the procedures to be followed when clearing materials from process equipment.

(c) The owner or operator shall modify and update the information required by paragraph (b) of this section as needed to reflect new or revised equipment or procedures.

(d) The owner or operator shall implement the procedures described in paragraphs (b) and (c) of this section as part of the start-up, shutdown, and malfunction plan required in § 60.787 of this subpart.

(e) The owner or operator shall maintain a record of the information required by paragraphs (b) and (c) of this section as part of the start-up, shutdown, and malfunction plan required in § 60.787 of this subpart.

§ 60.777 Delay of repair.

(a) Delay of repair of equipment for which a control equipment failure or a gap, crack, tear, or hole has been identified, is allowed if the repair is technically infeasible without a shutdown, as defined in § 60.771 of this subpart, or if the owner or operator determines that VOC emissions of purged material from immediate repair would be greater than the VOC emissions likely to result from delay of repair. Repair of this equipment shall occur by the end of the next shutdown.

(b) Delay of repair of equipment for which a control equipment failure or a gap, crack, tear, or hole has been identified, is allowed if the equipment is emptied or is no longer used to treat or manage Group 1 wastewater streams or residuals removed from Group 1 wastewater streams.

(c) Delay of repair of equipment for which a control equipment failure or a gap, crack, tear, or hole has been identified is also allowed if additional time is necessary due to the unavailability of parts beyond the control of the owner or operator. Repair shall be completed as soon as practical. The owner or operator who uses this provision shall comply with the requirements of § 60.785(b)(7) of this subpart to document the reasons that the delay of repair was necessary.

§ 60.778 Stream-specific list of VOC determination.

(a) *General.* This section specifies how to determine a stream-specific list of VOC for a process wastewater stream or in-process aqueous stream. A stream-specific list of VOC is required when speciation is used for compliance demonstration (i.e., performance tests, design evaluations, and ranges of parameters set for monitoring and for determining if VOC emissions increase has occurred for modification determinations. A stream-specific list may also be used for Group 1 and Group 2 determinations.

(b) *Test methods for determining VOC concentration.* The owner or operator shall use one of the test methods that speciates compounds and is specified in § 60.782(b)(5) of this subpart to determine concentration. For process wastewater streams, the annual average concentration shall be determined either

at the point of determination or downstream of the point of determination, with adjustment for concentration changes made according to § 60.782(b)(6) of this subpart if a point downstream of the point of determination is used. For aqueous in-process streams, the annual average concentration shall be determined before the point of determination and shall be adjusted for any losses of VOC to the atmosphere and for dilution.

(c) *Compounds that may be excluded from the site-specific list of VOC.* Compounds that meet the requirements specified in paragraphs (b)(1), (b)(2), or (b)(3) of this section are not required to be included in the stream-specific list of VOC. The owner or operator shall use one of the methods specified in § 60.782(b)(5) of this subpart to determine concentration.

(1) Compounds not used or produced by the chemical process unit.

(2) Compounds with concentrations at the point of determination that are below 1 part per million by weight.

(3) Compounds with concentrations at the point of determination that are below the lower detection limit where the lower detection limit is greater than 1 part per million by weight. The method used for determining concentration shall be an analytical method for wastewater which has the compound of interest as a target analyte.

(d) *Create stream-specific list of VOC for Group 1 and Group 2 determination.* The owner or operator shall include those individual VOC with the greatest mass on the stream-specific list of VOC until 75 compounds or every compound, whichever is fewer, is included on the list, except as provided by paragraph (c) of this section. The stream-specific list of VOC must represent at least 90 percent of the total VOC in the process wastewater stream. If the compounds on the stream-specific list of VOC do not represent at least 90 percent of total VOC, Method 25D to appendix A of this part shall be used to make the Group 1 determination for that process wastewater stream. The owner or operator shall document how the percent of VOC in the process wastewater stream was determined.

(e) *Create stream-specific list of VOC for estimating VOC emission changes for modification determinations.* The owner or operator shall include those individual VOC with the greatest mass on the stream-specific list of VOC until 75 compounds or every compound, whichever is fewer, is included on the list, except as provided by paragraph (c) of this section. The stream-specific list of VOC must represent at least 90 percent of the total VOC in the process wastewater stream or aqueous in-process stream. If the compounds on the stream-specific list of VOC do not represent at least 90 percent of total VOC, the owner or operator shall use the mass flow rate procedure specified in § 60.772 of this subpart to estimate VOC emissions for modification determinations. The owner or operator shall document how the percent of VOC in the process wastewater stream or aqueous in-process stream was determined.

(f) *Create stream-specific list of VOC for compliance demonstrations.* The owner or operator shall determine the percent of total VOC in the process wastewater stream. The owner or operator shall document how the percent of VOC in the process wastewater stream was determined.

(i) For the owner or operator that can identify at least 90 percent, by mass, of the VOC in the wastewater stream or aqueous in-process stream, the individual VOC that are 5 percent, by mass, or greater, are required to be included on the list. If less than half of the total VOC in the wastewater are represented by the compounds with a mass of 5 percent or greater, the owner or operator shall include those individual VOC with the greatest mass on the stream-specific list of VOC until 75 compounds or every compound, whichever is fewer, is included on the list, except as provided by paragraph (c) of this section. The owner or operator shall document that the site-specific list of VOC is representative of the process wastewater stream and forms the basis of a good compliance demonstration.

(ii) For the owner or operator that can identify at least 50 percent, by mass, of the VOC in the wastewater stream, the individual VOC with the greatest mass on the stream-specific list of VOC up to 75 compounds or every compound, whichever is fewer, are to be included on the list, except as provided by paragraph (c) of this section. The owner or operator shall document that the site-specific list of VOC is representative of the process wastewater stream and forms the basis of a good compliance demonstration.

(iii) For the owner or operator that cannot identify at least 50 percent, by mass, of the VOC in the process wastewater stream, one of the following compliance options shall be used to treat the process wastewater stream:

(A) The design steam stripper option in § 60.779(d) of this subpart; or

(B) The 95 percent mass removal with outlet concentration of 50 ppmw option in § 60.779(e)(2) of this subpart; or

(C) The steam stripper option in § 60.779(e)(3) of this subpart.

§ 60.779 Process wastewater provisions—Performance standards for treatment processes managing Group 1 wastewater streams and/or residuals removed from Group 1 wastewater streams.

(a) This section specifies the performance standards for treating process wastewater streams that are Group 1 wastewater streams. The owner or operator shall comply with the requirements as specified in paragraphs (a)(1) through (a)(8) of this section. Where multiple compliance options are provided, the options may be used in combination for different wastewater streams and/or for different compounds in the same wastewater streams, except where otherwise provided in this section. Once a Group 1 wastewater stream or residual removed from a Group 1 wastewater stream has been treated in accordance with this subpart, it is no longer subject to the requirements of this subpart.

(1) *Control options: Group 1 wastewater streams.* The owner or operator shall comply with the requirements specified in any one of paragraphs (d), (e), (f), (g), (h), or (m) of this section, except as provided in § 60.789 of this subpart for relationship with other rules.

(2) [Reserved]

(3) *Biological treatment processes.* Biological treatment processes in compliance with this section may be either open or closed biological treatment processes as defined in § 60.771 of this subpart. An open biological treatment process in compliance with this section need not be covered and vented to a control device as required in § 60.774 of this subpart. An open or a closed biological treatment process in compliance with this section and using §§ 60.783(f) or 60.783(g) of this subpart to demonstrate compliance is not subject to the requirements of § 60.774 of this subpart. A closed biological treatment process in compliance with this section and using § 60.783(e) of this subpart to demonstrate compliance shall comply with the requirements of § 60.774 of this subpart. Waste management units upstream of an open or closed biological treatment process shall meet the requirements of § 60.774 of this subpart, as applicable.

(4) *Performance tests and design evaluations.* If the design steam stripper option (paragraph (d) of this section) or the Resource Conservation and Recovery Act (RCRA) option (paragraph (h) of this section) is selected to comply with this section, neither a design evaluation nor a performance test is required. If § 60.789(d) of this subpart (Relationship to the HON) is selected to

comply with this section, the performance test or design evaluation used to demonstrate compliance for the HON also demonstrates compliance with this section. For any other non-biological treatment process, and for closed biological treatment processes as defined in § 60.771 of this subpart, the owner or operator shall conduct either a design evaluation as specified in paragraph (j) of this section, or a performance test as specified in § 60.783 of this subpart. For each open biological treatment process as defined in § 60.771 of this subpart, the owner or operator shall conduct a performance test as specified in § 60.783 of this subpart.

Note to paragraph (a)(4) of this section: Some open biological treatment processes may not require a performance test. Refer to § 60.783(h) of this subpart and table 36 of the appendix to subpart G of 40 CFR part 63 to determine whether the biological treatment process meets the criteria that exempt the owner or operator from conducting a performance test.)

(5) *Control device requirements.* When gases are vented from the treatment process, the owner or operator shall comply with the applicable control device requirements specified in §§ 60.780 and 60.783(i) and (j) of this subpart, and the applicable leak inspection provisions specified in § 60.786 of this subpart. This requirement does not apply to any open biological treatment process that meets the mass removal requirements. Vents from anaerobic biological treatment processes may be routed through hard-piping to a fuel gas system.

(6) *Residuals: general.* When residuals result from treating Group 1 wastewater streams, the owner or operator shall comply with the requirements for residuals specified in paragraph (k) of this section.

(7) *Treatment using a series of treatment processes.* In all cases where the wastewater provisions in this subpart allow or require the use of a treatment process or control device to comply with emissions limitations, the owner or operator may use multiple treatment processes or control devices, respectively. For combinations of treatment processes where the wastewater stream is conveyed by hard-piping, the owner or operator shall comply with either the requirements of paragraph (a)(7)(i) or (a)(7)(ii) of this section. For combinations of treatment processes where the wastewater stream is not conveyed by hard-piping, the owner or operator shall comply with the requirements of paragraph (a)(7)(ii) of this section. For combinations of control devices, the owner or operator shall comply with the requirements of paragraph (a)(7)(i) of this section.

(i)(A) For combinations of treatment processes, the wastewater stream shall be conveyed by hard-piping between the treatment processes. For combinations of control devices, the vented gas stream shall be conveyed by hard-piping between the control devices.

(B) For combinations of treatment processes, each treatment process shall meet the applicable requirements of § 60.774 of this subpart except as provided in paragraph (a)(3) of this section.

(C) The owner or operator shall identify, and keep a record of, the combination of treatment processes or of control devices, including identification of the first and last treatment process or control device.

(D) The performance test or design evaluation shall determine compliance across the combination of treatment processes or control devices. If a performance test is conducted, the ''inlet'' shall be the point at which the wastewater stream or residual enters the first treatment process, or the vented gas stream enters the first control device. The ''outlet'' shall be the point at which the treated wastewater stream exits the last treatment process, or the vented gas stream exits the last control device.

(ii)(A) For combinations of treatment processes, each treatment process shall meet the applicable requirements of § 60.774 of this subpart except as provided in paragraph (a)(3) of this section.

(B) The owner or operator shall identify, and keep a record of, the combination of treatment processes, including identification of the first and last treatment process.

(C) The owner or operator shall determine the mass removed or destroyed by each treatment process. The performance test or design evaluation shall determine compliance for the combination of treatment processes by adding together the mass removed or destroyed by each treatment process.

(8) *Prohibition against double counting.* The removal of VOC must be in addition to the reduction and destruction required by other rules, unless the removal of VOC is from the same stream.

(b) [Reserved]

(c) [Reserved]

(d) *Design steam stripper option.* The owner or operator shall operate and maintain a steam stripper that meets the requirements of paragraphs (d)(1) through (d)(6) of this section.

(1) Minimum active column height of 5 meters;

(2) Countercurrent flow configuration with a minimum of 10 actual trays;

(3) Minimum steam flow rate of 0.04 kilograms of steam per liter of wastewater feed within the column;

(4) Minimum wastewater feed temperature to the steam stripper of 95° C, or minimum column operating temperature of 95° C;

(5) Maximum liquid loading of 67,100 liters per hour per square meter; and

(6) Operate at nominal atmospheric pressure.

(e) *Percent mass removal/destruction option, for nonbiological treatment process.* For wastewater streams that are Group 1 and treated in a nonbiological treatment process, the owner or operator shall comply with either paragraph (e)(1) or (e)(2) of this section for a noncombustion treatment process and paragraph (e)(1) of this section for a combustion treatment process. For wastewater streams that are Group 1 and treated in a steam stripper, the owner or operator shall comply with either paragraph (e)(1), (e)(2), or (e)(3) of this section. This paragraph (e) shall not be used for biological treatment processes.

(1) *Reduce mass flow rate of VOC by the appropriate Fr values.* For wastewater streams that are Group 1, the owner or operator shall reduce, by removal or destruction, the mass flow rate of VOC by the required removal or destruction efficiency, i.e., the flow-weighted average Fr value. To use this compliance option, the owner or operator shall develop a stream-specific list of VOC upon which to base the compliance demonstration and shall calculate a flow-weighted average Fr. Follow the procedures in § 60.778 of this subpart to develop a stream-specific list of VOC. Follow the procedures in appendix J of this part to determine Fr values for individual compounds. The owner or operator shall conduct either a design evaluation or a performance test. Design evaluation requirements are specified in paragraph (j) of this section. Performance test requirements are specified in § 60.783(c) of this subpart, for noncombustion treatment processes, and in § 60.783(d) of this subpart, for combustion treatment processes.

(2) *Reduce mass flow rate of VOC by 95 percent and reduce outlet concentration of VOC to less than 50 ppmw, for noncombustion treatment process.* For wastewater streams that are Group 1, the owner or operator shall reduce, by removal or destruction, the mass flow rate of VOC by 95 percent and reduce the outlet concentration of VOC to less than 50 ppmw. The owner or operator shall conduct either a design evaluation or a performance test. Design evaluation requirements are specified in

paragraph (j) of this section. Performance test requirements are specified in § 60.783(c) of this subpart.

(3) *Demonstrate a steam stripper reduces mass flow rate of methanol, ethylene glycol monobutyl ether acetate, and methyl ethyl ketone by the appropriate Fr value.* For wastewater steams that are Group 1 and treated in a steam stripper, the owner or operator shall demonstrate that the mass flow rate of methanol is reduced by 31 percent; that the mass flow rate of ethylene glycol monobutyl ether acetate is reduced by 76 percent; and that the mass flow rate of methyl ethyl ketone is reduced by 95 percent. The owner or operator shall conduct either a design evaluation or a performance test. Design evaluation requirements are specified in paragraph (j) of this section. Performance test requirements are specified in § 60.783(c) of this subpart. When design evaluations are used to demonstrate compliance, the Henry's law constant at 25° C (expressed as y/x atmosphere per mole fraction) used in the evaluation shall be: 7.73 for methanol; 24.96 for ethylene glycol monobutyl ether acetate; and 59.2 for methyl ethyl ketone.

(f) *Required mass removal (RMR) option, for noncombustion treatment process.* For wastewater streams that are Group 1, the owner or operator shall reduce, by removal or destruction, the mass flow rate of VOC by the required mass removal, i.e, the flow-weighted average Fr. To use this compliance option, the owner or operator shall develop a list of VOC upon which to base the compliance demonstration and shall calculate a flow-weighted average Fr. Follow the procedures in § 60.778 of this subpart to develop a stream-specific list of VOC. Follow the procedures in appendix J of this part to determine Fr values. The owner or operator shall conduct a compliance demonstration as specified in paragraphs (f)(1), (f)(2), and (f)(3) of this section.

(1) *Nonbiological, noncombustion treatment process.* The owner or operator shall conduct either a design evaluation or a performance test. Design evaluation requirements are specified in paragraph (j) of this section. Performance test requirements are specified in § 60.783(e) of this subpart.

(2) *Aerobic biological treatment process—open and closed biological treatment processes.* Closed biological treatment process means a tank or surface impoundment where biological treatment occurs and air VOC emissions from the treatment process are routed to either a control device by means of a closed vent system or to a fuel gas system by means of hard-piping. The tank or surface impoundment has a fixed roof, as defined in § 60.771 of this subpart, or a floating flexible membrane cover that meets the requirements specified in 40 CFR § 63.134. Open biological treatment process is not a closed biological treatment process. Open biological treatment processes have additional requirements for compliance demonstration because they have more potential for VOC emissions.

(i) *Closed biological treatment process.* The owner or operator shall conduct either a design evaluation or a performance test. Design evaluation requirements are specified in paragraph (j) of this section. Performance test requirements are specified in both § 60.783(e) or (f) of this subpart.

(ii) *Open biological treatment process.* The owner or operator shall conduct a performance test as specified in § 60.783(f) of this subpart, except as provided in § 60.783(h) of this subpart.

(3) *Anaerobic biological treatment process.* An anaerobic biological treatment process shall also be a closed biological treatment process. The owner or operator shall conduct either a design evaluation or a performance test. Design evaluation requirements are specified in paragraph (j) of this section. Performance test requirements are specified in § 60.783(e) of this subpart.

(g) *95-percent RMR option, for biological treatment processes.* The owner or operator shall reduce, by removal or destruction, the mass flow rate of VOC by 95 percent for all wastewater entering the biological treatment process. To use this compliance option, the owner or operator shall develop a stream-specific list of VOC as specified in § 60.778 of this subpart upon which to base the compliance demonstration. The owner or operator shall conduct a compliance demonstration as specified in paragraphs (g)(1) and (g)(2) of this section. The owner or operator shall also comply with paragraphs (g)(3) and (g)(4) of this section.

(1) *Aerobic biological treatment process—open and closed biological treatment processes.*

(i) *Closed biological treatment process.* The owner or operator shall conduct either a design evaluation or a performance test. Design evaluation requirements are specified in paragraph (j) of this section. Performance test requirements are specified in both § 60.783(e) and (g) of this subpart.

(ii) *Open biological treatment process.* The owner or operator shall conduct a performance test as specified in § 60.783(g) of this subpart, except as provided in § 60.783(h) of this subpart.

(2) *Anaerobic biological treatment process.* An anaerobic biological treatment process shall also be a closed biological treatment process. The owner or operator shall conduct either a design evaluation or a performance test. Design evaluation requirements are specified in paragraph (j) of this section. Performance test requirements are specified in § 60.783(e) of this subpart.

(3) For each treatment process or waste management unit that receives, manages, or treats wastewater streams subject to this paragraph (g)(3), from the point of determination of each Group 1 or Group 2 wastewater stream to the biological treatment unit, the owner or operator shall comply with § 60.774 of this subpart for control of air VOC emissions.

(4) If a wastewater stream is in compliance with the requirements in paragraph (d), (e), (f), (h), or (m) of this section before entering the biological treatment unit, the VOC mass of that wastewater is not required to be included in the total mass flow rate entering the biological treatment unit for the purpose of demonstrating compliance.

(h) *Treatment in a RCRA unit option.* The owner or operator shall treat the wastewater stream or residual in a unit identified in, and complying with, paragraphs (h)(1), (h)(2), or (h)(3) of this section. These units are exempt from the design evaluation or performance tests requirements specified in paragraphs (a)(4) and (j) of this section, and from the monitoring requirements specified in § 60.781 of this subpart, as well as recordkeeping and reporting requirements associated with monitoring and performance tests.

(1) The wastewater stream or residual is discharged to a hazardous waste incinerator for which the owner or operator has been issued a final permit under 40 CFR part 270 and complies with the requirements of 40 CFR part 264, subpart O, or has certified compliance with the interim status requirements of 40 CFR part 265, subpart O;

(2) The wastewater stream or residual is discharged to a process heater or boiler burning hazardous waste for which the owner or operator:

(i) Has been issued a final permit under 40 CFR part 270 and complies with the requirements of 40 CFR part 266, subpart H; or

(ii) Has certified compliance with the interim status requirements of 40 CFR part 266, subpart H.

(3) The wastewater stream or residual is discharged to an underground injection well for which the owner or operator has been issued a final permit

under 40 CFR part 270 or 40 CFR part 144 and complies with the requirements of 40 CFR part 122. The owner or operator shall comply with all applicable requirements of this subpart prior to the point where the wastewater enters the underground portion of the injection well.

(i) [Reserved]

(j) *Design evaluations or performance tests for treatment processes.* Except as provided in paragraph (j)(3), (h), or (m) of this section, the owner or operator shall demonstrate by the procedures in either paragraph (j)(1) or (j)(2) of this section that each nonbiological treatment process used to comply with paragraphs (e), and/or (f) of this section achieves the conditions specified for compliance. The owner or operator shall demonstrate by the procedures in either paragraph (j)(1) or (j)(2) of this section that each closed biological treatment process used to comply with paragraphs (f) or (g) of this section achieves the conditions specified for compliance. If an open biological treatment unit is used to comply with paragraph (f) or (g) of this section, the owner or operator shall comply with § 60.783(f) or § 60.783(g), respectively, of this subpart. Some open biological treatment processes may not require a performance test. Refer to § 60.783(h) of this subpart to determine whether the open biological treatment process meets the criteria that exempt the owner or operator from conducting a performance test.

(1) This paragraph (j)(1) may be used to demonstrate compliance with paragraphs (e), (f), or (g) of this section, except when the treatment process is an open biological treatment process. A design evaluation and supporting documentation that addresses the operating characteristics of the treatment process and that is based on operation at a representative wastewater stream flow rate and a representative concentration under which it would be most difficult to demonstrate compliance. For closed biological treatment processes, the actual mass removal shall be determined by a mass balance over the unit. The mass flow rate of VOC exiting the treatment process shall be the sum of the mass flow rate of VOC in the wastewater stream exiting the biological treatment process and the mass flow rate of the vented gas stream exiting the control device. The mass flow rate entering the treatment process minus the mass flow rate exiting the process determines the actual mass removal.

(2) This paragraph (j)(2) may be used to demonstrate compliance with paragraphs (e), (f), or (g) of this section. Performance tests conducted using test methods and procedures that meet the applicable requirements specified in § 60.783 of this subpart.

(3) The provisions of paragraphs (j)(1) and (j)(2) of this section do not apply to design stream strippers which meet the requirements of paragraph (d) of this section.

(k) *Residuals.* For each residual removed from a Group 1 wastewater stream, the owner or operator shall control for air VOC emissions by complying with § 60.774 of this subpart and by complying with one of the provisions in paragraphs (k)(1) through (k)(4) of this section.

(1) Recycle the residual to a production process or sell the residual for the purpose of recycling. Once a residual is returned to a production process, the residual is no longer subject to this section.

(2) Return the residual to the treatment process.

(3) Treat the residual to destroy the total combined mass flow rate of VOC by 99 percent or more, as determined by the procedures specified in § 60.783(c) or (d) of this subpart.

(4) Comply with the requirements for RCRA treatment options specified in paragraph (h) of this section.

(l) [Reserved]

(m) *1 Mg exemption.* For each plant site, up to 1 Mg of VOC per year may be excluded from control. The 1 Mg shall be based on an annual average and calculated according to procedures in paragraphs (m)(1) and (m)(2) of this section.

(1) *Annual average concentration.* The annual average concentration shall be a flow-weighted average representative of actual or anticipated operation of the CPU generating the process wastewater over a designated 12-month period. For flexible operation units, the owner or operator shall consider the anticipated production over the designated 12-month period and include all process wastewater streams generated by the process equipment during this period. The owner or operator is not required to determine the concentration of VOC that are not reasonably expected to be in the process. Concentration values that are not determined using Method 25D may be adjusted with the chemical's Fm value. Compound-specific Fm factors shall be determined as specified in appendix J of this part. Flow-weighted annual average concentrations for VOC means the total mass of VOC occurring in the wastewater stream during the designated 12-month period divided by the total mass of the wastewater stream during the same designated 12-month period. The annual average concentration shall be determined for each process wastewater stream either at the point of determination, or downstream of the point of determination with adjustment for concentration changes made according to § 60.782 of this subpart. The procedures specified in § 60.782(b)(5)(i) through (b)(5)(iv) and (b)(6) of this subpart are considered acceptable for determining the annual average concentration. They may be used in combination, and no one procedure shall take precedence over another. A minimum of three wastewater samples from each process wastewater stream shall be taken. Samples may be grab samples or composite samples.

(2) *Annual average flow rate.* The owner or operator shall determine the annual average flow rate by measuring flow rate either at the point of determination for each process wastewater stream, or downstream of the point of determination with adjustment for flow rate changes made according to § 60.782(c)(4) of this subpart. The annual average flow rate for the process wastewater stream shall be representative of the actual or anticipated operation of the CPU generating the wastewater over the designated 12-month period.

§ 60.780 Standards—Control devices.

(a) For each control device used to comply with the provisions in §§ 60.774, 60.775, and 60.779 of this subpart, the owner or operator shall operate and maintain the control device or combination of control devices in accordance with the requirements of paragraphs (b) through (g) of this section, unless otherwise specified in this subpart.

(b) Whenever organic VOC emissions are vented to a control device used to comply with the provisions of this subpart, such control device shall be operating.

(c) The control device shall be designed and operated in accordance with paragraph (c)(1), (c)(2), (c)(3), (c)(4), or (c)(5) of this section.

(1) An enclosed combustion device (including but not limited to a vapor incinerator, boiler, or process heater) shall meet the conditions in paragraph (c)(1)(i), (c)(1)(ii), or (c)(1)(iii) of this section, alone or in combination with other control devices. If a boiler or process heater is used as the control device, then the vent stream shall be introduced into the flame zone of the boiler or process heater.

(i) Reduce the total organic compound emissions, less methane and ethane, or total VOC emissions vented to the

control device by 95 percent by weight or greater;

(ii) Achieve an outlet total organic compound concentration, less methane and ethane, or total VOC concentration of 20 parts per million by volume on a dry basis corrected to 3 percent oxygen. The owner or operator shall use either Method 18, 40 CFR part 60, appendix A, or any other method or data that has been validated according to the applicable procedures in Method 301, 40 CFR part 63, appendix A; or

(iii) Provide a minimum residence time of 0.5 seconds at a minimum temperature of 760° C.

(2) A vapor recovery system (including but not limited to a carbon adsorption system or condenser), alone or in combination with other control devices, shall reduce the total organic compound emissions, less methane and ethane, or total VOC emissions vented to the control device by 95 percent by weight, or greater, or achieve an outlet total organic compound concentration, less methane and ethane, or total VOC concentration of 20 parts per million by volume, whichever is less stringent. The 20 parts per million by volume performance standard is not applicable to compliance with the provisions of § 60.774 of this subpart for surface impoundments or containers.

(3) A flare shall comply with the requirements of 40 CFR 63.11, as specified in table 2A of this subpart, and § 60.783(j) of this subpart.

(4) A scrubber, alone or in combination with other control devices, shall reduce the total organic compound emissions, less methane and ethane, or total VOC emissions in such a manner that 95 weight percent is either removed, or destroyed by chemical reaction with the scrubbing liquid or achieve an outlet total organic compound concentration, less methane and ethane, or total VOC concentration of 20 parts per million by volume, whichever is less stringent. The 20 parts per million by volume performance standard is not applicable to compliance with the provisions of § 60.774 of this subpart for surface impoundments or containers.

(5) Any other control device used shall reduce the total organic compound emissions, less methane and ethane, or total VOC emissions vented to the control device by 95 percent by weight or greater.

(d) Except as provided in paragraph (d)(4) of this section, an owner or operator shall demonstrate that each control device or combination of control devices achieves the appropriate conditions specified in paragraph (c) of this section by using one or more of the methods specified in paragraphs (d)(1), (d)(2), or (d)(3) of this section.

(1) Performance tests conducted using the test methods and procedures specified in § 60.783(i) of this subpart for control devices other than flares; or

(2) A design analysis that addresses the vent stream characteristics and control device operating parameters specified in paragraphs (d)(2)(i) through (d)(2)(vii) of this section.

(i) For a thermal vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate and shall establish the design minimum and average temperature in the combustion zone and the combustion zone residence time.

(ii) For a catalytic vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate and shall establish the design minimum and average temperatures across the catalyst bed inlet and outlet.

(iii) For a boiler or process heater, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate; shall establish the design minimum and average flame zone temperatures and combustion zone residence time; and shall describe the method and location where the vent stream is introduced into the flame zone.

(iv) For a condenser, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature and shall establish the design outlet organic compound concentration level, design average temperature of the condenser exhaust vent stream, and the design average temperatures of the coolant fluid at the condenser inlet and outlet.

(v) For a carbon adsorption system that regenerates the carbon bed directly on-site in the control device such as a fixed-bed absorber, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature and shall establish the design exhaust vent stream organic compound concentration level, adsorption cycle time, number and capacity of carbon beds, type and working capacity of activated carbon used for carbon beds, design total regeneration stream mass or volumetric flow over the period of each complete carbon bed regeneration cycle, design carbon bed temperature after regeneration, design carbon bed regeneration time, and design service life of carbon.

(vi) For a carbon adsorption system that does not regenerate the carbon bed directly on-site in the control device such as a carbon canister, the design analysis shall consider the vent stream composition, constituent concentrations, mass or volumetric flow rate, relative humidity, and temperature and shall establish the design exhaust vent stream organic compound concentration level, capacity of carbon bed, type and working capacity of activated carbon used for carbon bed, and design carbon replacement interval based on the total carbon working capacity of the control device and affected facility operating schedule.

(vii) For a scrubber, the design analysis shall consider the vent stream composition; constituent concentrations; liquid-to-vapor ratio; scrubbing liquid flow rate and concentrations; temperature; and the reaction kinetics of the constituents with the scrubbing liquid. The design analysis shall establish the design exhaust vent stream organic compound concentration level and will include the additional information in paragraphs (d)(2)(vii)(A) and (d)(2)(vii)(B) of this section for trays and a packed column scrubber.

(A) Type and total number of theoretical and actual trays;

(B) Type and total surface area of packing for entire column, and for individual packed sections if column contains more than one packed section.

(3) For flares, the compliance determination is specified in § 60.783(j) of this subpart.

(4) An owner or operator using any control device specified in paragraphs (d)(4)(i) through (d)(4)(iv) of this section is exempt from the requirements in paragraphs (d)(1) through (d)(3) of this section.

(i) A boiler or process heater with a design heat input capacity of 44 megawatts or greater.

(ii) A boiler or process heater into which the emission stream is introduced with the primary fuel.

(iii) A boiler or process heater burning hazardous waste for which the owner or operator:

(A) Has been issued a final permit under 40 CFR part 270 and complies with the requirements of 40 CFR part 266 subpart H, or

(B) Has certified compliance with the interim status requirements of 40 CFR part 266, subpart H.

(iv) A hazardous waste incinerator for which the owner or operator has been issued a final permit under 40 CFR part 270 and complies with the requirements of 40 CFR part 264, subpart O, or has certified compliance with the interim

status requirements of 40 CFR part 265, subpart O.

(e) The owner or operator of a control device that is used to comply with the provisions of this section shall monitor the control device in accordance with § 60.781 of this subpart.

(f) Each control device shall be visually inspected initially and annually thereafter, and at other times as requested by the Administrator. Except as provided in § 60.777 of this subpart, if gaps, cracks, tears, or holes are observed in ductwork, piping, or connections to covers and control devices during an inspection, a first effort to repair shall be made as soon as practical but no later than 5 calendar days after identification. Repair shall be completed no later than 15 calendar days after identification or discovery of the defect.

(g) The owner or operator using a carbon adsorption system shall operate and maintain the control device in accordance with the following requirements:

(1) Following the initial startup of the control device, all carbon in the control device shall be replaced with fresh carbon on a regular, pre-determined time interval that is no longer than the carbon service life established for the carbon adsorption system.

(2) All carbon removed from the control device shall be managed in accordance with one of the following:

(i) Regenerated or reactivated in a thermal treatment unit that is permitted under subpart X of this part or 40 CFR part 265, subpart P of this chapter;

(ii) Incinerated by a process that is permitted under subpart 0 of this part; or

(iii) Burned in a boiler or industrial furnace that is permitted under 40 CFR part 266, subpart H of this chapter.

§ 60.781 Monitoring of operations.

(a) For each design steam stripper or biological treatment unit used to comply with § 60.779 of this subpart, the owner or operator shall comply with the monitoring requirements specified in Table 7 of this subpart.

(b) If the owner or operator elects to comply using biological treatment processes, the owner or operator shall request approval to monitor appropriate parameters that demonstrate proper operation of the biological treatment unit. The request shall be submitted according to the procedures specified in § 60.784(b) of this subpart and shall include a description of planned reporting and recordkeeping procedures. The owner or operator shall include as part of the submittal the basis for the selected monitoring frequencies and the methods that will be used. The Administrator will specify appropriate reporting and recordkeeping requirements as part of the review of the permit application or by other appropriate means. Table 7 of this subpart summarizes the provisions specified in this paragraph (b).

(c) If the owner or operator elects to comply with Item 3 in Table 7 of this subpart, the owner or operator shall request approval to monitor appropriate parameters that demonstrate proper operation of the selected treatment process. The request shall be submitted according to the procedures specified in § 60.784(b) of this subpart, and shall include a description of planned reporting and recordkeeping procedures. The Administrator will specify appropriate reporting and recordkeeping requirements as part of the review of the permit application or by other appropriate means.

(d) Except as provided in paragraphs (d)(4) and (d)(5) of this section, for each control device used to comply with the requirements of §§ 60.774, 60.775, 60.779, and 60.780 of this subpart, the owner or operator shall comply with the requirements in § 60.780(d) of this subpart, and with the requirements specified in paragraph (d)(1), (d)(2), or (d)(3) of this section, unless otherwise specified in this subpart.

(1) The owner or operator shall comply with the monitoring requirements specified in Table 8 of this subpart; or

(2) The owner or operator shall use an organic monitoring device installed at the outlet of the control device and equipped with a continuous recorder. Continuous recorder is defined in § 60.771 of this subpart; or

(3) The owner or operator shall request approval to monitor parameters other than those specified in paragraphs (d)(1) and (d)(2) of this section. The request shall be submitted according to the procedures specified in § 60.784(b) of this subpart, and shall include a description of planned reporting and recordkeeping procedures. The Administrator will specify appropriate reporting and recordkeeping requirements as part of the review of the permit application or other appropriate means.

(4) For a boiler or process heater in which all vent streams are introduced with primary fuel, the owner or operator shall comply with the requirements in § 60.780(d) of this subpart but the owner or operator is exempt from the monitoring requirements specified in paragraphs (d)(1) through (d)(3) of this section.

(5) For a boiler or process heater with a design heat input capacity of 44 megawatts or greater, the owner or operator shall comply with the requirements in § 60.780(d) of this subpart but the owner or operator is exempt from the monitoring requirements specified in paragraphs (d)(1) through (d)(3) of this section.

(e) For each parameter monitored in accordance with paragraph (b), (c), or (d) of this section, the owner or operator shall establish a value that indicates proper operation of the treatment process or control device. In order to establish the value, the owner or operator shall comply with the requirements specified in §§ 60.784(c)(6)(ii)(A) and 60.784(c)(7)(ii) of this subpart.

(f) Monitoring equipment shall be installed, calibrated, and maintained according to the manufacturer's specifications or other written procedures that provide adequate assurance that the equipment would reasonably be expected to monitor accurately.

(g) Each owner or operator of a treatment process or control device subject to the monitoring provisions of this subpart shall operate the treatment process or control device such that monitored parameters are below the maximum or above the minimum established value required to be monitored under paragraphs (b), (c), or (d) of this section and established under paragraph (e) of this section.

(h) Monitoring data under this subpart is directly enforceable when determining compliance with the required operating limits for the monitored control devices. For each excursion, except for excused excursions as defined in § 60.784(d)(3), the owner or operator shall be deemed to have failed to have applied the control in a manner that achieves the required operating limits. Failure to achieve the required operating limits is a violation of this standard.

§ 60.782 Process wastewater provisions—test methods and procedures for determining applicability and Group 1 and Group 2 determinations (determining which process wastewater streams require control).

(a) *Procedures to determine applicability.* An owner or operator shall comply with paragraph (a)(1) or (a)(2) of this section for each wastewater stream to determine which wastewater streams require control for VOC. The owner or operator may use a combination of the approaches in paragraphs (a)(1) and (a)(2) of this

section for different wastewater streams generated at the affected facility.

(1) *Determine Group 1 or Group 2 status.* Determine whether a wastewater stream is a Group 1 or Group 2 wastewater stream in accordance with paragraphs (b) and (c) of this section.

(2) *Designate as Group 1.* An owner or operator may designate as a Group 1 wastewater stream a single wastewater stream or a mixture of wastewater streams. The owner or operator is not required to determine the concentration or flow rate for each designated Group 1 wastewater stream for the purposes of this section.

(b) *Procedures to establish concentrations, when determining Group status under paragraph (a)(1) of this section.* An owner or operator who elects to comply with the requirements of paragraph (a)(1) of this section shall determine the annual average concentration for VOC according to paragraph (b)(1) of this section. The annual average concentration shall be a flow-weighted average representative of actual or anticipated operation of the designated CPU generating the wastewater over a designated 12-month period. For flexible operation units, the owner or operator shall consider the anticipated production over the designated 12-month period and include all wastewater streams generated by the process equipment during this period. The owner or operator is not required to determine the concentration of VOC that are not reasonably expected to be in the process or in the resulting wastewater stream.

(1) *General.* An owner or operator who elects to comply with the requirements of paragraph (a)(1) of this section shall determine the flow-weighted annual average concentration for VOC and the range of concentrations represented by the flow-weighted annual average concentration. For the purposes of this section, the term concentration, whether concentration is used alone or with other terms, may be adjusted by the compound-specific fraction measured (Fm) factors. Compound-specific Fm factors shall be determined as specified in appendix J of this part. Flow-weighted annual average concentration for VOC means the total mass of VOC occurring in the wastewater stream during the designated 12-month period divided by the total mass of the wastewater stream during the same designated 12-month period. The annual average concentration shall be determined for each wastewater stream either at the point of determination, or downstream of the point of determination with adjustment for concentration changes made according to paragraph (b)(6) of this section. The procedures specified in paragraphs (b)(3), (b)(4), and (b)(5) of this section are considered acceptable procedures for determining the annual average concentration. They may be used in combination, and no one procedure shall take precedence over another.

(2) [Reserved]

(3) *Process knowledge of the wastewater.* Where process knowledge is used to determine the annual average concentration, the owner or operator shall provide sufficient information to document the annual average concentration for wastewater streams determined to be Group 2 wastewater streams as specified in § 60.785(g) of this subpart. Documentation to determine the annual average concentration is not required for Group 1 streams. Examples of acceptable documentation include material balances, records of chemical purchases, process stoichiometry, or previous test results. If test data are used, the owner or operator shall provide documentation describing the testing protocol and the means by which any losses of volatile compounds during sampling, and the bias and accuracy of the analytical method, were accounted for in the determination.

(4) *Bench-scale or pilot-scale test data.* Where bench-scale or pilot-scale test data are used to determine the annual average concentration, the owner or operator shall provide sufficient information to document that the data are representative of the actual annual average concentration, or are reliably indicative of another relevant characteristic of the wastewater stream that could be used to predict the annual average concentration. For concentration data, the owner or operator shall also provide documentation describing the testing protocol, and the means by which any losses of volatile compounds during sampling, and the bias and accuracy of the analytical method, were accounted for in the determination of annual average concentration.

(5) *Test data from sampling at the point of determination or at a location downstream of the point of determination.* Where an owner or operator elects to comply with paragraph (a)(1) of this section by measuring the concentration for VOC, the owner or operator shall comply with the requirements of this paragraph (b)(5). For each wastewater stream, measurements shall be made either at the point of determination, or downstream of the point of determination with adjustment for concentration changes made according to paragraph (b)(6) of this section. A minimum of three samples from each wastewater stream shall be taken. Samples may be grab samples or composite samples.

(i) *Methods.* The owner or operator shall use any of the methods specified in paragraphs (b)(5)(i)(A) through (b)(5)(i)(F) of this section.

(A) *Method 25D.* Use procedures specified in Method 25D, 40 CFR part 60, appendix A.

(B) *Method 305.* Use procedures specified in Method 305, 40 CFR part 63, appendix A .

(C) *Methods 624 and 625.* Use procedures specified in Methods 624 and 625, 40 CFR part 136, appendix A and comply with the sampling protocol requirements specified in paragraph (b)(5)(ii) of this section. If these methods are used to analyze one or more compounds that are not on the method's published list of approved compounds, the Alternative Test Procedure specified in 40 CFR part 136.4 and 136.5 shall be followed. For Method 625, make corrections to the compounds for which the analysis is being conducted. The corrections shall be based on the accuracy as recovery factors in Table 7 of the method.

(D) *Method 1624 and Method 1625.* Use procedures specified in Method 1624 and Method 1625, 40 CFR part 136, appendix A and comply with the requirements specified in paragraph (b)(5)(ii) of this section. If these methods are used to analyze one or more compounds that are not on the method's published list of approved compounds, the Alternative Test Procedure specified in 40 CFR part 136.4 and 136.5 shall be followed.

(E) *Other EPA method(s).* Use procedures specified in the method and comply with the requirements specified in paragraphs (b)(5)(ii) and either paragraph (b)(5)(iii)(A) or (b)(5)(iii)(B) of this section.

(F) *Method(s) other than EPA method.* Use procedures specified in the method and comply with the requirements specified in paragraphs (b)(5)(ii) and (b)(5)(iii)(A) of this section.

(ii) *Sampling plan.* The owner or operator who is expressly referred to this paragraph (b)(5)(ii) by provisions of this subpart shall prepare a sampling plan. Wastewater samples shall be collected using sampling procedures which minimize loss of organic compounds during sample collection and analysis and maintain sample integrity. The sample plan shall include procedures for determining recovery efficiency of the relevant VOC. An example of an acceptable sampling plan

would be one that incorporates similar sampling and sample handling requirements to those of Method 25D, 40 CFR part 60, appendix A. The sampling plan shall be maintained at the facility.

(iii) *Validation of methods.* The owner or operator shall validate EPA methods other than Methods 25D, 305, 624, 625, 1624, and 1625 using the procedures specified in paragraph (b)(5)(iii)(A) or (b)(5)(iii)(B) of this section. The owner or operator shall validate other methods as specified in paragraph (b)(5)(iii)(A) of this section.

(A) *Validation of EPA methods and other methods.* The method used to measure VOC concentrations in the wastewater shall be validated according to section 5.1 or 5.3, and the corresponding calculations in section 6.1 or 6.3, of Method 301 of appendix A of this part. The data are acceptable if they meet the criteria specified in section 6.1.5 or 6.3.3 of Method 301 of appendix A of this part. If correction is required under section 6.3.3 of Method 301 of appendix A of this part, the data are acceptable if the correction factor is within the range 0.7 to 1.30. Other sections of Method 301 of appendix A of this part are not required. The concentrations of the individual VOC measured in the water may be corrected to their concentrations had they been measured by Method 25D of appendix A of this part, by multiplying each concentration by the compound-specific fraction measured (Fm) factor. Compound-specific Fm factors shall be determined as specified in appendix J of this part.

(B) *Validation for EPA methods.* Follow the procedures as specified in ''Alternative Validation Procedure for EPA Waste Methods'' 40 CFR part 63, appendix D.

(iv) *Calculations of average concentration.* For methods that speciate, the average concentration of VOC shall be calculated by first summing the concentration of the individual compounds to obtain a total VOC concentration for the sample, adding the sample totals, and then dividing by the number of samples in the run to obtain the sample average for the run. If the method used does not speciate the compounds, the sample results should be added and this total divided by the number of samples in the run to obtain the sample average for the run.

(6) *Adjustment for concentrations determined downstream of the point of determination.* The owner or operator shall make corrections to the annual average concentration when the concentration is determined downstream of the point of determination at a location where: two or more wastewater streams have been mixed; one or more wastewater streams have been treated; or, losses to the atmosphere have occurred. The owner or operator shall make the adjustments either to the individual data points or to the final annual average concentration.

(c) *Procedures to determine flow rate, when evaluating Group status under paragraph (a)(1) of this section.* An owner or operator who elects to comply with paragraph (a)(1) of this section shall determine the annual average flow rate of the wastewater stream and the range of flow rates represented by the annual average flow rate. The annual average flow rate shall be determined either at the point of determination for each wastewater stream, or downstream of the point of determination with adjustment for flow rate changes made according to paragraph (c)(4) of this section. These procedures may be used in combination for different wastewater streams at the affected facility. The annual average flow rate for the wastewater stream shall be representative of actual or anticipated operation of the designated CPU generating the wastewater over a designated 12-month period. The owner or operator shall consider the annual wastewater volume generated by the designated CPU. If the designated CPU is a flexible operation unit, the owner or operator shall consider all anticipated production in the process equipment over the designated 12-month period. The procedures specified in paragraphs (c)(1), (c)(2), and (c)(3) of this section are considered acceptable procedures for determining the flow rate. They may be used in combination, and no one procedure shall take precedence over another.

(1) *Process knowledge of the wastewater.* The owner or operator may use process knowledge of the wastewater stream and/or the process to determine the annual average flow rate. The owner or operator shall use the maximum expected annual average production capacity of the process unit, knowledge of the process, and/or mass balance information to either estimate the annual average wastewater flow rate directly or estimate the total annual wastewater volume and then divide total volume by 525,600 minutes in a year. Where process knowledge is used to determine the annual average flow rate, the owner or operator shall provide sufficient information to document the flow rate for wastewater streams determined to be Group 2 wastewater streams as specified in § 60.785(g) of this subpart. Documentation to determine the annual average flow rate is not required for Group 1 streams.

(2) *Historical records.* The owner or operator may use historical records to determine the annual average flow rate. Derive the highest annual average flow rate of wastewater from historical records representing the most recent 5 years of operation or, if the process unit has been in service for less than 5 years but at least 1 year, from historical records representing the total operating life of the process unit. Where historical records are used to determine the annual average flow rate, the owner or operator shall provide sufficient information to document the flow rate for wastewater streams determined to be Group 2 wastewater streams. Documentation to determine the annual average flow rate is not required for Group 1 streams.

(3) *Measurements of flow rate.* Where an owner or operator elects to comply with paragraph (a)(1) of this section by measuring the flow rate, the owner or operator shall comply with the requirements of this paragraph (c)(3). Measurements shall be made at the point of determination, or at a location downstream of the point of determination with adjustments for flow rate changes made according to paragraph (c)(4) of this section. Where measurement data are used to determine the annual average flow rate, the owner or operator shall provide sufficient information to document the flow rate for wastewater streams determined to be Group 2 wastewater streams. Documentation to determine the annual average flow rate is not required for Group 1 streams.

(4) *Adjustment for flow rates determined downstream of the point of determination.* The owner or operator shall make corrections to the annual average flow rate of a wastewater stream when it is determined downstream of the point of determination at a location where two or more wastewater streams have been mixed or one or more wastewater streams have been treated. The owner or operator shall make corrections for such changes in the annual average flow rate.

§ 60.783 Process wastewater provisions—test methods and procedures to determine compliance.

(a) *General.* This section specifies the procedures for performance tests that are conducted to demonstrate compliance of a treatment process or a control device with the control requirements specified in § 60.779 of this subpart. Owners or operators conducting a design evaluation shall comply with the requirements of either

paragraph (a)(1) or (a)(2) of this section. Owners or operators conducting a performance test shall comply with the applicable requirements in paragraphs (a) through (i) of this section.

(1) *Performance tests and design evaluations for treatment processes.* If design steam stripper option (§ 60.779(d) of this subpart) or RCRA option (§ 60.779(h)of this subpart) is selected to comply with § 60.779 of this subpart, neither a design evaluation nor a performance test is required. For any other non-biological treatment process, the owner or operator shall conduct either a design evaluation as specified in § 60.779(j) of this subpart, or a performance test as specified in this section. For closed biological treatment processes, the owner or operator shall conduct either a design evaluation as specified in § 60.779(j) of this subpart, or a performance test as specified in this section. For each open biological treatment process, the owner or operator shall conduct a performance test as specified in this section.

Note to paragraph (a)(1): Some open biological treatment processes may not require a performance test. Refer to paragraph (h) of this section to determine whether the biological treatment process meets the criteria that exempt the owner or operator from conducting a performance test.

(2) *Performance tests and design evaluations for control devices.* The owner or operator shall conduct either a design evaluation as specified in § 60.780(d) of this subpart, or a performance test as specified in paragraph (i) of this section for control devices other than flares and paragraph (j) of this section for flares.

(3) Performance tests and compliance determinations shall be conducted according to the schedule and procedures in 40 CFR 63.7(a) and table 2A of this subpart, and the applicable sections of this subpart.

(4) The owner or operator shall notify the Administrator of the intention to conduct a performance test at least 30 calendar days before the performance test is scheduled to allow the Administrator the opportunity to have an observer present during the test.

(5) Performance tests shall be conducted according to the provisions of 40 CFR 63.7(e)(1) through (e)(2) and (e)(4) and table 2A of this subpart, except that performance tests shall be conducted at maximum representative operating conditions for the process. During the performance test, an owner or operator may operate the control or recovery device at maximum or minimum representative operating conditions for monitored control or recovery device parameters, whichever results in lower emission reduction.

(6) Data shall be reduced in accordance with the EPA-approved methods specified in the applicable subpart or, if other test methods are used, the data and methods shall be validated according to the protocol in Method 301 of appendix A of 40 CFR part 63.

(7) Performance tests may be waived with approval of the Administrator as specified in 40 CFR 63.7(h)(2) and table 2A of this subpart. Owners or operators who apply for a waiver of a performance test shall submit the application by the dates specified in paragraph (b)(7)(i) of this section.

(i) The application for a waiver of an initial performance test shall be submitted not later than 90 calendar days before the Notification of Compliance Status required in § 60.784(c) of this subpart is due to be submitted.

(ii) Any application for a waiver of a performance test shall include information justifying the owner or operator's request for a waiver, such as the technical or economic infeasibility, or the impracticality, of the affected facility performing the required test.

(8) *Representative process unit operating conditions.* Compliance shall be demonstrated for representative operating conditions. Operations during periods of start-up, shutdown, or malfunction and periods of non-operation shall not constitute representative conditions. The owner or operator shall record the process information that is necessary to document operating conditions during the test.

(9) *Representative treatment process or control device operating conditions.* Performance tests shall be conducted when the treatment process or control device is operating at a representative inlet flow rate and concentration. If the treatment process or control device will be operating at several different sets of representative operating conditions, the owner or operator shall comply with paragraphs (a)(9)(i) and (a)(9)(ii) of this section. The owner or operator shall record information that is necessary to document treatment process or control device operating conditions during the test.

(i) *Range of operating conditions.* If the treatment process or control device will be operated at several different sets of representative operating conditions, performance testing over the entire range is not required. In such cases, the performance test results shall be supplemented with modeling and/or engineering assessments to demonstrate performance over the operating range.

(ii) *Consideration of residence time.* If concentration and/or flow rate to the treatment process or control device are not relatively constant (i.e., comparison of inlet and outlet data will not be representative of performance), the owner or operator shall consider residence time, when determining concentration and flow rate.

(10) *Testing equipment.* All testing equipment shall be prepared and installed as specified in the applicable test methods, or as approved by the Administrator.

(11) *Compounds not required to be considered in performance tests or design evaluations.* This paragraph (a)(11) applies only when test methods that speciate compounds are used. Compounds that meet the requirements specified in paragraphs (a)(11)(i), (a)(11)(ii), or (a)(11)(iii) of this section are not required to be included in the performance test.

(i) Compounds not used or produced by the chemical process unit; or

(ii) Compounds with concentrations at the point of determination that are below 1 part per million by weight; or

(iii) Compounds with concentrations at the point of determination that are below the lower detection limit where the lower detection limit is greater than 1 part per million by weight. The method shall be an analytical method for wastewater which has that compound as a target analyte.

(12) *Treatment using a series of treatment processes.* In all cases where the wastewater provisions in this subpart allow or require the use of a treatment process to comply with emission limitations, the owner or operator may use multiple treatment processes. The owner or operator complying with the requirements of § 60.779(a)(12)(i) of this subpart, when wastewater is conveyed by hard-piping, shall comply with either paragraph (a)(12)(i) or (a)(12)(ii) of this section. The owner or operator complying with the requirements of § 60.779(a)(12)(ii) of this subpart shall comply with the requirements of paragraph (a)(12)(ii) of this section.

(i) The owner or operator shall conduct the performance test across each series of treatment processes. For each series of treatment processes, inlet concentration and flow rate shall be measured either where the wastewater stream enters the first treatment process in a series of treatment processes, or prior to the first treatment process as specified in paragraph (a)(14) of this section. For each series of treatment processes, outlet concentration and flow

rate shall be measured where the wastewater stream exits the last treatment process in the series of treatment processes, except when the last treatment process is an open or a closed aerobic biological treatment process demonstrating compliance by using the procedures in paragraphs (f) or (g) of this section. When the last treatment process is either an open or a closed aerobic biological treatment process demonstrating compliance by using the procedures in paragraphs (f) or (g) of this section, inlet and outlet concentrations and flow rates shall be measured as provided in paragraphs (a)(12)(i)(A) and (a)(12)(i)(B) of this section. The mass flow rates removed or destroyed by the series of treatment processes and by the biological treatment process are all used to calculate actual mass removal (AMR) as specified in paragraph (f)(5)(ii) of this section.

(A) The inlet and outlet to the series of treatment processes prior to the biological treatment process are the points at which the wastewater enters the first treatment process and exits the last treatment process in the series, respectively, except as provided in paragraph (a)(14)(ii) of this section.

(B) The inlet to the biological treatment process shall be the point at which the wastewater enters the biological treatment process or the outlet from the series of treatment processes identified in paragraph (a)(12)(i)(A) of this section, except as provided in paragraph (a)(14)(ii) of this section.

(ii) The owner or operator shall conduct the performance test across each treatment process in the series of treatment processes. The mass flow rate removed or destroyed by each treatment process shall be added together to determine whether compliance has been demonstrated using paragraphs (c), (d), (e), (f), and (g) of this section, as applicable. If a biological treatment process is one of the treatment processes in the series of treatment processes, the inlet to the biological treatment process shall be the point at which the wastewater enters the biological treatment process or the inlet to the equalization tank if all the criteria of paragraph (a)(14)(ii) of this section are met.

(13) When using a biological treatment process to comply with § 60.779 of this subpart, the owner or operator may elect to calculate the AMR using a subset of VOC determined at the point of determination or downstream of the point of determination with adjustment for concentration and flowrate changes made according to § 60.782(b)(6) and (c)(4), respectively, of this subpart. All VOC measured to determine the RMR, except as provided by paragraph (a)(11) of this section, shall be included in the RMR calculation.

(14) The owner or operator determining the inlet for purposes of demonstrating compliance with paragraphs (e), (f), or (g) of this section may elect to comply with paragraph (a)(14)(i) or (a)(14)(ii) of the section.

(i) When wastewater is conveyed exclusively by hard-piping from the point of determination to a treatment process that is either the only treatment process or the first in a series of treatment processes (i.e., no treatment processes or other waste management units are used upstream of this treatment process to store, handle, or convey the wastewater), the inlet to the treatment process shall be at any location from the point of determination to where the wastewater stream enters the treatment process. When samples are taken upstream of the treatment process and before wastewater streams have converged, the owner or operator shall ensure that the mass flow rate of all Group 1 wastewater streams is accounted for when using § 60.779(e) or (f) of this subpart to comply and that the mass flow rate of all Group 1 and Group 2 wastewater streams is accounted for when using § 60.779(g) of this subpart to comply, except as provided in § 60.779(a)(6) of this subpart.

(ii) The owner or operator may consider the inlet to the equalization tank as the inlet to the biological treatment process if all the criteria in paragraphs (a)(14)(ii)(A) through (a)(14)(ii)(C) of this section are met. The outlet from the series of treatment processes prior to the biological treatment process is the point at which the wastewater exits the last treatment process in the series prior to the equalization tank, if the equalization tank and biological treatment process are part of a series of treatment processes. The owner or operator shall ensure that the mass flow rate of all Group 1 wastewater streams is accounted for when using § 60.779(e) or (f) of this subpart to comply and that the mass flow rate of all Group 1 and Group 2 wastewater streams is accounted for when using § 60.779(g) of this subpart to comply, except as provided in paragraph (a)(11) of this section.

(A) The wastewater is conveyed by hard-piping from either the last previous treatment process or the point of determination to the equalization tank.

(B) The wastewater is conveyed from the equalization tank exclusively by hard-piping to the biological treatment process and no treatment processes or other waste management units are used to store, handle, or convey the wastewater between the equalization tank and the biological treatment process.

(C) The equalization tank is equipped with a fixed roof and a closed vent system that routes VOC emissions to a control device that meets the requirements of 40 CFR 63.133(a)(2)(i) and (b)(1) through (b)(4).

(b) [Reserved]

(c) *Non-combustion, non-biological treatment process: percent mass removal/destruction option.* This paragraph (c) applies to performance tests that are conducted to demonstrate compliance of a noncombustion, non-biological treatment process with the percent mass removal limits specified in § 60.779(e)(1), (e)(2), and (e)(3) of this subpart for VOC. When demonstrating compliance with § 60.779(e)(1) of this subpart, the owner or operator shall comply with the requirements specified in paragraphs (c)(1) through (c)(6) of this section. When demonstrating compliance with § 60.779(e)(2) of this subpart, the owner or operator shall comply with the requirements specified in paragraphs (c)(1), (c)(2), (c)(3), and (c)(6) of this section. When demonstrating compliance with § 60.779(e)(3) of this subpart, the owner or operator shall comply with the requirements specified in paragraphs (e)(1), (e)(2), (e)(3), (e)(4), and (e)(6) of this section for each of the following VOC: methanol, ethylene glycol monobutyl ether acetate, and, methyl ethyl ketone.

(1) *Concentration.* The concentration of VOC entering and exiting the treatment process shall be determined as provided in this paragraph (c)(1). Wastewater samples shall be collected using sampling procedures which minimize loss of organic compounds during sample collection and analysis and maintain sample integrity per § 60.782(b)(5)(ii) of this subpart. The method shall be an analytical method for wastewater which has that compound as a target analyte. Samples may be grab samples or composite samples. Samples shall be taken at approximately equally spaced time intervals over a 1-hour period. Each 1-hour period constitutes a run, and the performance test shall consist of a minimum of 3 runs.

(2) *Flow rate.* The flow rate of the entering and exiting wastewater streams shall be determined using inlet and outlet flow meters, respectively. Where the outlet flow is not greater than the inlet flow, a flow meter shall be used,

and may be used at either the inlet or outlet. Flow rate measurements shall be taken at the same time as the concentration measurements.

(3) *Calculation of mass flow rate—for noncombustion, nonbiological treatment processes.*

(i) When complying with either § 60.779(e)(1) or (e)(2)of this subpart, use this paragraph (c)(3)(i), to calculate the mass flow rate of VOC entering and exiting the treatment process.

$$QMW_a = \frac{\rho}{p * 10^6}\left(\sum_{k=1}^{p} Q_{a,k} C_{T,a,k}\right) \qquad \text{(Eqn WW1)}$$

$$QMW_b = \frac{\rho}{p * 10^6}\left(\sum_{k=1}^{p} Q_{b,k} C_{T,b,k}\right) \qquad \text{(Eqn WW2)}$$

Where:

QMW_a, QMW_b = Mass flow rate of VOC, average of all runs, in wastewater entering (QMW_a) or exiting (QMW_b) the treatment process, kilograms per hour.

ρ = Density of the wastewater, kilograms per cubic meter.

$Q_{a,k}$, $Q_{b,k}$ = Volumetric flow rate of wastewater entering ($Q_{a,k}$) or exiting ($Q_{b,k}$) the treatment process during each run k, cubic meters per hour.

$C_{T,a,k}$, $C_{T,b,k}$ = Total concentration of VOC in wastewater entering ($C_{T,a,k}$) or exiting ($C_{T,b,k}$) the treatment process during each run k, parts per million by weight. Total concentration shall be based on speciated method(s) if using § 60.779(e)(1) of this subpart to comply and shall be based on either speciated or non-speciated methods if using § 60.779(e)(2) of this subpart to comply.

p = Number of runs.

k = Identifier for a run.

10^6 = conversion factor, mg/kg

(ii) When complying with § 60.779(e)(3) of this subpart, use this paragraph (c)(3)(ii) to calculate the mass flow rate of each compound, i.e., methanol, ethylene glycol monobutyl ether acetate, and methyl ethyl ketone, entering and exiting the treatment process.

$$QMW_a = \frac{\rho}{p * 10^6} Q_{a,k} + C_{T,a,k} \qquad \text{(Eqn WW1-1)}$$

$$QMW_b = \frac{\rho}{p * 10^6} Q_{b,k} + C_{T,b,k} \qquad \text{(Eqn WW2-1)}$$

Where:

QMW_a, QMW_b = Mass flow rate of a compound average of all runs, in wastewater entering (QMW_a) or existing (QMW_b) the treatment process, kilograms per hour.

ρ = Density of the wastewater, kilograms per cubic meter.

$Q_{a,k}$, $Q_{b,k}$ = Volumetric flow rate of wastewater entering ($Q_{a,k}$) or exiting ($Q_{b,k}$) the treatment process during each run k, cubic meters per hour.

$C_{,a,k}$, $C_{,b,k}$ = Concentration of a compound in wastewater entering ($C_{,a,k}$) or existing ($C_{,b,k}$) the treatment process during each run k, parts per million by weight. Concentration shall be based on speciated method(s).

p = Number of runs.

k = Identifier for a run.

10^6 = conversion factor, mg/kg

(4) *Percent removal calculation for mass flow rate.* The percent mass removal across the treatment process shall be calculated as follows if complying with § 60.779(e)(1) of this subpart:

$$E = \frac{QMW_a - QMW_b}{QMW_a} * 100 \qquad \text{(Eqn WW3)}$$

Where:

E = Removal or destruction efficiency of the treatment process, percent.

QMW_a, QMW_b = Mass flow rate of VOC in wastewater entering (QMW_a) and exiting (QMW_b) the treatment process, kilograms per hour (as calculated using Equations WW1 and WW2, or Equations WW1–2 and WW2–2).

(5) *Calculation of flow-weighted average of Fr values.* If complying with § 60.779(e)(1) of this subpart, use Equation WW8 in paragraph (d)(8) of this section to calculate the flow-weighted average of the Fr values. When the term ''combustion'' is used in Equation WW8, the term ''treatment process'' shall be used for the purposes of this paragraph. Follow the procedures in § 60.778 of this subpart to develop a stream-specific list of VOC. Follow the procedures in appendix J of this part to determine Fr values.

(6) *Compare mass removal efficiency to required efficiency.* Compare the mass removal efficiency (calculated in Equation WW3) to the required efficiency as specified in § 60.779(e) of this subpart. If complying with § 60.779(e)(1) of this subpart, compliance is demonstrated if the mass removal efficiency is greater than or equal to the flow-weighted average of the Fr values calculated in Equation WW8. If complying with § 60.779(e)(2) of this subpart, compliance is demonstrated if the mass removal efficiency is 95 percent or greater and outlet concentration is less than 50 ppmw. If complying with § 60.779(e)(3) of this subpart, compliance is demonstrated if the mass removal for methanol is greater than or equal to 31 percent, and the mass removal for ethylene glycol monobutyl ether acetate, and methyl ethyl ketone is greater than or equal to 76 percent, and the mass

removal for methyl ethyl ketone is greater than or equal to 95 percent.

(d) *Combustion treatment processes: percent mass removal/destruction option.* This paragraph (d) applies to performance tests that are conducted to demonstrate compliance of a combustion treatment process with the percent mass destruction limits specified in § 60.779(e)(1) of this subpart for VOC. The owner or operator shall comply with the requirements specified in paragraphs (d)(1) through (d)(9) of this section.

(1) *Concentration in wastewater stream entering the combustion treatment process.* The concentration of VOC entering the treatment process shall be determined as provided in this paragraph (d)(1). Wastewater samples shall be collected using sampling procedures which minimize loss of organic compounds during sample collection and analysis and maintain sample integrity per § 60.782(b)(5)(ii) of this subpart. The method shall be an analytical method for wastewater which has that compound as a target analyte. Samples may be grab samples or composite samples. Samples shall be taken at approximately equally spaced time intervals over a 1-hour period. Each 1-hour period constitutes a run, and the performance test shall consist of a minimum of 3 runs.

(2) *Flow rate of wastewater entering the combustion treatment process.* The flow rate of the wastewater stream entering the combustion treatment process shall be determined using an inlet flow meter. Flow rate measurements shall be taken at the same time as the concentration measurements.

(3) *Calculation of mass flow rate in wastewater stream entering combustion treatment processes.* The mass flow rate of VOC entering the treatment process is calculated as follows:

$$QMW_a = \frac{\rho}{p * 10^6}\left(\sum_{k=1}^{p} Q_{a,k} * C_{T,a,k}\right) \qquad \text{(Eqn WW4)}$$

Where:

QMW_a=Mass flow rate of VOC entering the combustion unit, kilograms per hour.

ρ = Density of the wastewater stream, kilograms per cubic meter.

$Q_{a,k}$=Volumetric flow rate of wastewater entering the combustion unit during run k, cubic meters per hour.

$C_{T,a,k}$=Total concentration of VOC in the wastewater stream entering the combustion unit during run k, parts per million by weight.

p=Number of runs.

k=Identifier for a run.

(4) *Concentration in vented gas stream exiting the combustion treatment process.* The concentration of VOC exiting the combustion treatment process in any vented gas stream shall be determined as provided in this paragraph (d)(4). Samples may be grab samples or composite samples. Samples shall be taken at approximately equally spaced time intervals over a 1-hour period. Each 1-hour period constitutes a run, and the performance test shall consist of a minimum of 3 runs. Concentration measurements shall be determined using Method 18, 40 CFR part 60, appendix A. Alternatively, any other test method validated according to the procedures in Method 301, 40 CFR part 60, appendix A may be used.

(5) *Volumetric flow rate of vented gas stream exiting the combustion treatment process.* The volumetric flow rate of the vented gas stream exiting the combustion treatment process shall be determined using Method 2, 2A, 2C, or 2D, CFR part 60, appendix A, as appropriate. Volumetric flow rate measurements shall be taken at the same time as the concentration measurements.

(6) *Calculation of mass flow rate of vented gas stream exiting combustion treatment processes.* The mass flow rate VOC in a vented gas stream exiting the combustion treatment process shall be calculated as follows:

[Reserved] (Eqn WW5)

$$QMG_b = K_2\left(\sum_{i=1}^{n} CG_{b,i} MW_i\right) QG_b \qquad \text{(Eqn WW6)}$$

Where:

$CG_{b,i}$=Concentration of (TOC) (minus methane and ethane) or total VOC, in vented gas stream, exiting ($CG_{b,i}$) the control device, dry basis, parts per million by volume.

QMG_b=Mass rate of TOC (minus methane and ethane) or total VOC in vented gas stream, exiting (QMG_b) the control device, dry basis, kilograms per hour.

MW_i=Molecular weight of a component, kilogram/kilogram-mole.

QG_b=Flow rate of gas stream exiting (QG_b) the control device, dry standard cubic meters per hour.

K_2=Constant, 41.57 x 10^{-9} (parts per million)$^{-1}$ (gram-mole per standard cubic meter) (kilogram/gram), where standard temperature (gram-mole per standard cubic meter) is 20° Celsius.

i=Identifier for a compound.

n=Number of components in the sample.

(7) *Destruction efficiency calculation.* The destruction efficiency of the combustion unit for VOC shall be calculated as follows:

$$E = \frac{QMW_a - QMG_b}{QMW_a} * 100 \qquad \text{(Eqn WW7)}$$

Where:

E=Destruction efficiency of VOC for the combustion unit, percent.

QMW_a=Mass flow rate of VOC entering the combustion unit, kilograms per hour.

QMG_b=Mass flow rate VOC in vented gas stream exiting the combustion treatment process, kilograms per hour.

(8) *Calculation of flow-weighted average of Fr values.* Use Equation WW8 to calculate the flow-weighted average of the Fr values. Follow the procedures in § 60.778 of this subpart to develop a stream-specific list of VOC. Follow the procedures in appendix J of this part to determine the Fr values.

$$avg = \left(\frac{\sum_{i=1}^{n} \sum_{k=1}^{p} Fr_i * C_{i,a,k} * Q_{a,k}}{\sum_{k=1}^{p} \sum_{i=1}^{n} C_{i,a,k} * Q_{a,k}} \right) * 1 \qquad \text{(Eqn WW8)}$$

Where:

Fr_{avg}=Flow-weighted average of the Fr values.

$C_{i,a,k}$=Concentration of VOC in wastewater stream entering the combustion unit, during run k, parts per million by weight.

$Q_{a,k}$=Volumetric flow rate of wastewater entering the combustion unit during run k, cubic meters per hour.

Fr_i=Compound-specific Fr value as determined by the procedures in appendix J of this part.

(9) *Calculate flow-weighted average of Fr values and compare to mass destruction efficiency.* Compare the mass destruction efficiency (calculated in Equation WW7) to the required efficiency as specified in § 60.779(e)(2) of this subpart. Compliance is demonstrated if the mass destruction efficiency is greater than or equal to the flow-weighted average of the Fr value calculated in Equation WW8.

(e) *Non-combustion treatment processes including closed biological treatment processes: RMR option.* This paragraph (e) applies to performance tests for non-combustion treatment processes other than open biological treatment processes to demonstrate compliance with the mass removal provisions for VOC. Compliance options for noncombustion nonbiological treatment processes are specified in § 60.779(f)(1) of this subpart. Compliance options for closed aerobic and anaerobic biological treatment processes are specified in § 60.779(f)(2)(i) and (g)(1)(i), and § 60.779(f)(3), and (g)(2) of this subpart. When complying with § 60.779(f)(2)(i) or (f)(3) of this subpart, the owner or operator shall comply with the requirements specified in paragraphs (e)(1) through (e)(6) of this section. When complying with § 60.779(g)(1)(i) or (g)(2) of this subpart, the owner or operator shall comply with the requirements specified in paragraphs (e)(1) through (e)(6) of this section.

(1) *Concentration in wastewater stream.* The concentration of VOC shall be determined as provided in this paragraph (e)(1). Concentration measurements to determine RMR shall be taken at the point of determination or downstream of the point of determination with adjustment for concentration change made according to § 60.782(b)(6) of this subpart. Concentration measurements to determine AMR shall be taken at the inlet and outlet to the treatment process and as provided in paragraph (a)(7) of this section for a series of treatment processes. Wastewater samples shall be collected using sampling procedures which minimize loss of organic compounds during sample collection and analysis and maintain sample integrity per § 60.782(b)(5)(ii) of this subpart. The method shall be an analytical method for wastewater which has that compound as a target analyte. Samples may be grab samples or composite samples. Samples shall be taken at approximately equally spaced time intervals over a 1-hour period. Each 1-hour period constitutes a run, and the performance test shall consist of a minimum of 3 runs.

(2) *Flow rate.* Flow rate measurements to determine RMR shall be taken at the point of determination or downstream of the point of determination with adjustment for flow rate change made according to § 60.782(c)(4) of this subpart. Flow rate measurements to determine AMR shall be taken at the inlet and outlet to the treatment process and as provided in paragraph (a)(7) of this section for a series of treatment processes. Flow rate shall be determined using inlet and outlet flow measurement devices. Where the outlet flow is not greater than the inlet flow, a flow measurement device shall be used, and may be used at either the inlet or outlet. Flow rate measurements shall be taken at the same time as the concentration measurements.

(3) *Calculation of RMR for non-combustion treatment processes including closed biological treatment processes.* When using §§ 60.779(f)(2)(i) or (f)(3) of this subpart to comply, the required mass removal of VOC for each Group 1 wastewater stream shall be calculated as specified in paragraph (e)(3)(i) of this section. When using § 60.779(g)(1)(i) or (g)(2) of this subpart to comply, the required mass removal shall be calculated as specified in paragraph (e)(3)(ii) of this section.

(i) When using § 60.779(f)(2)(i) or (f)(3) of this subpart to comply, the required mass removal of VOC for each Group 1 wastewater stream shall be calculated using Equation WW9.

$$RMR = \frac{\rho}{10^9} Q \sum_{i=1}^{n} \left(C_i * Fr_i \right) \qquad \text{(Eqn WW9)}$$

Where:

RMR=Required mass removal for treatment process or series of treatment processes, kilograms per hour.

ρ=Density of the Group 1 wastewater stream, kilograms per cubic meter.

Q=Volumetric flow rate of wastewater stream at the point of determination, liters per hour.

i=Identifier for a compound.

n=Number of VOC in stream.

C_i=Concentration of VOC at the point of determination, parts per million by weight.

Fr_i=Fraction removal value of a VOC. Follow the procedures in § 60.778 of this subpart to develop a stream-specific list of VOC. Follow the procedures in appendix J of this part to determine Fr values.

10^9=Conversion factor, mg/kg * l/m^3.

(ii) When using § 60.779(g)(1)(i) or (g)(2) of this subpart to comply, the required mass removal is 95 percent of the mass flow rate for all wastewater streams combined for treatment. The required mass removal of VOC wastewater streams combined for treatment when complying with 40 CFR 63.138(g) shall be calculated using the following equation:

$$RWR = \frac{0.95\rho}{10^9} Q \sum_{i=1}^{n} \left(C_i \right) \qquad \text{(Eqn WW9a)}$$

Where:

RMR=Required mass removal for treatment process or series of treatment processes, kilograms per hour.

ρ=Density of the wastewater stream, kilograms per cubic meter.

Q=Volumetric flow rate of wastewater stream at the point of determination, liters per hour.

i=Identifier for a compound.

n=Number of VOC in stream.

C_i=Concentration of VOC at the point of determination, parts per million by weight.

10^9=Conversion factor, mg/kg * l/m^3

(4)(i) The required mass removal is calculated by summing the required mass removal for each Group 1 wastewater stream to be combined for treatment when complying with § 60.779(f)(2)(i) or (f)(3) of this subpart.

(ii) The required mass removal is calculated by summing the required mass removal for all wastewater streams combined for treatment when complying with § 60.779(g)(1)(i) or (g)(2) of this subpart.

(5) *The AMR calculation procedure for non-combustion treatment processes including closed biological treatment processes.* The AMR shall be calculated as follows:

$$AMR = \left(QMW_a - QMW_b\right) \quad \text{(Eqn WW10)}$$

Where:

AMR=Actual mass removal of VOC achieved by treatment process or series of treatment processes, kilograms per hour.

QMW_a=Mass flow rate of VOC in wastewater entering the treatment process or first treatment process in a series of treatment processes, kilograms per hour.

QMW_b=Mass flow rate of VOC in wastewater exiting the last treatment process in a series of treatment processes, kilograms per hour.

(6) *Compare RMR to AMR.* When complying with § 60.779(f)(2)(i) or (f)(3) of this subpart, compare the RMR calculated in Equation WW9 to the AMR calculated in Equation WW10. Compliance is demonstrated if the AMR is greater than or equal to the RMR. When complying with § 60.779(g)(1)(i) or (g)(2) of this subpart, compare the RMR calculated in Equation WW9a to the AMR calculated in Equation WW10. Compliance is demonstrated if the AMR is greater than or equal to 95-percent mass removal.

(f) *Open or closed aerobic biological treatment processes: Required mass removal (RMR) option.* This paragraph (f) applies to the use of performance tests that are conducted for open or closed aerobic biological treatment processes to demonstrate compliance with the mass removal provisions for VOC. These compliance options are specified in § 60.779(f)(2)(i) and (f)(2)(ii) of this subpart. The owner or operator shall comply with the requirements specified in paragraphs (f)(1) through (f)(6) of this section. Some compounds may not require a performance test. Refer to paragraph (h) of this section and Table 14 of this subpart to determine which compounds may be exempt from the requirements of this paragraph (f).

(1) *Concentration in wastewater stream.* The concentration of VOC shall be determined as provided in this paragraph (f)(1). Concentration measurements to determine RMR shall be taken at the point of determination or downstream of the point of determination with adjustment for concentration change made according to § 60.782(b)(6) of this subpart. Concentration measurements to determine AMR shall be taken at the inlet and outlet to the treatment process and as provided in paragraph (a)(7) of this section for a series of treatment processes. Wastewater samples shall be collected using sampling procedures which minimize loss of organic compounds during sample collection and analysis and maintain sample integrity per § 60.782(b)(5)(ii) of this subpart. The method shall be an analytical method for wastewater which has that compound as a target analyte. Samples may be grab samples or composite samples. Samples shall be taken at approximately equally spaced time intervals over a 1-hour period. Each 1-hour period constitutes a run, and the performance test shall consist of a minimum of 3 runs.

(2) *Flow rate.* Flow rate measurements to determine RMR shall be taken at the point of determination or downstream of the point of determination with adjustment for flow rate change made according to § 60.782(c)(4) of this subpart. Flow rate measurements to determine AMR shall be taken at the inlet and outlet to the treatment process and as provided in paragraph (a)(7) of this section for a series of treatment processes. Flow rate shall be determined using inlet and outlet flow measurement devices. Where the outlet flow is not greater than the inlet flow, a flow measurement device shall be used, and may be used at either the inlet or outlet. Flow rate measurements shall be taken at the same time as the concentration measurements.

(3) *Calculation of RMR for open or closed aerobic biological treatment processes.* The required mass removal of VOC for each Group 1 wastewater stream shall be calculated using the following equation:

$$RMR = \frac{\rho}{10^9} Q \sum_{i=1}^{n} \left(C_i * Fr_i\right) \quad \text{(Eqn WW11)}$$

Where:

RMR=Required mass removal for treatment process or series of treatment processes, kilograms per hour.

ρ=Density of the Group 1 wastewater stream, kilograms per cubic meter.

Q=Volumetric flow rate of wastewater stream at the point of determination, liters per hour.

i=Identifier for a compound.

n=Number of VOC in stream.

C_i=Concentration of VOC at the point of determination, parts per million by weight.

Fr_i=Fraction removal value of a VOC. Follow the procedures in § 60.778 of this subpart to develop a stream-specific list of VOC. Follow the procedures in appendix J of this part to determine Fr values.

10^9=Conversion factor, mg/kg * l/m^3.

(4) The required mass removal is calculated by adding together the required mass removal for each Group 1 wastewater stream to be combined for treatment.

(5) *Actual mass removal calculation procedure for open or closed aerobic biological treatment processes.* The actual mass removal (AMR) shall be calculated using Equation WW12 as specified in paragraph (f)(5)(i) of this section when the performance test is performed across the open or closed aerobic biological treatment process only. If compliance is being demonstrated in accordance with paragraph (a)(7)(i) of this section, the AMR for the series shall be calculated using Equation WW13 in paragraph (f)(5)(ii) of this section. (This equation is for situations where treatment is performed in a series of treatment processes connected by hard-piping.) If compliance is being demonstrated in accordance with paragraph (a)(7)(ii) of this section, the AMR for the biological treatment process shall be calculated using Equation WW12 in paragraph (f)(5)(i) of this section. The AMR for the biological treatment process used in a series of treatment processes calculated using Equation WW12 shall be added to the AMR determined for each of the other individual treatment processes in the series of treatment processes.

(i) Calculate AMR for the open or closed aerobic biological treatment process as follows:

$$AMR = QMW_a * F_{bio} \quad \text{(Eqn WW12)}$$

Where:

AMR=Actual mass removal of VOC achieved by open or closed biological treatment process, kilograms per hour.

QMW_a=Mass flow rate of VOC in wastewater entering the treatment process, kilograms per hour.

F_{bio}=Site-specific fraction of VOC biodegraded. F_{bio} shall be determined as specified in paragraph (h) of this section and 40 CFR part 63, appendix C. Follow the procedures in § 60.778 of this subpart to develop a stream-specific list of VOC.

(ii) Calculate AMR across a series of treatment units where the last treatment

unit is an open or closed aerobic biological treatment process as follows:

$$AMR = QMW_a - (QMW_b)(1 - F_{bio}) \qquad \text{(Eqn WW13)}$$

Where:

AMR=Actual mass removal of VOC achieved by a series of treatment processes, kilograms per hour.

QMW_a=Mass flow rate of VOC in wastewater entering the first treatment process in a series of treatment processes, kilograms per hour.

QMW_b=Mass flow rate of VOC in wastewater exiting the last treatment process in a series of treatment processes prior to the biological treatment process, kilograms per hour.

F_{bio}=Site-specific fraction of VOC biodegraded. F_{bio} shall be determined as specified in paragraph (h) of this section and 40 CFR part 63, appendix C. Follow the procedures in § 60.778 of this subpart to develop a stream-specific list of VOC.

(6) *Compare RMR to AMR.* Compare the RMR calculated in Equation WW11 to the AMR calculated in either Equation WW12 or WW13, as applicable. Compliance is demonstrated if the AMR is greater than or equal to the RMR.

(g) *Open or closed aerobic biological treatment processes: 95-percent mass removal option.* This paragraph (g) applies to performance tests that are conducted for open or closed aerobic biological treatment processes to demonstrate compliance with the 95-percent mass removal provisions for VOC. This compliance option is specified in § 60.779(g) of this subpart. The RMR for this option is 95-percent mass removal. The owner or operator shall comply with the requirements specified in paragraphs (g)(1) of this section to determine AMR, paragraphs (e)(3)(ii) and (e)(4)(ii) of this section to determine RMR, and paragraph (g)(2) of this section to determine whether compliance has been demonstrated. Some compounds may not require a performance test. Refer to paragraph (h) of this section and Table 14 of this subpart to determine which compounds may be exempt from the requirements of this paragraph (g).

(1) The owner or operator shall comply with the requirements specified in paragraphs (f)(1), (f)(2), and (f)(5) of this section to determine AMR. References to Group 1 wastewater streams shall be deemed all wastewater streams combined for treatment for the purposes of this paragraph (g)(1).

(2) *Compare RMR to AMR.* Compliance is demonstrated if the AMR is greater than or equal to RMR.

(h) *Site-specific fraction biodegraded (F_{bio}).* The VOC are divided into two sets for the purposes of determining whether F_{bio} must be determined, and if F_{bio} must be determined, which procedures may be used to determine compound-specific kinetic parameters. These sets are VOC in Table 14 of this subpart, and all other VOC.

(1) *Performance test exemption.* If a biological treatment process meets the requirements specified in paragraphs (h)(1)(i) and (h)(1)(ii) of this section, the owner or operator is not required to determine F_{bio} and is exempt from the applicable performance test requirements specified in § 60.779 of this subpart.

(i) The biological treatment process meets the definition of ''enhanced biological treatment process'' in § 60.771 of this subpart.

(ii) At least 99 percent by weight of all VOC that are present in the aggregate of all wastewater streams using the biological treatment process to comply with § 60.779 of this subpart are compounds on Table 14 of this subpart.

(2) *F_{bio} determination.* If a biological treatment process does not meet the requirement specified in paragraph (h)(1)(i) of this section, the owner or operator shall determine F_{bio} for the biological treatment process using the procedures in 40 CFR part 63, appendix C, and paragraph (h)(2)(ii) of this section. If a biological treatment process meets the requirements of paragraph (h)(1)(i) of this section but does not meet the requirement specified in paragraph (h)(1)(ii) of this section, the owner or operator shall determine F_{bio} for the biological treatment process using the procedures in 40 CFR part 63, appendix C, and paragraph (h)(2)(i) of this section.

(i) *Enhanced biological treatment processes.* If the biological treatment process meets the definition of ''enhanced biological treatment process'' in § 60.771 of this subpart and the wastewater streams include one or more compounds not on Table 14 of this subpart that do not meet the criteria in paragraph (h)(1)(ii) of this section, the owner or operator shall determine F_{bio} for VOC not on Table 14 of this subpart using any of the procedures specified in 40 CFR part 63, appendix C. (stream-specific list) (The symbol F_{bio} represents the site specific fraction of an individual VOC that is biodegraded.) The owner or operator shall calculate F_{bio} for the VOC on Table 14 of this subpart using the defaults provided for first order biodegradation rate constants (K1) of this subpart and follow the procedure explained in Form III of 40 CFR part 63, appendix C, or any of the procedures specified in 40 CFR part 63, appendix C.

(ii) *Biological treatment processes that are not enhanced biological treatment processes.* For biological treatment processes that do not meet the definition for ''enhanced biological treatment process'' in § 60.771 of this subpart, the owner or operator shall determine the F_{bio} for VOC on Table 14 of this subpart and all other VOC using any of the procedures in 40 CFR part 63, appendix C, except procedure 3 (inlet and outlet concentration measurements).

(i) *Performance tests for control devices other than flares.* This paragraph (i) applies to performance tests that are conducted to demonstrate compliance of a control device with the efficiency limits specified in § 60.780(c) of this subpart. If complying with the 95-percent reduction efficiency requirement, comply with the requirements specified in paragraphs (i)(1) through (i)(9) of this section. If complying with the 20 ppm by volume requirement, comply with the requirements specified in paragraphs (i)(1) through (i)(6) and (i)(9) of this section. The 20 ppm by volume limit or 95 percent reduction efficiency requirement shall be measured as either total VOC or as TOC minus methane and ethane.

(1) *Sampling sites.* Sampling sites shall be selected using Method 1 or 1A of appendix A of this part, as appropriate. For determination of compliance with the 95 percent reduction requirement, sampling sites shall be located at the inlet and the outlet of the control device. For determination of compliance with the 20 parts per million by volume limit, the sampling site shall be located at the outlet of the control device.

(2) *Concentration in gas stream entering or exiting the control device.* The concentration of total VOC or TOC

in a gas stream shall be determined as provided in this paragraph (i)(2). Samples may be grab samples or composite samples (i.e., integrated samples). Samples shall be taken at approximately equally spaced time intervals over a 1-hour period. Each 1-hour period constitutes a run, and the performance test shall consist of a minimum of 3 runs. Concentration measurements shall be determined using Method 18, 40 CFR part 60, appendix A. Alternatively, any other test method validated according to the procedures in Method 301, 40 CFR part 60, appendix A may be used.

(3) *Volumetric flow rate of gas stream entering or exiting the control device.* The volumetric flow rate of the gas stream shall be determined using Method 2, 2A, 2C, or 2D, 40 CFR part 60, appendix A, as appropriate. Volumetric flow rate measurements shall be taken at the same time as the concentration measurements.

(4) *Calculation of TOC concentration.* The TOC concentration (CGT) is the sum of the concentrations of the individual components. If compliance is being determined based on TOC, the owner or operator shall compute TOC for each run using the following equation:

$$CG_T = \frac{1}{m}\sum_{j=1}^{m}\left(\sum_{i=1}^{n} CGS_{i,j}\right) \quad \text{(Eqn WW14)}$$

Where:

CG_T=Total concentration of TOC (minus methane and ethane) in vented gas stream, average of samples, dry basis, parts per million by volume.

$CGS_{i,j}$=Concentration of sample components in vented gas stream for sample j, dry basis, parts per million by volume.

i=Identifier for a compound.

n=Number of components in the sample.

j=Identifier for a sample.

m=Number of samples in the sample run.

(5) *Calculation of total VOC concentration.* The owner or operator determining compliance based on total VOC concentration (CVOC) shall compute C VOC according to the Equation WW14.

(6) *Percent oxygen correction for combustion control devices.* If the control device is a combustion device, comply with the requirements specified in paragraph (i)(6)(i) of this section to determine oxygen concentration, and in paragraph (i)(6)(ii) of this section to calculate the percent oxygen correction.

(i) *Oxygen concentration.* The concentration of TOC or total VOC shall be corrected to 3 percent oxygen if the control device is a combustion device. The emission rate correction factor for excess air, composite sampling (i.e., integrated sampling) and analysis procedures of Method 3B, 40 CFR part 60, appendix A shall be used to determine the actual oxygen concentration (%02d). The samples shall be taken during the same time that the TOC (minus methane or ethane) or total VOC samples are taken.

(ii) *3 percent oxygen calculation.* The concentration corrected to 3 percent oxygen (CGc), when required, shall be computed using the following equation:

$$CG_c = CG_T\left(\frac{17.9}{20.9 - \%O_{2d}}\right) \quad \text{(Eqn WW15)}$$

Where:

CG_c=Concentration of TOC or VOC corrected to 3 percent oxygen, dry basis, parts per million by volume.

CG_T=Total concentration of TOC (minus methane and ethane) in vented gas stream, average of samples, dry basis, parts per million by volume.

$\%0_{2d}$=Concentration of oxygen measured in vented gas stream, dry basis, percent by volume.

(7) *Mass rate calculation.* The mass rate of either TOC (minus methane and ethane) or total VOC shall be calculated using the following equations. Where the mass rate of TOC is being calculated, all organic compounds (minus methane and ethane) measured by methods specified in paragraph (i)(2) of this section are summed using Equations WW16 and WW17.

$$OMG_a = K_2\left(\sum_{i=1}^{n} CG_{a,i}MW_i\right)QG_a \quad \text{(Eqn WW16)}$$

$$OMG_b = K_2\left(\sum_{i=1}^{n} CG_{b,i}MW_i\right)QG_b \quad \text{(Eqn WW17)}$$

Where:

$CG_{a,i}$, $CG_{b,i}$=Concentration of TOC (minus methane and ethane) or total VOC, in vented gas stream, entering ($CG_{a,i}$) and exiting ($CG_{b,i}$) the control device, dry basis, parts per million by volume.

QMG_a, QMG_b=Mass rate of TOC (minus methane and ethane) or total VOC, in vented gas stream, entering (QMG_a) and exiting (QMG_b) the control device, dry basis, kilograms per hour.

Mw_i=Molecular weight of a component, kilogram/kilogram-mole.

QG_a,QG_b=Flow rate of gas stream entering (QG_a) and exiting (QG_b) the control device, dry standard cubic meters per hour.

K_2=Constant, 41.57 x 10^{-9} (parts per million)$^{-1}$ (gram-mole per standard cubic meter) (kilogram/gram), where standard temperature (gram-mole per standard cubic meter) is 20° Celsius.

i=Identifier for a compound.

n=Number of components in the sample.

(8) *Percent reduction calculation.* The percent reduction in TOC (minus methane and ethane) or total VOC shall be calculated as follows:

$$E = \frac{QMG_a - QMG_b}{QMG_a}(100\%) \qquad \text{(Eqn WW18)}$$

Where:

E=Destruction efficiency of control device, percent.

QMG_a,QMG_b=Mass rate of TOC (minus methane and ethane) or total VOC, in vented gas stream entering and exiting (QMG_b) the control device, dry basis, kilograms per hour.

(9) *Compare mass destruction efficiency to required efficiency.* If complying with the 95 percent reduction efficiency requirement, compliance is demonstrated if the mass destruction efficiency (calculated in Equation WW18) is 95 percent or greater. If complying with the 20 parts per million by volume limit in § 60.780(c) of this subpart, compliance is demonstrated if the outlet total organic compound concentration, less methane and ethane, or total VOC concentration is 20 parts per million by volume, or less. For combustion control devices, the concentration shall be calculated on a dry basis, corrected to 3 percent oxygen.

(j) *Compliance demonstration for flares.* When a flare is used to comply with § 60.780(c) of this subpart, the owner or operator shall comply with the flare provisions in 40 CFR 63.11(b) and table 2A of this subpart, and with paragraphs (j)(1), (j)(2), and (j)(3) of this section. An owner or operator is not required to conduct a performance test to determine percent emission reduction or outlet VOC or TOC concentration when a flare is used. If a compliance demonstration has been conducted previously for a flare, using the techniques specified in paragraphs (h)(1) through (h)(3) of this section, that compliance demonstration may be used to satisfy the requirements of this paragraph (j) if either no deliberate process changes have been made since the compliance demonstration, or the results of the compliance demonstration reliably demonstrate compliance despite process changes.

(1) The compliance determination shall be conducted as specified in 40 CFR 63.11(b)(4) and table 2A of this subpart, to determine visible emissions.

(2) Determine the net heating value of the gas being combusted, using the techniques specified in 40 CFR 63.11(b)(6) and table 2A of this subpart; and

(3) Determine the exit velocity using the techniques specified in either 40 CFR 63.11(b)(7)(i) (and 40 CFR 63.11(b)(7)(iii), where applicable) or 40 CFR 63.11(b)(8), and table 2A of this subpart, as appropriate.

§ 60.784 Reporting requirements.

(a) Owners or operators requesting approval to use alternative monitoring, recordkeeping, or reporting shall comply with the provisions in paragraph (b) of this section. Each owner or operator shall submit the reports specified in paragraphs (a)(1) through (a)(4) of this section, as applicable:

(1) Reports required by subpart A of part 60 of this part, as specified in table 2 of this subpart,

(2) Reports of certain subpart A provisions of 40 CFR part 63, as required by table 2A of this subpart,

(3) Reports required in paragraphs (c) through (g) of this section, and

(4) Start-up, shutdown, and malfunction reports specified in § 60.787 of this subpart.

(b) *Alternative monitoring and recordkeeping.* An owner or operator may request approval to use alternatives to the continuous operating parameter monitoring and recordkeeping provisions of this subpart.

(1) Requests for approval to use alternatives to the continuous monitoring and recordkeeping provisions shall be submitted prior to the implementation of the alternative monitoring system for which approval is being requested if not already included in the operating permit application. The request shall contain the information specified in paragraphs (b)(3) and (b)(4) of this section, as applicable.

(2) [Reserved]

(3) An owner or operator of an affected facility that does not have an automated monitoring and recording system capable of measuring parameter values at least once every 15 minutes and generating continuous records may request approval to use a non-automated system with less frequent monitoring.

(i) The requested system shall include manual reading and recording of the value of the relevant operating parameter no less frequently than once per hour. Daily average values shall be calculated from these hourly values and recorded.

(ii) The request shall contain:

(A) A description of the planned monitoring and recordkeeping system;

(B) Documentation that the affected facility does not have an automated monitoring and recording system;

(C) Justification for requesting an alternative monitoring and recordkeeping system; and

(D) Demonstration to the Administrator's satisfaction that the proposed monitoring frequency is sufficient to represent control device operating conditions considering typical variability of the specific process and control device operating parameter being monitored.

(4) An owner or operator may request approval to use an automated data compression recording system that does not record monitored operating parameter values at a set frequency (for example once every 15 minutes) but records all values that meet set criteria for variation from previously recorded values.

(i) The requested system shall be designed to:

(A) Measure the operating parameter value at least once every 15 minutes.

(B) Record at least four values each hour during periods of operation.

(C) Record the date and time when monitors are turned off or on.

(D) Recognize unchanging data that may indicate the monitor is not functioning properly, alert the operator, and record the incident.

(E) Compute daily average values of the monitored operating parameter based on recorded data.

(F) If the daily average is not an excursion, as defined in paragraphs (d)(3)(i) through (d)(3)(iii) of this section, the data for that operating day may be converted to hourly average values and the four or more individual records for each hour in the operating day may be discarded.

(ii) The request shall contain a description of the monitoring system and data compression recording system, including the criteria used to determine which monitored values are recorded and retained, the method for calculating daily averages, and a demonstration that the system meets all criteria in paragraph (b)(4)(i) of this section.

(5) [Reserved]

(6) For each waste management unit, treatment process, or control device used to comply with §§ 60.774 through 60.775 of this subpart for which the owner or operator seeks to monitor a parameter other than those specified in Table 5, Table 7, and Table 8 of this subpart, the owner or operator shall submit a request for approval to monitor alternative parameters. The owner or operator who requests approval to

monitor a different parameter than those listed in Table 5, Table 7, and Table 8 of this subpart shall submit the information specified in paragraphs (b)(6)(i), (ii), and (iii) of this section.

(i) A description of the parameter(s) to be monitored to ensure the waste management unit, treatment process, or control device measure is operated in conformance with its design and achieves the specified emission limit, percent reduction, or nominal efficiency, and an explanation of the criteria used to select the parameter(s).

(ii) A description of the methods and procedures that will be used to demonstrate that the parameter indicates proper operation of the waste management unit, treatment process, or control device, the schedule for this demonstration, and a statement that the owner or operator will establish, as part of the demonstration, an operating parameter value for the monitored parameter that indicates proper operation and maintenance of the unit, process, or device.

(iii) The frequency and content of monitoring, recording, and reporting if monitoring and recording is not continuous, or if semiannual reports required under paragraph (d) of this section will not include reports of daily average values when the monitored operating parameter is not above or below (as appropriate) the operating parameter value established in paragraph (c)(7)(ii) of this section. The rationale for the proposed monitoring, recording, and reporting system shall be included.

(c) *Notification of Compliance Status.* Each owner or operator subject to this subpart shall submit a Notification of Compliance Status within 150 days after the compliance dates specified in § 60.770(a) of this subpart. The Notification of Compliance Status shall include the results of any emission point group determinations, performance tests, inspections, continuous monitoring system performance evaluations, values of monitored parameters established during performance tests, and any other information specified in paragraphs (c)(1) through (c)(14) of this section used to demonstrate compliance or required to be included in the Notification of Compliance Status.

(1) The owner or operator shall identify each designated CPU and list the components in the designated CPU. The owner or operator shall identify each affected facility and describe the process wastewater, maintenance wastewater, and aqueous in-process streams generated by the affected facility. The information shall clearly link all applicable CPU, designated CPU, and affected facilities and demonstrate that all components of a CPU were assigned to a designated CPU.

(2) For each affected facility, the owner or operator shall submit the information specified in Table 9 of this subpart for each wastewater stream generated.

(3) For each treatment process identified in Table 9 of this subpart that receives, manages, or treats a wastewater stream (i.e., Group 1 wastewater stream or Group 2 wastewater stream selected by the owner or operator for control) or residual removed from a wastewater stream, the owner or operator shall submit the information specified in Table 10 of this subpart.

(4) For each waste management unit identified in Table 9 of this subpart that receives or manages a wastewater stream (i.e., Group 1 wastewater stream or Group 2 wastewater stream selected by the owner or operator for control) or residual removed from a wastewater stream, the owner or operator shall submit the information specified in Table 11 of this subpart.

(5) For each waste management unit identified in table 9 of this subpart, the owner or operator shall include in the Notification of Compliance Status the compliance option that will be used to comply with § 60.774 of this subpart, and the applicable provisions of other subparts that the owner or operator will use to comply with the compliance option, as allowed in § 60.774 of this subpart.

(6) For each residual removed from a wastewater stream (i.e., Group 1 wastewater stream or Group 2 wastewater stream selected by the owner or operator for control), the owner or operator shall submit the information specified in Table 12 of this subpart.

(7) For each control device used to comply with §§ 60.774, 60.775, and 60.779 of this subpart, the owner or operator shall submit the information specified in paragraphs (c)(7)(i) and (c)(7)(ii) of this section.

(i) For each flare, the owner or operator shall submit the information specified in paragraphs (c)(7)(i)(A) through (c)(7)(i)(C) of this section.

(A) Flare design (i.e., steam-assisted, air-assisted, or non-assisted);

(B) All visible emission readings, heat content determinations, flow rate measurements, and exit velocity determinations made during the compliance determination as specified by § 60.780(c)(3) of this subpart; and

(C) Reports of the times and durations of all periods during the compliance determination when the pilot flame is absent or the monitor is not operating.

(ii) For each control device other than a flare, the owner or operator shall submit the information specified in paragraph (c)(7)(ii)(A) of this section and in either paragraph (c)(7)(ii)(B) or (c)(7)(ii)(C) of this section.

(A) The information in paragraphs (c)(7)(ii)(A)(*1*), (*2*), and (*3*) of this section on operating parameter values required to be established under § 60.781(f) of this subpart for the applicable parameters specified in Table 8 of this subpart, unless the operating parameter value has already been established in the operating permit.

(*1*) The specific operating parameter value of the monitored parameter(s) for each emission point;

(*2*) The rationale for the specific operating parameter value for each parameter for each emission point, including any data and calculations used to develop the value and a description of why the value indicates proper operation of the control device.

(*i*) If a performance test is conducted for a control device, the operating parameter value shall be based on the parameter values measured during the performance test supplemented by engineering analyses and/or manufacturer's recommendations. Performance testing is not required to be conducted over the entire range of permitted parameter values.

(*ii*) If a performance test is not conducted for a control device, the operating parameter value may be based solely on engineering analyses and/or manufacturer's recommendations.

(*3*) A definition of the affected facility's operating day for purposes of determining daily average values of monitored parameters. The definition shall specify the times at which an operating day begins and ends.

(B) The design evaluation specified in § 60.780(d)(2) of this subpart; or

(C) Results of the performance test specified in § 60.780(d)(1) of this subpart. Performance test results shall include operating ranges of key process and control parameters during the performance test; the value, averaged over the period of the performance test, of each parameter identified in the operating permit as being monitored in accordance with § 60.781 of this subpart; and applicable supporting calculations.

(8) For each treatment process used to comply with this subpart, the owner or operator shall submit the information specified in paragraphs (c)(8)(i) and (c)(8)(ii) of this section.

(i) For Items 1 and 2 in Table 7 of this subpart, the owner or operator shall

submit the information specified in paragraphs (c)(8)(i)(A) and (c)(8)(i)(B) of this section.

(A) The information specified in paragraph (c)(6)(ii)(A) of this section for the operating parameter value required to be established under § 60.781(f) of this subpart for the monitoring parameters approved by the Administrator, unless the operating parameter value has already been established in the operating permit.

(B) Results of the initial measurements of the parameters approved by the Administrator and any applicable supporting calculations.

(ii) For Item 3 in Table 7 of this subpart, the owner or operator shall submit the information specified in paragraph (c)(7)(ii)(A) of this section for the monitored operating parameter values required to be established under § 60.781(f) of this subpart, unless the operating parameter value has already been established in the operating permit.

(9) Except as provided in paragraph (c)(9)(iii) of this section, for each waste management unit or treatment process used to comply with this subpart, the owner or operator shall submit the information specified in either paragraph (c)(9)(i) or (c)(9)(ii) of this section.

(i) The design evaluation and supporting documentation specified in § 60.779(j)(1) of this subpart.

(ii) Results of the performance test specified in § 60.779(j)(2) of this subpart. Performance test results shall include operating ranges of key process and control parameters during the performance test; the value, averaged over the period of the performance test, of each parameter identified in the operating permit as being monitored in accordance with § 60.781(f) of this subpart; and applicable supporting calculations.

(iii) If the owner or operator elects to use one of the options for treatment in a RCRA unit specified in § 60.779(h) of this subpart, the owner or operator is exempt from the requirements specified in paragraphs (c)(9)(i) and (c)(9)(ii) of this section.

(10) For performance tests and group determinations that are based on measurements, and for estimates of VOC emissions, the Notification of Compliance Status shall include one complete test report for each test method used for a particular kind of emission point. For additional tests performed for the same kind of emission point using the same method, the results and any other information required shall be submitted, but a complete test report is not required. A complete test report shall include a brief process description, sampling site description, description of sampling and analysis procedures and any modifications to standard procedures, quality assurance procedures, record of operating conditions during the test, record of preparation of standards, record of calibrations, raw data sheets for field sampling, raw data sheets for field and laboratory analyses, documentation of calculations, and any other information required by the test method.

(11) An owner or operator who transfers a Group 1 wastewater stream or residual removed from a Group 1 wastewater stream for treatment pursuant to § 60.773(e) shall include in the Notification of Compliance Status the name and location of the transferee and a description of the Group 1 wastewater stream or residual removed from a Group 1 wastewater stream sent to the treatment facility.

(12) The owner or operator who chooses to comply with the provisions in § 60.789 of this subpart shall include in the Notification of Compliance Status a statement specifying which regulation(s) is being used to comply with this subpart.

(13) Notification that the owner or operator has elected to comply with the reduced recordkeeping program in 60.785(j) of this subpart.

(14) Notification of the waste management unit compliance option used to comply with the provisions of this subpart, as specified in § 60.774 of this subpart, shall be submitted in the Notification of Compliance Status. If the owner or operator is complying with the recordkeeping and reporting provisions of a rule other than this subpart, as specified in § 60.774 of this subpart, a statement containing this information shall be submitted.

(d) *Semiannual reports.* Each owner or operator subject to the provisions of this subpart shall submit to the Administrator semiannual reports. The reports shall be submitted semiannually no later than 60 calendar days after the end of each 6-month period. The first report shall be submitted no later than 8 months after the due date of the notification of initial start-up required by § 60.7(a)(3) of this part and shall cover the 6-month period beginning on the due date of the notification of initial start-up.

(1) [Reserved]

(2) The semiannual report shall include reports of all excursions and all periods when monitoring parameters are above the maximum or below the minimum established value.

(3) The semiannual report shall include the daily average values of monitored parameters for all excursions, as defined by paragraphs (d)(3)(i), (d)(3)(ii), or (d)(3)(iii) of this section. For excursions caused by lack of monitoring data, the duration of periods when monitoring data were not collected shall be reported. For a control device where multiple parameters are monitored, if one or more of the parameters meets the excursion criteria in paragraphs (d)(3)(i), (d)(3)(ii), or (d)(3)(iii) of this section, this is considered a single excursion for the control device.

(i) When the daily average value of one or more monitored parameters is above the maximum or below the minimum (as appropriate) established operating parameter value.

(ii) When the period of control device operation is 4 hours or greater in an operating day and monitoring data are insufficient to constitute a valid hour of data for at least 75 percent of the operating hours.

(iii) When the period of control device operation is less than 4 hours in an operating day and more than one of the hours during the period of operation does not constitute a valid hour of data due to insufficient monitoring data.

(iv) Monitoring data are insufficient to constitute a valid hour of data, as used in paragraphs (d)(3)(ii) and (d)(3)(iii) of this section, if measured values are unavailable for any of the 15-minute periods within the hour. For data compression systems approved under paragraph (b)(4) of this section, monitoring data are insufficient to calculate a valid hour of data if there are less than 4 data values recorded during the hour.

(4) Each control device is allowed one excused excursion per semiannual period. The first semiannual period is the 6-month period covered by the first semiannual report.

(5)(i) Paragraphs (d)(5)(i)(A) through (d)(5)(i)(D) of this section specify when an excursion is not a violation. In cases where continuous monitoring is required, the excursion does not count toward the number of excused excursions for determining compliance.

(A) If a monitored parameter is below the minimum established value and the affected facility is operated during such period in accordance with the affected facility's start-up, shutdown, and malfunction plan,

(B) If a monitored parameter is above the maximum established value and the affected facility is operated during such period in accordance with the affected facility's start-up, shutdown, and malfunction plan,

(C) If monitoring data are not collected during periods of start-up, shutdown, or malfunction and the

affected facility is operated during such period in accordance with the affected facility's start-up, shutdown, and malfunction plan, or

(D) If cessation of the emissions to which the monitoring applies occurs during periods of non-operation of the chemical process unit or portion thereof.

(ii) Nothing in paragraphs (d)(3) through (d)(5) of this section shall be construed to allow or excuse a monitoring parameter excursion caused by any activity that violates other applicable provisions of this subpart.

(iii) Paragraphs (d)(3) through (d)(5) of this section, except paragraph (d)(5)(i) of this section, shall apply only to emission points and control devices for which continuous monitoring is required by this subpart.

(6) The semiannual report shall include results of any performance tests conducted during the reporting period including one complete report for each test method used for a particular kind of emission point tested. For additional tests performed for a similar emission point using the same method, results and any other information required shall be submitted, but a complete test report is not required. A complete test report shall contain a brief process description, sampling site data, description of sampling and analysis procedures and any modifications to standard procedures, quality assurance procedures, record of operating conditions during the test, record of preparation of standards, record of calibrations, raw data sheets for field sampling, raw data sheets for field and laboratory analyses, documentation of calculations, and any other information required by the test method.

(7) The semiannual report shall include notification that the owner or operator has elected to comply with the reduced recordkeeping program in § 60.785(j) of this subpart.

(8) The semiannual report shall include notification that the owner or operator has elected not to retain the daily average values, as specified in § 60.785(j)(2)(i) of this subpart.

(9) The semiannual report shall include periods recorded under § 60.785(f)(10) of this subpart when the vent is diverted from the control device through a bypass line, with the next semiannual report.

(10) The semiannual report shall include notification of all occurrences recorded under § 60.785(f)(11) of this subpart in which the seal mechanism is broken, the bypass line damper or valve position has changed, or the key to unlock the bypass line damper or valve was checked out, with the next semiannual report.

(11) The semiannual report shall include notification that semiannual report information for waste management units will be submitted with semiannual reports required by another rule that is one of the compliance options for waste management units as specified in § 60.784 of this subpart.

(12) The semiannual report shall include notification of each affected facility that ceases to generate at least one process wastewater stream or aqueous in-process stream or no longer produces a primary product that is a SOCMI product.

(e) *Semiannual reporting for treatment processes.* Except as provided in paragraph (g) of this section, for each treatment process used to comply with this subpart, the owner or operator shall submit as part of the next semiannual report required by paragraph (d) of this section the information specified in paragraphs (e)(1) and (e)(2) of this section.

(1) For Item 1 in Table 7 of this subpart, the owner or operator shall submit the results of measurements that indicate that the biological treatment unit is outside the parameters established in the Notification of Compliance Status or operating permit.

(2) For Item 2 in Table 7 of this subpart, the owner or operator shall submit the monitoring results for each operating day during which the daily average value of any monitored parameter was above the maximum or below the minimum operating parameter value established in the Notification of Compliance Status or operating permit.

(3) For Item 3 in Table 7 of this subpart, the owner or operator shall submit the monitoring results for each operating day during which the daily average value of any monitored parameter specified in Item 3 of Table 7 of this subpart was above the maximum or below the minimum (as appropriate) operating parameter value established in the Notification of Compliance Status or operating permit.

(f) *Semiannual reporting for control devices.* Except as provided in paragraph (g) of this section, for each control device used to comply with §§ 60.774 through 60.780 of this subpart, the owner or operator shall submit as part of the next semiannual report required by paragraph (d) of this section the information specified in either paragraph (f)(1) or (f)(2) of this section.

(1) The information specified in Table 13 of this subpart, or

(2) If the owner or operator elects to comply with § 60.781(e)(2) of this subpart, i.e., an organic monitoring device installed at the outlet of the control device, the owner or operator shall submit the monitoring results for each operating day during which the daily average concentration level or reading is above the maximum or below the minimum (as appropriate) operating parameter value established as a requirement of § 60.781(f) of this subpart or established in the facility's operating permit.

(g) Where the owner or operator obtains approval to use a treatment process or control device other than one for which monitoring requirements are specified in § 60.781 of this subpart, or to monitor parameters other than those specified in Table 7 or 8 of this subpart, the owner or operator shall comply with the appropriate reporting requirements established by the Administrator.

§ 60.785 Recordkeeping requirements.

(a) Data retention requirements are specified in paragraph (b) of this section. Each owner or operator shall keep the records specified in paragraphs (a)(1) through (a)(4) of this section, as applicable:

(1) Records required by subpart A of part 60 of this part, as specified in table 2 of this subpart,

(2) Records of certain subpart A provisions of 40 CFR part 63, as required by table 2A of this subpart,

(3) Records required in paragraphs (c) through (j) of this section, and

(4) Start-up, shutdown, and malfunction records specified in § 60.787 of this subpart.

(b) *Data retention.* Unless otherwise specified in this subpart, each owner or operator of an affected facility shall keep copies of all applicable records and reports required by this subpart for at least 5 years. All applicable records shall be maintained in such a manner that they can be readily accessed. Records of the most recent 2 years shall be retained onsite or shall be accessible to an inspector while onsite. The records of the remaining 3 years may be retained offsite. Records may be maintained in hard copy or computer-readable form including, but not limited to, on paper, microfilm, computer, floppy disk, magnetic tape, or microfiche.

(c) *Miscellaneous records.* The owner or operator shall keep the records specified in paragraphs (c)(1) through (c)(8) of this section.

(1) A record that each waste management unit inspection required by § 60.774 of this subpart was performed.

(2) A record that each inspection for control devices required by § 60.780(f) of this subpart was performed.

(3) For Item 1 and Item 2 of Table 7 of this subpart, the owner or operator shall keep the records approved by the Administrator.

(4) Except as provided in paragraph (c)(5) of this section, continuous records of the monitored parameters specified in Item 3 of Table 7, in Table 8, or in § 60.781(e)(2) of this subpart, as appropriate.

(5) Where the owner or operator obtains approval to use a treatment process or control device other than one for which monitoring requirements are specified in § 60.781 of this subpart, or to monitor parameters other than those specified in Table 7 or Table 8 of this subpart, the owner or operator shall comply with the recordkeeping requirements established by the Administrator as part of the review of the permit application or other appropriate means.

(6) The owner or operator who is complying with the provisions in § 60.789(c)(1) of this subpart shall keep a record of the information used to determine which control, testing, monitoring, recordkeeping, and reporting requirements are the most stringent.

(7) Documentation of a decision to use a delay of repair due to unavailability of parts, as specified in § 60.777(c) of this subpart, shall include a description of the failure, the reason additional time was necessary (including a statement of why replacement parts were not kept on site and when the manufacturer promised delivery), the date when repair would have been completed if parts had been available, and the date when repair was completed.

(8) The owner or operator shall keep a record of each affected facility that ceases to generate at least one process wastewater stream or aqueous in-process stream or no longer produces a primary product that is a SOCMI product.

(d) *Record of notice sent to treatment operator.* The owner or operator transferring a Group 1 wastewater stream or residual removed from a Group 1 wastewater stream in accordance with § 60.773(e) of this subpart shall keep a record of the notice sent to the treatment operator stating that the wastewater stream or residual contains VOC which are required to be managed and treated in accordance with the provisions of this subpart.

(e) *Control device records.* For each control device used to comply with this subpart, the owner or operator shall keep a record of the information specified in paragraphs (e)(1) through (e)(3) of this section.

(1) Identification of all parts of the control device that are designated as unsafe to inspect, as specified in § 60.786(g) of this subpart, an explanation stating why the equipment is unsafe to inspect, and the plan for inspecting the equipment.

(2) Identification of all parts of the control device that are designated as difficult to inspect, as specified in § 60.786(h) of this subpart, an explanation stating why the equipment is difficult to inspect, and the plan for inspecting the equipment.

(3) For each boiler or process heater used to comply with this subpart, the owner or operator shall keep a record of any changes in the location at which the vent stream is introduced into the flame zone.

(f) *Continuous records.* Owners or operators required to keep continuous records by any section of this subpart shall keep records as specified in paragraphs (f)(1) through (f)(11) of this section, unless an alternative recordkeeping system has been requested and approved under § 60.784(b) of this subpart, except as provided in § 60.784(d)(5)(i) of this subpart.

(1) The monitoring system shall measure data values at least once every 15 minutes.

(2) The owner or operator shall record either:

(i) Each measured data value; or

(ii) Block average values for 15-minute or shorter periods calculated from all measured data values during each period or at least one measured data value per minute if measured more frequently than once per minute.

(3) If the daily average value of a monitored parameter for a given operating day is below the maximum or above the minimum established value in the report required by § 60.784(c) of this subpart or the operating permit, the owner or operator shall either:

(i) Retain block hourly average values for that operating day for 5 years and discard, at or after the end of that operating day, the 15-minute or more frequent average values and readings recorded under paragraph (f)(2) of this section; or

(ii) Retain the data recorded in paragraph (f)(2) of this section for 5 years.

(4) If the daily average value of a monitored parameter for a given operating day is above the maximum or below the minimum established value in the report required by § 60.784(c) of this subpart or operating permit, the owner or operator shall retain the data recorded that operating day under paragraph (f)(2) of this section for 5 years.

(5) Daily average values of each continuously monitored parameter shall be calculated for each operating day, and retained for 5 years, except as specified in paragraphs (f)(6) and (f)(7) of this section.

(i) The daily average shall be calculated as the average of all values for a monitored parameter recorded during the operating day. The average shall cover a 24-hour period if operation is continuous, or the number of hours of operation per operating day if operation is not continuous.

(ii) The operating day shall be the period defined in the operating permit or the report required by § 60.784(c) of this subpart. It may be from midnight to midnight or another daily period.

(6) If all recorded values for a monitored parameter during an operating day are below the maximum or above the minimum established value in the report required by § 60.784(c) of this subpart or operating permit, the owner or operator may record this fact and retain this record for 5 years rather than calculating and recording a daily average for that operating day. For these operating days, the records required in paragraph (f)(3) of this section shall also be retained for 5 years.

(7) Monitoring data recorded during periods identified in paragraphs (f)(7)(i) through (f)(7)(v) of this section shall not be included in any average computed under this subpart. Records shall be kept of the times and durations of all such periods and any other periods during process or control device operation when monitors are not operating.

(i) Monitoring system breakdowns, repairs, calibration checks, and zero (low-level) and high-level adjustments:

(ii) Start-ups;

(iii) Shutdowns;

(iv) Malfunctions;

(v) Periods of non-operation of the chemical process unit (or portion thereof), resulting in cessation of the emissions to which the monitoring applies.

(8) For flares, records of the times and duration of all periods during which all pilot flames are simultaneously absent shall be kept rather than daily averages.

(9) For carbon adsorbers, the owner or operator shall keep the records specified in paragraphs (e)(9)(i) and (e)(9)(ii) of this section instead of daily averages.

(i) Records of the total regeneration stream mass flow for each carbon bed regeneration cycle.

(ii) Records of the temperature of the carbon bed after each regeneration cycle.

(10) Hourly records of whether the flow indicator for bypass lines specified in § 60.786(f)(1) of this subpart was operating and whether a diversion was detected at any time during the hour. Also, records of the times of all periods when the vent is diverted from the control device or the flow indicator specified in § 60.786(f)(1) of this subpart is not operating.

(11) Where a seal or closure mechanism is used to comply with § 60.786(f)(2) of this subpart, hourly records of whether a diversion was detected at any time are not required. The owner or operator shall record whether the monthly visual inspection of the seals or closure mechanisms has been done, and shall record the occurrence of all periods when the seal mechanism is broken, the bypass line damper or valve position has changed, or the key for a lock-and-key type configuration has been checked out, and records of any car-seal that has broken.

(g) *Process knowledge records.* If the owner or operator determines that a wastewater stream is not a Group 1 wastewater stream by using process knowledge to determine the annual average concentration of a wastewater stream as specified in § 60.782(b)(3) of this subpart and/or uses process knowledge to determine the annual average flow rate as specified in § 60.782(c)(1) of this subpart, the owner or operator shall keep the documentation of how process knowledge was used to determine the annual average concentration and/or the annual average flow rate of the wastewater stream as specified in § 60.782(b)(3) or (c)(1) of this subpart, as appropriate.

(h) *Continuous monitoring system records.* For continuous monitoring systems used to comply with this subpart, records documenting the completion of calibration checks, and records documenting the maintenance of continuous monitoring systems that are specified in the manufacturer's instructions or that are specified in other written procedures that provide adequate assurance that the equipment would reasonably be expected to monitor accurately.

(i) [Reserved]

(j) *Reduced recordkeeping program.* For any parameter with respect to any item of equipment, the owner or operator may implement the recordkeeping requirements specified in paragraph (j)(1) or (j)(2) of this section as alternatives to the continuous operating parameter monitoring and recordkeeping provisions specified in this subpart. The owner or operator shall retain for a period of 5 years each record required by paragraph (j)(1) or (j)(2) of this section.

(1) The owner or operator may retain only the daily average value, and is not required to retain more frequent monitored operating parameter values, for a monitored parameter with respect to an item of equipment, if the requirements of paragraphs (j)(1)(i) through (j)(1)(vi) of this section are met. An owner or operator electing to comply with the requirements of paragraph (j)(1) of this section shall notify the Administrator in the Notification of Compliance Status as specified in § 60.784(c)(13) of this subpart or, if the Notification of Compliance Status has already been submitted, in the semiannual report immediately preceding implementation of the requirements of paragraph (j)(1) of this section as specified in § 60.784(d)(7) of this subpart.

(i) The monitoring system is capable of detecting unrealistic or impossible data during periods of operation other than start-ups, shutdowns, or malfunctions (e.g., a temperature reading of −200°C on a boiler), and will alert the operator by alarm or other means. The owner or operator shall record the occurrence. All instances of the alarm or other alert in an operating day constitute a single occurrence.

(ii) The monitoring system generates, updated at least hourly throughout each operating day, a running average of the monitoring values that have been obtained during that operating day, and the capability to observe this running average is readily available to the Administrator on-site during the operating day. The owner or operator shall record the occurrence of any period meeting the criteria in paragraphs (j)(1)(ii)(A) through (j)(1)(ii)(C) of this section. All instances in an operating day constitute a single occurrence.

(A) The running average is above the maximum or below the minimum established limits;

(B) The running average is based on at least six 1-hour average values; and

(C) The running average reflects a period of operation other than a start-up, shutdown, or malfunction.

(iii) The monitoring system is capable of detecting unchanging data during periods of operation other than start-ups, shutdowns, or malfunctions, except in circumstances where the presence of unchanging data is the expected operating condition based on past experience (e.g., pH in some scrubbers), and will alert the operator by alarm or other means. The owner or operator shall record the occurrence. All instances of the alarm or other alert in an operating day constitute a single occurrence.

(iv) The monitoring system will alert the owner or operator by an alarm or other means, if the running average parameter value calculated under paragraph (j)(1)(ii) of this section reaches a set point that is appropriately related to the established limit for the parameter that is being monitored.

(v) The owner or operator shall verify the proper functioning of the monitoring system, including its ability to comply with the requirements of paragraph (j)(1) of this section, at the times specified in paragraphs (j)(1)(v)(A) through (j)(1)(v)(C). The owner or operator shall document that the required verifications occurred.

(A) Upon initial installation.

(B) Annually after initial installation.

(C) After any change to the programming or equipment constituting the monitoring system, which might reasonably be expected to alter the monitoring system's ability to comply with the requirements of this section.

(vi) The owner or operator shall retain the records identified in paragraphs (j)(1)(vi)(A) through (j)(1)(vi)(D) of this section.

(A) Identification of each parameter, for each item of equipment, for which the owner or operator has elected to comply with the requirements of paragraph (j) of this section.

(B) A description of the applicable monitoring system(s), and of how compliance will be achieved with each requirement of paragraphs (j)(1)(i) through (j)(1)(v) of this section. The description shall identify the location and format (e.g., on-line storage, log entries) for each required record. If the description changes, the owner or operator shall retain both the current and the most recent superseded description, as provided in paragraph (a) of this section, except as provided in paragraph (j)(1)(vi)(D) of this section.

(C) A description, and the date, of any change to the monitoring system that would reasonably be expected to impair its ability to comply with the requirements of paragraph (j)(1) of this section.

(D) Owners and operators subject to paragraph (j)(1)(vi)(B) of this section shall retain the current description of the monitoring system as long as the description is current, but not less than 5 years from the date of its creation. The current description shall, at all times, be retained on-site or be accessible from a central location by computer or other means that provides access within 2

hours after a request. The owner or operator shall retain all superseded descriptions for at least 5 years after the date of their creation. Superseded descriptions shall be retained on-site (or accessible from a central location by computer or other means that provides access within 2 hours after a request) for at least 6 months after their creation. Thereafter, superseded descriptions may be stored off-site.

(2) If an owner or operator has elected to implement the requirements of paragraph (j)(1) of this section for a monitored parameter with respect to an item of equipment and a period of 6 consecutive months has passed without an excursion as defined in paragraph (j)(2)(iv) of this section, the owner or operator is no longer required to record the daily average value for any operating day when the daily average value is less than the maximum or greater than the minimum established limit. With approval by the Administrator, monitoring data generated prior to the compliance date of this subpart shall be credited toward the period of 6 consecutive months, if the parameter limit and the monitoring accomplished during the period prior to the compliance date was required and/or approved by the Administrator.

(i) If the owner or operator elects not to retain the daily average values, the owner or operator shall notify the Administrator in the next semiannual report as specified in § 60.784(d)(8) of this subpart. The notification shall identify the parameter and unit of equipment.

(ii) If, on any operating day after the owner or operator has ceased recording daily average values as provided in paragraph (j)(2) of this section, there is an excursion as defined in paragraph (j)(2)(iv) of this section, the owner or operator shall immediately resume retaining the daily average value for each operating day and shall notify the Administrator in the next semiannual report. The owner or operator shall continue to retain each daily average value until another period of 6 consecutive months has passed without an excursion as defined in paragraph (j)(2)(iv) of this section.

(iii) The owner or operator shall retain the records specified in paragraphs (j)(1)(i) through (j)(1)(iv) of this section, for the duration specified in paragraph (j) of this section. For any calendar week, if compliance with paragraphs (j)(1)(i) through (j)(1)(iv) of this section does not result in retention of a record of at least one occurrence or measured parameter value, the owner or operator shall record and retain at least one parameter value during a period of operation other than a start-up, shutdown, or malfunction.

(iv) For purposes of paragraph (j) of this section, an excursion means that the daily average value of monitoring data for a parameter is greater than the maximum, or less than the minimum established value, except that the daily average value during any start-up, shutdown, or malfunction shall not be considered an excursion for purposes of paragraph (j)(2) of this section, if the owner or operator follows the applicable provisions of the start-up, shutdown, and malfunction plan required by § 60.787 of this subpart. An excused excursion, as described in § 60.784(d)(4) of this subpart, shall not be considered an excursion for purposes of this paragraph (j)(2).

§ 60.786 Leak inspection provisions.

(a) For each vapor collection system, closed-vent system, fixed roof, cover, or enclosure required to comply with this section, the owner or operator shall comply with the requirements of paragraphs (b) through (i) of this section, unless otherwise specified in this subpart.

(b) Except as provided in paragraphs (g) and (h) of this section, each vapor collection system and closed-vent system shall be inspected according to the procedures and schedule specified in paragraphs (b)(1) and (b)(2) of this section and each fixed roof, cover, and enclosure shall be inspected according to the procedures and schedule specified in paragraph (b)(3) of this section.

(1) If the vapor collection system or closed vent system is constructed of hard-piping, the owner or operator shall:

(i) Conduct an initial inspection according to the procedures in paragraph (c) of this section; and

(ii) Conduct annual visual inspections for visible, audible, or olfactory indications of leaks.

(2) If the vapor collection system or closed vent system is constructed of duct work, the owner or operator shall:

(i) Conduct an initial inspection according to the procedures in paragraph (c) of this section, and

(ii) Conduct annual visual inspections for visible, audible, or olfactory indications of leaks.

(2) If the vapor collection system or closed vent system is constructed of duct work, the owner or operator shall:

(i) Conduct an initial inspection according to the procedures in paragraph (c) of this section; and

(ii) Conduct annual inspections according to the procedures in paragraph (c) of this section.

(iii) Conduct annual visual inspections for visible, audible, or olfactory indications of leaks.

(3) For each fixed roof, cover, and enclosure, the owner or operator shall:

(i) Conduct an initial inspection according to the procedures in paragraph (c) of this section; and

(ii) Conduct semi-annual visual inspections for visible, audible, or olfactory indications of leaks.

(c) Each vapor collection system, closed vent system, fixed roof, cover, and enclosure shall be inspected according to the procedures specified in paragraphs (c)(1) through (c)(6) of this section.

(1) Inspections shall be conducted in accordance with Method 21, 40 CFR part 60, appendix A, and with the exceptions and modifications specified in this subpart.

(2) The detection instrument shall meet the performance criteria of Method 21, 40 CFR part 60, appendix A except the instrument response factor criteria in Section 3.1.2(a) of Method 21 shall be for the average composition of the process fluid not each individual VOC in the stream.

(i) Except as provided in paragraph (c)(2)(ii) of this section, the detection instrument shall meet the performance criteria of Method 21, 40 CFR part 60, appendix A, except the instrument response factor criteria in section 3.1.2(a) of Method 21 shall be for the average composition of the process fluid not each individual VOC in the stream. For process streams that contain nitrogen, air, or other inerts which are not organic hazardous air pollutants or VOCs, the average stream response factor shall be calculated on an inert-free basis.

(ii) If no instrument is available at the plant site that will meet the performance criteria specified in paragraph (c)(2)(i) of this section, the instrument readings may be adjusted by multiplying by the average response factor of the process fluid, calculated on an inert-free basis as described in paragraph (c)(2)(i) of this section.

(3) The detection instrument shall be calibrated before use on each day of its use by the procedures specified in Method 21, 40 CFR part 60, appendix A.

(4) Calibration gases shall be as follows:

(i) Zero air (less than 10 parts per million hydrocarbon in air); and

(ii) Mixtures of methane in air at a concentration less than 10,000 parts per million. A calibration gas other than methane in air may be used if the instrument does not respond to methane or if the instrument does not meet the performance criteria specified in

paragraph (c)(2)(i) of this section. In such cases, the calibration gas may be a mixture of one or more of the compounds to be measured in the air.

(5) An owner or operator may elect to adjust or not adjust instrument readings for background. If an owner or operator elects to not adjust readings for background, all such instrument readings shall be compared directly to the applicable leak definition to determine whether there is a leak. If an owner or operator elects to adjust instrument readings for background, the owner or operator shall measure background concentration using the procedures in 40 CFR 63.180(b) and (c). The owner or operator shall subtract background reading from the maximum concentration indicated by the instrument.

(6) The arithmetic difference between the maximum concentration indicated by the instrument and the background level shall be compared with 500 parts per million for determining compliance.

(d) Leaks, as indicated by an instrument reading greater than 500 parts per million above background or by visual inspections, shall be repaired as soon as practical, except as provided in paragraph (e) of this section.

(1) A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.

(2) Repair shall be completed no later than 15 calendar days after the leak is detected.

(e) Delay of repair of a vapor collection system, closed vent system, fixed roof, cover, or enclosure for which leaks have been detected is allowed if the repair is technically infeasible without a shutdown or if the owner or operator determines that emissions resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. Repair of such equipment shall be complete by the end of the next shutdown.

(f) For each vapor collection system or closed vent system that contains bypass lines that could divert emissions away from a control device, the owner or operator shall comply with the provisions of either paragraph (f)(1) or (f)(2) of this section. Equipment such as low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, and pressure relief valves needed for safety purposes are not subject to this paragraph (f).

(1) Properly install, maintain, and operate a flow indicator that takes a reading at least once every 15 minutes. Records shall be generated as specified in § 60.785(f)(10) of this subpart. The flow indicator shall be installed at the entrance to any bypass line that could divert emissions away from the control device and to the atmosphere; or

(2) Secure the bypass line damper or valve in the non-diverting position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the damper or valve is maintained in the non-diverting position and emissions are not diverted through the bypass line. Records shall be generated as specified in § 60.785(e)(11) of this subpart.

(g) Any parts of the vapor collection system, closed vent system, fixed roof, cover, or enclosure that are designated, as described in paragraph (i)(1) of this section, as unsafe to inspect are exempt from the inspection requirements of paragraphs (b)(1), (b)(2), and (b)(3)(i) of this section if:

(1) The owner or operator determines that the equipment is unsafe to inspect because inspecting personnel would be exposed to an imminent or potential danger as a consequence of complying with paragraphs (b)(1), (b)(2), or (b)(3)(i) of this section; and

(2) The owner or operator has a written plan that requires inspection of the equipment as frequently as practicable during safe-to-inspect times.

(h) Any parts of the vapor collection system, closed vent system, fixed roof, cover, or enclosure that are designated, as described in paragraph (i)(2) of this section, as difficult to inspect are exempt from the inspection requirements of paragraphs (b)(1), (b)(2), and (b)(3)(i) of this section if:

(1) The owner or operator determines that the equipment cannot be inspected without elevating the inspecting personnel more than 2 meters above a support surface; and

(2) The owner or operator has a written plan that requires inspection of the equipment at least once every 5 years.

(i) The owner or operator shall record the information specified in paragraphs (i)(1) through (i)(5) of this section.

(1) Identification of all parts of the vapor collection system, closed vent system, fixed roof, cover, or enclosure that are designated as unsafe to inspect, an explanation of why the equipment is unsafe to inspect, and the plan for inspecting the equipment.

(2) Identification of all parts of the vapor collection system, closed vent system, fixed roof, cover, or enclosure that are designated as difficult to inspect, an explanation of why the equipment is difficult to inspect, and the plan for inspecting the equipment.

(3) For each vapor collection system or closed vent system that contains bypass lines that could divert a vent stream away from the control device and to the atmosphere, the owner or operator shall keep a record of the information specified in either paragraph (i)(3)(i) or (i)(3)(ii) of this section.

(i) Hourly records of whether the flow indicator specified under paragraph (f)(1) of this section was operating and whether a diversion was detected at any time during the hour, as well as records of the times of all periods when the vent stream is diverted from the control device or the monitor is not operating.

(ii) Where a seal mechanism is used to comply with paragraph (f)(2) of this section, hourly records of flow are not required. In such cases, the owner or operator shall record whether the monthly visual inspection of the seals or closure mechanisms has been done, and shall record the occurrence of all periods when the seal mechanism is broken, the bypass line valve position has changed, or the key for a lock-and-key type configuration has been checked out, and records of any car-seal that has broken.

(4) For each inspection during which a leak is detected, a record of the information specified in paragraphs (i)(4)(i) through (i)(4)(viii) of this section.

(i) The instrument identification numbers; the name or initials of the person conducting the inspection; and identification of the equipment.

(ii) The date the leak was detected and the date of the first attempt to repair the leak.

(iii) Maximum instrument reading measured by the method specified in paragraph (d) of this section after the leak is successfully repaired or determined to be nonrepairable.

(iv) ''Repair delayed'' and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

(v) The name, initials, or other form of identification of the owner or operator (or designee) whose decision it was that repair could not be effected without a shutdown.

(vi) The expected date of successful repair of the leak if a leak is not repaired within 15 calendar days.

(vii) Dates of shutdowns that occur while the equipment is unrepaired.

(viii) The date of successful repair of the leak.

(5) For each inspection conducted in accordance with paragraph (c) of this section during which no leaks are detected, a record that the inspection was performed, the date of the

inspection, and a statement that no leaks were detected.

(6) For each visual inspection conducted in accordance with paragraph (b)(1)(ii) or (b)(3)(ii) of this section during which no leaks are detected, a record that the inspection was performed, the date of the inspection, and a statement that no leaks were detected.

§ 60.787 Additional Requirements—Start-up, Shutdown, Malfunction, or Nonoperation; Alternative Means of Emission Limitation; and Permits

(a) *Applicability of this subpart during periods of start-up, shutdown, malfunction, or non-operation.* Paragraphs (a)(1) through (a)(4) of this section shall be followed during periods of start-up, shutdown, malfunction, or non-operation of the affected facility or any part thereof.

(1) The emission limitations set forth in this subpart and the emission limitations referred to in this subpart shall apply at all times except during periods of non-operation of the affected facility (or specific portion thereof) resulting in cessation of the emissions to which this subpart applies. The emission limitations of this subpart and the emission limitations referred to in this subpart shall not apply during periods of start-up, shutdown, or malfunction. During periods of start-up, shutdown, or malfunction, the owner or operator shall follow the applicable provisions of the start-up, shutdown, and malfunction plan as specified in 40 CFR 63.6(e)(3) and table 2A of this subpart. However, if a start-up, shutdown, malfunction, or period of non-operation of one portion of an affected facility does not affect the ability of a particular emission point to comply with the emission limitations to which it is subject, then that emission point shall still be required to comply with the applicable provisions of this subpart during the start-up, shutdown, malfunction, or period of non-operation.

(2) The owner or operator shall not shut down items of equipment that are required or utilized for compliance with this subpart during periods of start-up, shutdown, or malfunction during times when emissions, wastewater streams, or residuals are being routed to such items of equipment, if the shutdown would contravene requirements of this subpart applicable to such items of equipment. This paragraph (a)(2) does not apply if the item of equipment is malfunctioning. This paragraph (a)(2) also does not apply if the owner or operator shuts down the compliance equipment (other than monitoring systems) to avoid damage due to a contemporaneous start-up, shutdown, or malfunction of the affected facility or portion thereof. If the owner or operator has reason to believe that monitoring equipment would be damaged due to a contemporaneous start-up, shutdown, or malfunction of the affected facility or portion thereof, the owner or operator shall provide documentation to the Administrator, as soon as possible, supporting such a claim. Once approved by the Administrator, the provision for ceasing to collect, during a start-up, shutdown, or malfunction, monitoring data that would otherwise be required by the provisions of this subpart must be incorporated into the start-up, shutdown, malfunction plan for that affected facility.

(3) During start-ups, shutdowns, and malfunctions when the emission limitations of this subpart do not apply pursuant to paragraphs (a)(1) and (a)(2) of this section, the owner or operator shall implement, to the extent reasonably available, measures to prevent or minimize excess emissions. For purposes of this paragraph (a)(3), the term ''excess emissions'' means emissions in excess of those that would have occurred if there were no start-up, shutdown, or malfunction and the owner or operator complied with the relevant provisions of this subpart. The measures to be taken shall be identified in the applicable start-up, shutdown, and malfunction plan, and may include, but are not limited to, air pollution control technologies, recovery technologies, work practices, pollution prevention, monitoring, and/or changes in the manner of operation of the affected facility. Back-up control devices are not required, but may be used if available.

(b) *Start-up, shutdown, and malfunction plan.* The owner or operator of an affected facility shall develop and implement a written start-up, shutdown, and malfunction plan as specified in 40 CFR 63.6(e)(3) and table 2A of this subpart. This plan shall describe, in detail, procedures for operating and maintaining the affected facility during periods of start-up, shutdown, and malfunction and a program for corrective action for malfunctioning process and air pollution control equipment used to comply with this subpart. A provision for ceasing to collect, during a start-up, shutdown, or malfunction, monitoring data that would otherwise be required by the provisions of this subpart may be included in the start-up, shutdown, and malfunction plan only if the owner or operator has demonstrated to the Administrator that the monitoring system would be damaged or destroyed if it were not shut down during the start-up, shutdown, or malfunction. The affected facility shall keep the start-up, shutdown, and malfunction plan on-site.

(1) *Records of start-up, shutdown, and malfunction.* The owner or operator shall keep the records specified in paragraphs (b)(1)(i) and (b)(1)(ii) of this section.

(i) Records of the occurrence and duration of each start-up, shutdown, and malfunction of operation of process equipment or control devices or recovery devices or continuous monitoring systems used to comply with this subpart during which excess emissions (as defined in paragraph (a)(3) of this section) occur.

(ii) For each start-up, shutdown, or malfunction during which excess emissions (as defined in paragraph (a)(3) of this section) occur, records reflecting whether the procedures specified in the affected facility's start-up, shutdown, and malfunction plan were followed, and documentation of actions taken that are not consistent with the plan. For example, if a start-up, shutdown, and malfunction plan includes procedures for routing a control device to a backup control device, records shall be kept of whether the plan was followed. These records may take the form of a ''checklist,'' or other form of recordkeeping that confirms conformance with the start-up shutdown, and malfunction plan for the event.

(2) *Reports of start-up, shutdown, and malfunction.* For the purposes of this subpart, the start-up, shutdown, and malfunction reports shall be submitted on the same schedule as the semiannual reports required under § 60.784(d) of this subpart. Said reports shall include the information specified in paragraphs (b)(1)(i) and (b)(1)(ii)of this section and shall contain the name, title, and signature of the owner or operator or other responsible official who is certifying its accuracy.

(b) *Alternative means of emission limitation.* If, in the judgment of the Administrator, an alternative means of emission limitation will achieve a reduction in VOC emissions at least equivalent to the reduction in VOC achieved under any design, equipment, work practice, or operational standards in this subpart, the Administrator will publish a notice permitting the use of the alternative means for purposes of compliance with that requirement.

(1) The notice may condition the permission on requirements related to the operation and maintenance of the alternative means.

(2) Any notice under paragraph (b) of this section shall be published only after public notice and an opportunity for a hearing.

(3) Any person seeking permission to use an alternative means of compliance under this section shall collect, verify, and submit to the Administrator information showing that the alternative means achieves equivalent emission reductions.

(c) *Permit.* Each owner or operator of an affected facility subject to this subpart shall obtain a permit under 40 CFR part 70 or part 71 from the appropriate permitting authority. If EPA has approved a State operating permit program under 40 CFR part 71, the permit shall be obtained from the State authority. If the State operating permit program has not been approved, the owner or operator shall apply to the EPA regional office pursuant to 40 CFR part 70.

§ 60.788 [Reserved]

§ 60.789 Relationship to other regulations.

(a) The owner or operator who is subject to the provisions of this section shall include in the Notification of Compliance Status a statement specifying the options being used to comply with the provisions of this section.

(b) *Relationship to benzene waste.* After the compliance dates specified in § 60.770 of this subpart, the owner or operator of a Group 1 or Group 2 wastewater stream that is also subject to the provisions of 40 CFR part 61, subpart FF is required to comply with the provisions of both this subpart and 40 CFR part 61, subpart FF. Alternatively, the owner or operator may elect to comply with the provisions of paragraphs (b)(1) and (b)(2) of this section, which shall constitute compliance with the provisions of 40 CFR part 61, subpart FF.

(1) Comply with the provisions of this subpart; and

(2) For any Group 2 wastewater stream or organic stream whose benzene emissions are subject to control through the use of one or more treatment processes or waste management units under the provisions of 40 CFR part 61, subpart FF on or after September 12, 1994, comply with the requirements of this subpart for Group 1 wastewater streams.

(c) *Relationship to RCRA.* After the compliance dates specified in § 60.770 of this subpart, the owner or operator of any Group 1 or Group 2 wastewater stream that is also subject to provisions in 40 CFR parts 260 and 272 shall comply with the requirements of either paragraph (c)(1) or (c)(2) of this section.

(1) For each Group 1 or Group 2 wastewater stream, the owner or operator shall comply with the more stringent control requirements (e.g., waste management units, numerical treatment standards, etc.) and the more stringent testing, monitoring, recordkeeping, and reporting requirements that overlap between the provisions of this subpart and the provisions of 40 CFR parts 260 through 272. The owner or operator shall keep a record of the information used to determine which requirements were the most stringent and shall submit this information if requested by the Administrator; or

(2) The owner or operator shall submit, no later than four months before the applicable compliance date specified in § 60.770 of this subpart, a request for a case-by-case determination of requirements. The request shall include the information specified in paragraphs (c)(2)(i) and (c)(2)(ii) of this section.

(i) Identification of the wastewater streams that are subject to this subpart and to the provisions in 40 CFR parts 260 through 272, determination of the Group 1/Group 2 status of those streams using the provisions specified in this subpart, determination of whether or not those streams are listed or exhibit a characteristic as specified in 40 CFR part 261, and determination of whether the waste management unit is subject to permitting under 40 CFR part 270.

(ii) Identification of the specific control requirements (e.g., waste management units, numerical treatment standards, etc.) and testing, monitoring, recordkeeping, and reporting requirements that overlap between the provisions of this subpart and the provisions of 40 CFR parts 260 through 272.

(d) *Overlap with the Vinyl Chloride NESHAP.* After the compliance dates specified in § 60.770 of this subpart, the owner or operator of a Group 1 and Group 2 wastewater stream that is also subject to the provisions of 40 CFR part 61 subpart F shall comply with the provisions of either paragraph (d)(1) or (d)(2) of this section.

(1) The owner or operator shall comply with the provisions of both this subpart and 40 CFR part 61 subpart F or

(2) The owner or operator may submit, no later than four months before the applicable compliance date specified in § 60.770 of this subpart, information demonstrating how compliance with 40 CFR Part 61, subpart F, will also ensure compliance with this subpart. The information shall include a description of the testing, monitoring, reporting, and recordkeeping that will be performed.

(e) *Overlap with the HON.* After the compliance dates specified in § 60.770 of this subpart, the owner or operator of any Group 1 or Group 2 process wastewater stream that is also subject to and controlled according to the provisions in 40 CFR, subpart G shall comply with either 40 CFR, subpart G or this subpart.

(f) *Overlap with other regulations for monitoring, recordkeeping, or reporting with respect to combustion devices, recovery devices, or recapture devices.* After compliance dates specified in § 60.770 of this subpart, if any combustion device, recovery device, or recapture device subject to this subpart is also subject to monitoring, recordkeeping, and reporting requirements in 40 CFR part 264, subpart AA or CC, or is subject to monitoring and recordkeeping requirements in 40 CFR part 265, subpart AA or CC and other owner or operator complies with the periodic reporting requirements under 40 CFR part 264, subpart AA or CC that would apply to the device if the facility had final-permitted status, the owner or operator may elect to comply with the monitoring, recordkeeping, and reporting requirements of this subpart, or with the monitoring, recordkeeping, and reporting requirements in 40 CFR parts 264 and/or 265, as described in this paragraph (f), which shall constitute compliance with the monitoring, recordkeeping, and reporting requirements of this subpart.

TABLE 1 TO SUBPART YYY—LIST OF SOCMI CHEMICALS

Chemical name [a]	CAS No. [b]
(1,1,2-) Trichloro (1,2,2-) trifluoroethane	76131
(2-Ethylhexyl) amine	104756
1,4-Dichlorobutene	110576
1-Butene	106989

TABLE 1 TO SUBPART YYY—LIST OF SOCMI CHEMICALS—Continued

Chemical name [a]	CAS No. [b]
1-Methyl-2-pyrrolidone	872504
1-Naphthyl-N-methylcarbamate	
1-Phenyl ethyl hydroperoxide	3071327
2-Butene	25167673
2-Butyne-1,4-diol	110656
2-Chloro-1,3-butadiene (Chloroprene)	126998
2-Chloro-4-(ethylamino)-6-(isopropylamino)-S-triazine	1912249
2-Ethylhexanol (2-ethyl-1-hexanol)	104767
2-Hexenedinitrile	13042029
3,4-Dichloro-1-butene	64037543
3-Hexenedinitrile	1119853
3-Pentenenitrile	4635874
6-Ethyl-1,2,3,4-tetrahydro-9,10-antracenedione	15547178
Acenaphthene	83329
Acetal (1,1-diethoxy-ethane)	105577
Acetaldehyde	75070
Acetaldol (3-hydroxy-butanal)	107891
Acetamide	60355
Acetanilide	103844
Acetic anhydride	108247
Acetic acid	64197
Acetoacetanilide	102012
Acetone cyanohydrin	75865
Acetone	67641
Acetonitrile	75058
Acetophenone	98862
Acetyl chloride	75365
Acetylene tetrabromide (1,1,2,2-tetrabromoethane)	79276
Acetylene	74862
Acrolein	107028
Acrylamide	79061
Acrylic acid	79107
Acrylonitrile	107131
Adipic acid	124049
Adiponitrile	111693
Alcohols, C–11 or higher, mixtures	
Alcohols, C–11 or lower, mixtures	
Alizarin	72480
Alkyl naphthalenes	
Alkyl naphthalene sulfonates	
Alkyl anthraquinones	
Allyl cyanide	109751
Allyl chloride	107051
Allyl bromide	106956
Allyl alcohol	107186
Aluminum acetate	7360443
Aluminum formates	
Aminobenzoic acid (p-)	1321115
Aminoethylethanolamine	111411
Aminophenol sulfonic acid	
Aminophenol (p-)	123308
Ammonium acetate	631618
Ammonium thiocyanate	1762954
Amyl acetates	628637
	123922
Amyl chloride (n-)	543599
Amyl phenol	1322061
Amyl chlorides (mixed)	
Amyl mercaptans	110667
Amyl alcohols (mixed)	30899195
Amyl alcohol (tert-)	75854
Amyl alcohol (n-) (1-pentanol)	71410
Amyl ether	693652
Amylamines	110587
Amylene	513359
Amylenes, mixed	
Aniline	62533
Aniline hydrochloride	142041
Anisidine (p-)	29191524
Anisidine (o-)	90040
Anisole (methoxy benzene)	100663
Anthracene	120127

TABLE 1 TO SUBPART YYY—LIST OF SOCMI CHEMICALS—Continued

Chemical name [a]	CAS No. [b]
Anthranilic acid	118923
Anthraquinone	84651
ar-Methylbenzenediamine	25376458
Azobenzene	103333
Barium acetate	543806
Benzaldehyde	100527
Benzamide	55210
Benzene	71432
Benzenedisulfonic acid	98486
Benzenesulfonic acid	98113
Benzenesulfonic acid C_{10-16}-alkyl derivatives, sodium salts	68081812
Benzidine	
Benzil	134816
Benzilic acid	76937
Benzoguanamine	
Benzoic acid	65850
Benzoin	119539
Benzonitrile	100470
Benzophenone	119619
Benzotrichloride	98077
Benzoyl chloride	98884
Benzoyl peroxide	94360
Benzyl acetate	140114
Benzyl chloride	100447
Benzyl alcohol	100516
Benzyl dichloride	98873
Benzyl benzoate	120514
Benzylamine	100469
Benzylideneacetone	1896624
Biphenyl	92524
Bis(Chloromethyl)Ether	542881
Bisphenol A	80057
Brometone	
Bromobenzene	108861
Bromoform	75252
Bromonaphthalene	27497514
Butadiene and butene fractions	
Butadiene (1,3-)	106990
Butane	106978
Butanediol (1,4-)	110634
Butanes, mixed	
Butenes, mixed	
Butyl hydroperoxide (tert-)	75912
Butyl acetate (sec-)	105464
Butyl chloride (tert-)	507200
Butyl alcohol (tert-)	75650
Butyl benzoate	136607
Butyl mercaptan (n-)	109795
Butyl acrylate (n-)	141322
Butyl mercaptan (tert-)	75661
Butyl methacrylate (n-)	97881
Butyl alcohol (sec-)	78922
Butyl acetate (tert-)	540885
Butyl acetate (n-)	123864
Butyl methacrylate (tert-)	
Butyl toluene (tert-)	98511
Butyl phenol (tert-)	88186
Butyl alcohol (n-)	71363
Butylamine (t-)	75649
Butylamine (s-)	13952846
Butylamine (n-)	109739
Butylbenzene (tert-)	98066
Butylbenzoic acid (p-tert-)	98737
Butylbenzyl phthalate	85867
Butylene glycol (1,3-)	107880
Butylenes (n-)	
Butyraldehyde (n-)	123728
Butyric acid (n-)	107926
Butyric anhydride (n-)	106310
Butyrolacetone	96480
Butyronitrile	109740
Calcium acetate	62544

TABLE 1 TO SUBPART YYY—LIST OF SOCMI CHEMICALS—Continued

Chemical name [a]	CAS No. [b]
Calcium propionate	4075814
Caproic acid	142621
Caprolactam	105602
Carbaryl	63252
Carbazole	86748
Carbon tetrabromide	558134
Carbon disulfide	75150
Carbon tetrachloride	56235
Carbon tetrafluoride	75730
Cellulose acetate	9004357
Chloral	75876
Chloranil (o-chloranil)	2435532
Chloranil (p-chloranil)	118752
Chloroacetic acid	79118
Chloroacetophenone (2-)	532274
Chloroaniline (o-)	95512
Chloroaniline (p-)	106478
Chloroaniline (m-)	108429
Chlorobenzaldehyde (4-)	104881
Chlorobenzaldehyde (2-)	89985
Chlorobenzaldehyde (3-)	587042
Chlorobenzene	108907
Chlorobenzoic acid	118912
	535808
	74113
Chlorobenzotrichloride (p-)	5216251
Chlorobenzotrichloride (o-)	2136892
Chlorobenzoyl chloride (p-)	122010
Chlorobenzoyl chloride (o-)	609654
Chlorodifluoroethane	25497294
Chlorodifluoromethane	75456
Chlorofluorocarbons	
Chloroform	67663
Chlorohydrin	
Chloronaphthalene	25586430
Chloronitrobenzene (o-)	88733
Chloronitrobenzene (m-)	121733
Chloronitrobenzene (p-)	100005
Chlorophenol (o-)	95578
Chlorophenol (m-)	108430
Chlorophenol (p-)	106489
Chlorosulfonic acid	7790945
Chlorotoluene (m-)	108418
Chlorotoluene (o-)	95498
Chlorotoluene (p-)	106434
Chlorotrifluoroethylene	79389
Chlorotrifluoromethane	75729
Choline chloride	67481
Chrysene	218019
Cinnamic acid	140103
Citric acid	77929
Cobalt acetate	
Copper acetate	142712
Cresol and cresylic acid (o-)	95487
Cresol and cresylic acid (p-)	106445
Cresol and cresylic acid (m-)	108394
Cresols and cresylic acids (mixed)	1319773
Crotonaldehyde	4170300
Crotonic acid	3724650
Cumene hydroperoxide	80159
Cumene	98828
Cyanamide	420042
Cyanoacetic acid	372098
Cyanoformamide	
Cyanogen chloride	506774
Cyanuric acid	108805
Cyanuric chloride	108770
Cyclohexane, oxidized	68512152
Cyclohexane	110827
Cyclohexanol	108930
Cyclohexanone oxime	100641
Cyclohexanone	108941

TABLE 1 TO SUBPART YYY—LIST OF SOCMI CHEMICALS—Continued

Chemical name [a]	CAS No. [b]
Cyclohexene	110838
Cyclohexylamine	108918
Cyclooctadiene	29965977
Cyclooctadiene (1,3-)	3806595
Cyclooctadiene (1,5-)	111784
Cyclopentadiene (1,3-)	
Cyclopropane	75194
Decahydronaphthalene	91178
Decanol	112301
Decyl alcohol (1-decanol)	112301
Di-o-tolyguanidine	97392
Di(2-methoxyethyl) phthalate	
Di-n-heptyl-n-nonyl undecyl phthalate	
Diacetone alcohol	123422
Diacetoxy-2-Butene (1,4-)	
Diallyl phthalate	131179
Diallyl isophthalate	
Diaminobenzoic acids	27576041
Diaminophenol hydrochloride	137097
Dibromomethane	74953
Dibutanized aromatic concentrate	
Dibutoxyethyl phthalate	
Dichloro-1-butene (3,4-)	760236
Dichloro-2-butene (1,4-)	764410
Dichloro-2-butenes	
Dichloroaniline (mixed isomers)	27134276
Dichlorobenzene (p-)	106467
Dichlorobenzene (m-)	541731
Dichlorobenzene (o-)	95501
Dichlorobenzidine (3,3′-)	91941
Dichlorodifluoromethane	75718
Dichlorodimethylsilane	75785
Dichloroethane (1,2-) (Ethylene dichloride) (EDC)	107062
Dichloroethyl ether (bis(2-chloroethyl)ether)	111444
Dichloroethylene (1,2-)	540590
Dichlorofluoromethane	75434
Dichlorohydrin (a-)	96231
Dichloromethyl ether	
Dichloronitrobenzenes	
Dichloropentanes	
Dichlorophenol (2,4-)	120832
Dichloropropane (1,1-)	78999
Dichloropropene (1,3-)	542756
Dichloropropene/dichloropropane (mixed)	
Dichlorotetrafluoroethane	1320372
Dicyandiamide	461585
Dicyclohexylamine	101837
Dicyclopentadiene	77736
Diethanolamine (2,2′-Iminodiethanol)	111422
Diethyl phthalate	84662
Diethyl sulfate	64675
Diethylamine	109897
Diethylaniline (N,N-)	91667
Diethylaniline (2,6-)	579668
Diethylbenzene	25340174
Diethylene glycol monoethyl ether	111900
Diethylene glycol dimethyl ether	111966
Diethylene glycol	111466
Diethylene glycol monobutyl ether acetate	124174
Diethylene glycol monomethyl ether	111773
Diethylene glycol diethyl ether	112367
Diethylene glycol monomethyl ether acetate	629389
Diethylene glycol monoethyl ether acetate	112152
Diethylene glycol monohexyl ether	112594
Diethylene glycol monobutyl ether	112345
Diethylene glycol dibutyl ether	112732
Difluoroethane (1,1-)	75376
Dihydroxybenzoic acid (Resorcylic acid)	27138574
Diisobutylene	25167708
Diisodecyl phthalate	26761400
Diisononyl phthalate	28553120
Diisooctyl phthalate	27554263

TABLE 1 TO SUBPART YYY—LIST OF SOCMI CHEMICALS—Continued

Chemical name [a]	CAS No.[b]
Diisopropylamine	108189
Diketene (4-methylene-2-oxetanone)	674828
Dimethyl sulfate	77781
Dimethyl ether	115106
Dimethyl sulfide	75183
Dimethyl phthalate	131113
Dimethyl sulfoxide	67685
Dimethyl terephthalate	120616
Dimethylacetamide (N,N-)	127195
Dimethylamine	124403
Dimethylaminoethanol (2-)	108010
Dimethylaniline (N,N)	121697
Dimethylbenzidine (3,3′-)	119937
Dimethylformamide (N,N-)	68122
Dimethylhydrazine (1,1-)	57147
Dimethylphenol (2,5-) Xylenol (2, 5-)	95874
Dimethylphenol (2,6-) Xylenol (2, 6-)	576261
Dimethylphenol (3,5-) Xylenol (3, 5-)	108689
Dimethylphenol (2,4-) Xylenol (2, 4-)	105679
Dimethylphenol (2,3-) Xylenol (2, 3-)	526750
Dimethylphenol (3,4-) Xylenol (3, 4-)	95658
Dinitrobenzenes (NOS)[c]	25154545
Dinitrobenzoic acid (3,5-)	99343
Dinitrophenol (2,4-)	51285
Dinitrotoluene (3,4-)	610399
Dinitrotoluene (2,6-)	606202
Dinitrotoluene (2,3-)	602017
Dinitrotoluene (2,4-)	121142
Dioctyl phthalate	117817
Dioxane (1,4-) (1,4-Diethyleneoxide)	123911
Dioxolane (1,3-)	646060
Diphenyl oxide	101848
Diphenyl thiourea (N,N′-)	102089
Diphenyl methane	101815
Diphenylamine	122394
Dipropylene glycol	110985
Dodecandedioic acid	693232
Dodecene (branched)	112414
Dodecene (n-)	25378227
Dodecyl phenol (branched)	121158585
Dodecyl benzene (branched)	123013
Dodecylaniline	28675174
Dodecylbenzene sulfonic acid	27176870
Dodecylbenzene, nonlinear	
Dodecylbenzene (n-)	121013
Dodecylbenzene sulfonic acid, sodium salt	25155300
Dodecylmercaptan (branched)	25103586
Dodecylphenol	27193868
Epichlorohydrin (1-chloro-2,3-epoxypropane)	106898
Ethane	74840
Ethanol	64175
Ethanolamine	141435
Ethyl ether	60297
Ethyl oxalate	95921
Ethyl orthoformate	122510
Ethyl acetate	141786
Ethyl bromide	74964
Ethyl chloride (Chloroethane)	75003
Ethyl cyanide	107120
Ethyl acrylate	140885
Ethyl sodium oxalacetate	41892711
Ethyl acetoacetate	141979
Ethyl chloroacetate	105395
Ethyl mercaptan (ethanethiol)	75081
Ethylamine	75047
Ethylaniline (o-)	578541
Ethylaniline (n-)	103695
Ethylbenzene	100414
Ethylcellulose	9004573
Ethylcyanoacetate	105566
Ethylene glycol dibutyl ether	112481
Ethylene dibromide (Dibromoethane)	106934

TABLE 1 TO SUBPART YYY—LIST OF SOCMI CHEMICALS—Continued

Chemical name [a]	CAS No. [b]
Ethylene oxide	75218
Ethylene glycol monoethyl ether	110805
Ethylene glycol monoethyl ether acetate	111159
Ethylene glycol monomethyl ether	109864
Ethylene dichloride	107062
Ethylene glycol monobutyl ether acetate	112072
Ethylene glycol dimethyl ether	110714
Ethylene	74851
Ethylene glycol monophenyl ether	122996
Ethylene glycol monoacetate	542596
Ethylene carbonate	96491
Ethylene glycol monooctyl ether	
Ethylene glycol diacetate	111557
Ethylene glycol diethyl ether (1,2-diethoxyethane)	629141
Ethylene glycol monopropyl ether	2807309
Ethylene glycol monohexyl ether	112254
Ethylene glycol monomethyl ether acetate	110496
Ethylene glycol monobutyl ether	111762
Ethylene chlorohydrin	107073
Ethylene glycol	107211
Ethylenediamine	107153
Ethylenediamine tetraacetic acid	60004
Ethylenimine (Aziridine)	151564
Ethylhexanoic acid (2-)	149575
Ethylhexyl succinate (2-)	
Ethylhexyl acrylate (2-isomer)	103117
Ethylmethylbenzene	25550145
Fluoranthene	206440
Formaldehyde	50000
Formamide	75127
Formic acid	64186
Fumaric acid	110178
Furfural (2-furan carboxaldehyde)	98011
Glutaraldehyde	111308
Glyceraldehyde	367475
Glycerol dichlorohydrin	26545737
Glycerol tri(polyoxypropylene)ether	25791962
Glycerol	56815
Glycidol	556525
Glycine	56406
Glycol ethers	
Glyoxal (ethane dial)	107222
Guanidine	
Guanidine nitrate	506934
Heptenes	
Hexachlorobenzene	118741
Hexachlorobutadiene	87683
Hexachlorocyclopentadiene	77474
Hexachloroethane	67721
Hexadecyl chloride	
Hexadecyl alcohol (1-hexadecanol)	36653824
Hexadiene (1,4-)	592450
Hexamethylene glycol	629118
Hexamethylene diamine adipate	3323533
Hexamethylenediamine	124094
Hexamethylenetetramine	100970
Hexane	110543
Hexanetriol (1,2,6-)	106694
Hexyl alcohol	111273
Hexylene glycol	107415
Higher glycols	
Hydrogen cyanide	74908
Hydroquinone	123319
Hydroxyadipaldehyde	141311
Hydroxybenzoic acid (p-)	99967
Iminodiethanol (2,2-) (diethanolamine)	111422
Isoamyl alcohol	123513
Isoamyl chloride (mixed)	
Isoamylene	26760645
Isobutane	75285
Isobutanol	78831
Isobutyl methacrylate	97869

TABLE 1 TO SUBPART YYY—LIST OF SOCMI CHEMICALS—Continued

Chemical name [a]	CAS No. [b]
Isobutyl acetate	110190
Isobutyl acrylate	106638
Isobutyl vinyl ether	109535
Isobutyl alcohol	78831
Isobutylene	115117
Isobutyraldehyde (2-methyl-propanal)	78842
Isobutyric acid	79312
Isodecanol	25339177
Isohexyldecyl alcohol	
Isononyl alcohol	
Isooctyl alcohol	26952216
Isopentane	78784
Isophorone nitrile	
Isophorone	78591
Isophthalic acid	121915
Isoprene	78795
Isopropanol	67630
Isopropyl acetate	108214
Isopropyl ether	108203
Isopropyl chloride	75296
Isopropylamine	75310
Isopropylphenol	25168063
Ketene	463514
Lactic acid	79334
Lauryl dimethylamine oxide	
Lead subacetate	1335326
Lead phthalate	
Lead acetate	6080564
Linear alcohols, ethoxylated and sulfated, sodium salt, mixed	
Linear alcohols, ethoxylated, mixed	
Linear alkyl sulfonate	
Linear alcohols, sulfated, sodium salt, mixed	
Magnesium acetate	142723
Maleic anhydride	108316
Maleic hydrazide	123331
Maleic acid	110167
Malic acid	6915157
Manganese acetate	638380
Melamine (1,3,5-triazine-2,4,6-triamine)	108781
Mercuric acetate	1600277
Mesityl oxide	141797
Metanilic acid	121471
Methacrylic acid	79414
Methacrylonitrile	126987
Methallyl chloride	563473
Methallyl alcohol	513428
Methane	74828
Methanol	67561
Methionine	63683
Methyl mercaptan	74931
Methyl iodide	74884
Methyl ethyl ketone (2-butanone)	78933
Methyl isobutyl carbinol	108112
Methyl acetate	79209
Methyl chloride (Chloromethane)	74873
Methyl salicylate	119368
Methyl acetoacetate	105453
Methyl bromide (Bromomethane)	74839
Methyl formate	107313
Methyl phenyl carbinol	98851
Methyl methacrylate	80626
Methyl tert-butyl ether	1634044
Methyl isocyanate	624839
Methyl butynol	37365712
Methyl hydrazine	60344
Methyl isobutyl ketone (Hexone)	108101
Methyl acrylate	96333
Methyl butenols	
Methyl anthranilate	134203
Methylamine	74895
Methylaniline (N-)	100618
Methylbutanol (2-)	137326

TABLE 1 TO SUBPART YYY—LIST OF SOCMI CHEMICALS—Continued

Chemical name [a]	CAS No. [b]
Methylcyclohexane	108872
Methylcyclohexanol	25639423
Methylcyclohexanone	1331222
Methylene chloride (Dichloromethane)	75092
Methylene dianiline (4,4′)	101779
Methylene diphenyl diisocyanate (4,4′-) (MDI)	101688
Methylionones (a-)	79696
Methylnaphthalene (2-)	91576
Methylnaphthalene (1-)	90120
Methylpentane (2-)	107835
Methylpentynol	77758
Methylstyrene (a-)	98839
Monomethylhydrazine	
Morpholine	110918
n-Heptane	142825
n-Propanol	71238
N-Vinyl-2-pyrrolidine	
Naphthalene sulfonic acid (a-)	85472
Naphthalene	91203
Naphthalene sulfonic acid (b-)	120183
Naphthenic acids	
Naphthol (a-)	90153
Naphthol (b-)	135193
Naphtholsulfonic acid (1-)	567180
Naphthylamine sulfonic acid (1,4-)	84866
Naphthylamine (1-)	134327
Naphthylamine (2-)	91598
Naphthylamine sulfonic acid (2,1-)	81163
Neohexane	75832
Neopentanoic acid	75989
Neopentyl glycol	126307
Nickel formate	
Nitriloacetic acid	
Nitrilotriacetic acid	139139
Nitroaniline (m-)	99092
Nitroaniline (p-)	100016
Nitroaniline (o-)	88744
Nitroanisole (p-)	100174
Nitroanisole (o-)	91236
Nitrobenzene	98953
Nitrobenzoic acid (m-)	121926
Nitrobenzoic acid (o-)	552169
Nitrobenzoic acid (p-)	62237
Nitrobenzoyl chloride (p-)	
Nitroethane	79243
Nitroguanidine	556887
Nitromethane	75525
Nitronaphthalene (1-)	86577
Nitrophenol (p-)	100027
Nitrophenol (o-)	88755
Nitropropane (1-)	25322014
Nitropropane (2-)	79469
Nitrotoluene (p-)	99990
Nitrotoluene (o-)	88722
Nitrotoluene (m-)	99081
Nitrotoluene (all isomers)	1321126
Nitroxylene	25168041
Nonene	27215958
Nonyl alcohol	1430808
Nonylbenzene (branched)	1081772
Nonylphenol	25154523
Nonylphenol, ethoxylated	9016459
Nonylphenol (branched)	25154523
Octane	111659
Octene-1	111660
Octylamine (tert-)	107459
Octylphenol	27193288
Oil-soluble petroleum sulfonate sodium salt	
Oil-soluble petroleum sulfonate calcium salt	
Oxalic acid	144627
Oxamide	471465
Oxo chemicals	

TABLE 1 TO SUBPART YYY—LIST OF SOCMI CHEMICALS—Continued

Chemical name [a]	CAS No.[b]
p-tert-Butyl toluene	98511
Paraformaldehyde	30525894
Paraldehyde	123637
Pentachlorophenol	87865
Pentaerythritol tetranitrate	
Pentane	109660
Pentanethiol	115775
Pentanol (3-)	584021
Pentanol (2-)	6032297
Pentene (1-)	109671
Pentene (2-)	109682
Peracetic acid	79210
Perchloromethyl mercaptan	594423
Phenacetin	62442
Phenanthrene	85018
Phenetidine (p-)	156434
Phenetidine (o-)	94702
Phenol	108952
Phenolphthalein	77098
Phenolsulfonic acids (all isomers)	1333397
Phenyl anthranilic acid (all isomers)	91407
Phenylenediamine (m-)	108452
Phenylenediamine (p-)	106503
Phenylenediamine (o-)	95545
Phenylmethylpyrazolone	
Phenylpropane	103651
Phloroglucinol (1,3,5-benzenetriol)	108736
Phosgene	75445
Phthalic acid	88993
Phthalic anhydride	85449
Phthalimide	85416
Phthalonitrile	91156
Picoline (b-)	108996
Picoline (a-)	
Picramic acid	
Picric acid	88891
Piperazine	110850
Piperidine	110894
Piperylene	504609
Polybutenes	9003296
Polyethylene glycol	25322683
Polypropylene glycol	25322694
Potassium acetate	127082
Propane	74986
Propiolactone (beta-) (2-Oxetanone)	57578
Propionaldehyde	123386
Propionic acid	79094
Propyl acetate (n-)	109604
Propyl chloride	540545
Propyl alcohol (n-)	71238
Propylamine	107108
Propylene chlorohydrin	127004
Propylene glycol	57556
Propylene	115071
Propylene oxide	75569
Propylene carbonate	108327
Propylene glycol monomethyl ether	107982
1,2-dichloropropane	78875
Pseudocumene	95636
Pseudocumidine	
Pyrene	129000
Pyridine	110861
Pyrrolidone (2-)	616455
Quinone	106514
Resorcinol (1,3-benzenediol)	108463
Salicylic acid	69727
Sebacic acid	111206
Sodium benzoate	532321
Sodium phenate	139026
Sodium acetate	127093
Sodium formate	141537
Sodium methoxide	124414

TABLE 1 TO SUBPART YYY—LIST OF SOCMI CHEMICALS—Continued

Chemical name [a]	CAS No. [b]
Sodium cyanide	143339
Sodium propionate	137406
Sodium chloroacetate	3926623
Sodium carboxymethyl cellulose	9004324
Sodium oxalate	62760
Sodium dodecyl benzene sulfonate	
Sorbic acid	110441
Sorbitol (D-Glucitol)	50704
Stilbene	588590
Styrene	100425
Succinic acid	110156
Succinonitrile	110612
Sulfanilic acid	121573
Sulfolane	126330
Synthesis gas	
Tannic acid	1401554
Tartaric acid	526830
Terephthalic acid	100210
Terephthaloyl chloride	100209
Tetra (methyl-ethyl) lead	
Tetrabromophthalic anhydride	632791
Tetrachlorobenzene (1,2,3,5-)	
Tetrachlorobenzene (1,2,4,5-)	95943
Tetrachloroethane (1,1,2,2-)	79345
Tetrachloroethylene (Perchloroethylene)	127184
Tetrachlorophthalic anhydride	117088
Tetraethyl lead	78002
Tetraethylene glycol	112607
Tetraethylenepentamine	112572
Tetrafluoroethylene	
Tetrahydrofuran	109999
Tetrahydronapthalene	119642
Tetrahydrophthalic anhydride	85438
Tetramethylenediamine	110601
Tetramethylethylenediamine	110189
Tetramethyllead	75741
Thiourea	62566
Tolidines	
Toluene sulfonic acids	104154
Toluene diisocyanate (2,4-)	584849
Toluene	108883
Toluene diamine (2,4-)	95807
Toluene diisocyanates (mixture)	26471625
Toluene sulfonamides (o- and p-)	1333079
Toluenesulfonyl chloride	98599
Toluidine (o-)	95534
Trichloroacetic acid	76039
Trichloroaniline (2,4,6-)	634935
Trichlorobenzene (1,2,4-)	120821
Trichlorobenzene (1,2,3-)	87616
Trichlorobenzene (1,3,5-)	108703
Trichloroethane (1,1,2-)	79005
Trichloroethane (1,1,1-)	71556
Trichloroethylene	79016
Trichlorofluoromethane	75694
Trichlorophenol (2,4,5-)	95954
Trichloropropane (1,2,3-)	96184
Tricresyl phosphate	1330785
Tridecyl alcohol	112709
Tridecyl mercaptan	
Triethanolamine	102716
Triethylamine	121448
Triethylene glycol monoethyl ether	112505
Triethylene glycol	112276
Triethylene glycol dimethyl ether	112492
Triethylene glycol monomethyl ether	112356
Triisobutylene	7756947
Trimellitic anhydride	552307
Trimethyl-1,3-pentanediol (2,2,4-)	144194
Trimethyl-1-pentanol (2,4,4-)	16325636
Trimethylamine	75503
Trimethylcyclohexanol	933482

TABLE 1 TO SUBPART YYY—LIST OF SOCMI CHEMICALS—Continued

Chemical name [a]	CAS No.[b]
Trimethylcyclohexanone	2408379
Trimethylcyclohexylamine	34216347
Trimethylolpropane	77996
Trimethylpentane (2,2,4-)	540841
Tripropylene glycol	24800440
Urea	57136
Vinyl chloride (Chloroethylene)	75014
Vinyl acetate	108054
Vinyl toluene	25013154
Vinyl (N-)-pyrrolidone (2-)	88120
Vinylcyclohexene (4-)	100403
Vinylidene chloride (1,1-dichloroethylene)	75354
Vinylpyridine (2-)	100696
Xanthates	140896
Xylene sulfonic acid	25321419
Xylene (m-)	108383
Xylene (o-)	95476
Xylene (p-)	106423
Xylenes (NOS)[c]	1330207
Xylenols (Mixed)	1300716
Xylidene (dimethylbenzene diamine)	1300738
Xylidene (2,3-)	1300738
Xylidene (2,6-)	1300738
Xylidene (2,5-)	1300738
Xylidene (3,5-)	1300738
Xylidene (2,4-)	1300738
Xylidene (3,4-)	1300738
Zinc acetate	5970456

[a] Isomer means all structural arrangements for the same number of atoms of each element and does not mean salts, esters, or derivatives.
[b] CAS Number = Chemical Abstract Service number.

TABLE 2 TO SUBPART YYY—APPLICABILITY OF 40 CFR PART 60 GENERAL PROVISIONS TO SUBPART YYY

Reference	Applies to subpart YYY	Subject/comment
60.1	Yes	Applicability.
60.2	Yes	Definitions. If a term is defined in both the General Provisions and subpart YYY, the definition in YYY shall override the definition in the General provisions.
60.3	Yes	Units and abbreviations.
60.4	Yes	Address.
60.5	Yes	Determination of construction or modification.
60.6	Yes	Review of plans.
60.7(a)(1)	Yes	Submit a notification of the date construction or reconstruction commences.
60.7(a)(2)	Yes	Submit a notification of anticipated date of initial startup.
60.7(a)(3)	Yes	Submit a notification of actual date of initial startup.
60.7(a)(4)	Yes	Submit a notification of any physical or operational change to an existing facility which increases the emission rate of any air pollutant.
60.7(a)(5)	No	Continuous monitoring requirements and associated reporting and recordkeeping are specified in §§ 60.781, 60.784, and 60.785 of subpart YYY.
60.7(a)(6)–160.7(a)(7)	No	Subpart YYY is not an opacity standard.
60.7(b)	No	§ 60.785(f)(7) of subpart YYY specify which records to maintain to document periods of startup, shutdown, or malfunction; and periods when a continuous monitoring system is inoperative.
60.7(c), (d), and (e)	No	The semiannual report required in § 60.784(d) includes reports of all excursions and all periods when monitoring parameters are above the maximum or below the minimum established value. § 60.784(e) specifies semiannual reporting for treatment processes. Excess emissions are discussed and defined in § 60.787(a)(3) and must be recorded in the startup, shutdown, and malfunction plan as specified in § 60.787.
60.7(f)	No	§ 60.785 specifies data retention and the types of records that must be maintained.
60.7(g)–(h)	Yes	
60.8	No	The performance testing requirements in 40 CFR 63.7 apply to subpart YYY as specified in Table 2A of this subpart.
60.9	Yes	Availability of information.
60.10	Yes	State authority.
60.11	No	Subpart YYY is not an opacity standard. Operation and maintenance requirements are specified throughout subpart YYY.
60.12	Yes	Circumvention.
60.13(a)	No	Continuous monitoring requirements are specified in § 60.781.
60.13(b)	Yes	Except use 40 CFR part 63.11 in place of the § 60.8 reference to performance tests.

TABLE 2 TO SUBPART YYY—APPLICABILITY OF 40 CFR PART 60 GENERAL PROVISIONS TO SUBPART YYY—Continued

Reference	Applies to subpart YYY	Subject/comment
60.13(c)–(d)	No	Opacity and continuous emission monitoring not required in subpart YYY.
60.13(e)	No	Monitoring frequency is specified in § 60.781.
60.13(f)	Yes	Except § 60.781(g), which pertains to installation, calibration, and maintenance of monitoring equipment, applies, also.
60.13(g)	No	The locations to install CMS are specified in § 60.781.
60.13(h)	No	Provisions explaining how to calculate continuous parameter monitoring values are specified in § 60.785.
60.13(i)(1)–(i)(7), (i)(9)	Yes	Alternatives to monitoring methods or procedures must be approved by the Administrator.
60.13(i)(8)	No	Opacity monitoring not required in subpart YYY.
60.13(j)	No	Continuous emission monitoring not required in subpart YYY.
60.14(a)	No	A modification is determined as specified in § 60.772(b).
60.14(b)	No	VOC emissions are determined as specified in § 60.772(f).
60.14(c)	No	
60.14(d)	No	Reserved.
60.14(e)	No	Types of physical and operational changes that are not modifications are specified in § 60.772(c).
60.14(f)–(g)	Yes	
60.14(h)–60.14(l)	Yes	List of changes and projects that are exempt from modification provisions.
60.15	Yes	Except 60.772(g) specifies additional requirements for ''fixed capital cost of the new components.''
60.16	Yes	Prioritized major source categories.
60.17	Yes	Incorporations by reference.
60.18	No	Control device requirements are specified in 40 CFR part 63.11, as specified in Table 2A of this subpart.
60.19	Yes	General notification and reporting requirements.

TABLE 2A TO SUBPART YYY—APPLICABILITY OF 40 CFR PART 63 GENERAL PROVISIONS TO SUBPART YYY

Reference	Applies to subpart YYY	Subject/comment
63.6(e)(3)(i)	Yes	The startup, shutdown, malfunction plan may include written procedures that identify conditions that justify a delay of repair.
63.6(e)(3)(i)(B)	Yes	
63.6(e)(3)(i)(C)	Yes	
63.6(e)(3)(ii)	Yes	
63.6(e)(3)(v)	Yes	
63.6(e)(3)(vi)	Yes	
63.6(e)(3)(vii)	Yes	
63.6(e)(3)(vii)(A)	Yes	
63.6(e)(3)(vii)(B)	Yes	Except the plan shall provide for operation in compliance with § 60.787(a)(3).
63.6(e)(3)(vii)(C)	Yes	
63.6(e)(3)(viii)	Yes	
63.7(a)(3)	Yes	
63.7(d)	Yes	
63.7(e)(1)–(e)(2)	Yes	Except § 60.783(a)(8), representative process unit operating conditions, and (a)(9), representative treatment process or control device operating conditions, also address this issue.
63.7(e)(4)	Yes	
63.7(h)(1)–(h)(2)	Yes	
63.7(h)(5)	Yes	
63.9(a)(4)	Yes	
63.9(b)(5)	Yes	
63.11	Yes	

TABLE 3 TO SUBPART YYY—CONTROL REQUIREMENT OPTIONS FOR WASTEWATER TANKS, SURFACE IMPOUNDMENT, CONTAINERS, INDIVIDUAL DRAIN SYSTEMS, AND OIL-WATER SEPARATORS

Unit operation	Part 63, subpart G (HON)	Part 63 (standard-standards)	Part 60, subpart QQQ (petroleum refinery)	Part 264, subpart CC (RCRA CC)	Part 265, subpart CC (RCRA CC)	Part 61, subpart FF (benzene waste)
Wastewater Tanks	§ 63.133			§ 264.1084	§ 265.1085	§ 61.343
Surface Impoundments	§ 63.134	§§ 63.942 and 63.943 of Subpart QQ.		§ 264.1085	§ 265.1086	§ 61.344

TABLE 3 TO SUBPART YYY—CONTROL REQUIREMENT OPTIONS FOR WASTEWATER TANKS, SURFACE IMPOUNDMENT, CONTAINERS, INDIVIDUAL DRAIN SYSTEMS, AND OIL-WATER SEPARATORS—Continued

Unit operation	Part 63, subpart G (HON)	Part 63 (standard-standards)	Part 60, subpart QQQ (petroleum refinery)	Part 264, subpart CC (RCRA CC)	Part 265, subpart CC (RCRA CC)	Part 61, subpart FF (benzene waste)
Containers	§ 63.135	§§ 63.922 and 63.923 of Subpart PP.		§ 264.1086	§ 265.1087	§ 61.345
Individual Drain System	§ 63.136	§ 63.962 of Subpart RR.	§ 60.693–1			§ 61.346
Oil-water separators	§ 63.137	§§ 63.1042, 63.1043, and 63.1044 of Subpart VV.				§ 61.347

TABLE 4 TO SUBPART YYY—WASTEWATER TANKS REQUIRING CONTROLS AND CONTROL REQUIREMENTS

Capacity (m^3)	Vapor pressure (kPa)	Control requirements
<75		FR, IFR, EFR, or CVS and CD.
≥75 and <151	<13.1	FR, IFR, EFR, or CVS and CD.
	≥13.1	IFR, EFR, or CVS and CD.
≥151	<5.2	FR, IFR, EFR, or CVS and CD.
	≥5.2	IFR, EFR, or CVS and CD.

FR means fixed roof requirements in the applicable compliance option.
IFR means internal floating roof requirements in the applicable compliance option.
EFR means external floating roof requirements in the applicable compliance option.
CVS and CD means closed vent system routed to a control device requirements in the applicable compliance option.

TABLE 5 TO SUBPART YYY—COMPLIANCE OPTIONS FOR WASTEWATER TANKS, SURFACE IMPOUNDMENTS, CONTAINERS, INDIVIDUAL DRAIN SYSTEMS, AND OIL-WATER SEPARATORS

Headings within § 60.774	Part 63, subpart G (HON)	Part 63 (standard-standards)	Part 60, subpart QQQ (petroleum refinery)	Part 264, subpart CC (RCRA CC)	Part 265, subpart CC (RCRA CC)	Part 61, subpart FF (benzene waste)
Control Requirements.	If WMU subject to YYY or HON, then comply with HON control requirements.	Comply with subpart QQ, PP, RR, or VV control requirements, as applicable.	If WMU subject to YYY or Petroleum Refinery for individual drain systems, then comply with Petroleum Refinery control requirements.	If WMU subject to YYY and RCRA, part 264, then comply with RCRA, part 264 control requirements.	If WMU subject to YYY and RCRA, part 265, then comply with RCRA, part 265 control requirements.	If WMU subject to YYY and Benzene Waste, then comply with Benzene Waste control requirements.
Monitoring	If WMU subject to HON, can comply with either HON or YYY provisions; if WMU not subject to HON, comply with YYY provisions.	Comply with std-stds provisions or YYY provisions.	If WMU subject to Petroleum Refinery, then can comply with either Petroleum Refinery or YYY provisions; if WMU not subject to Petroleum Refinery, comply with YYY provisions.	If WMU subject to part RCRA, part 264, then can comply with either RCRA, part 264 or YYY provisions; if WMU not subject to RCRA, part 264, comply with YYY provisions.	If WMU subject to RCRA, part 265, then can comply with either RCRA, part 265 or YYY provisions; if WMU not subject to RCRA, part 265, comply with YYY provisions.	If WMU subject to Benzene Waste, then can comply with either Benzene Waste or YYY provisions; if WMU not subject to Benzene Waste, comply with YYY provisions.
Reporting	If WMU subject to HON, can comply with either HON or YYY provisions; if WMU not subject to HON, comply with YYY provisions.	Comply with std-stds provisions or YYY provisions *.	If WMU subject to Petroleum Refinery, then can comply with either Petroleum Refinery or YYY provisions; if WMU not subject to Petroleum Refinery, comply with YYY provisions.	If WMU subject to RCRA, part 264, then can comply with either RCRA, part 264 or YYY provisions; if WMU not subject to RCRA, part 264, comply with YYY provisions.	If WMU subject to RCRA, part 265, then can comply with either RCRA, part 265 or YYY provisions; if WMU not subject to RCRA, part 265, comply with YYY provisions **.	If WMU subject to Benzene Waste, then can comply with either Benzene Waste or YYY provisions; if WMU not subject to Benzene Waste, comply with YYY provisions.

TABLE 5 TO SUBPART YYY—COMPLIANCE OPTIONS FOR WASTEWATER TANKS, SURFACE IMPOUNDMENTS, CONTAINERS, INDIVIDUAL DRAIN SYSTEMS, AND OIL-WATER SEPARATORS—Continued

Headings within § 60.774	Part 63, subpart G (HON)	Part 63 (standard-standards)	Part 60, subpart QQQ (petroleum refinery)	Part 264, subpart CC (RCRA CC)	Part 265, subpart CC (RCRA CC)	Part 61, subpart FF (benzene waste)
Recordkeeping	If WMU subject to HON, can comply with either HON or YYY provisions; if WMU not subject to HON, comply with YYY provisions.	Comply with std-stds provisions or YYY provisions *.	If WMU subject to Petroleum Refinery, then can comply with either Petroleum Refinery or YYY provisions; if WMU not subject to Petroleum Refinery, comply with YYY provisions.	If WMU subject to RCRA, part 264, then can comply with either RCRA, part 264 or YYY provisions; if WMU not subject to RCRA, part 264, comply with YYY provisions.	If WMU subject to RCRA, part 265, then can comply with either RCRA, part 265 or YYY provisions; if WMU not subject to RCRA, part 265, comply with YYY provisions.	If WMU subject to Benzene Waste, then can comply with either Benzene Waste or YYY provisions; if WMU not subject to Benzene Waste, comply with YYY provisions.
Leak Detection	If WMU subject to HON, can comply with either HON or YYY provisions; if WMU not subject to HON, comply with YYY provisions.	Comply with std-stds provisions or YYY provisions.	If WMU subject to Petroleum Refinery, then can comply with either Petroleum Refinery or YYY provisions; if WMU not subject to Petroleum Refinery, comply with YYY provisions.	If WMU subject to RCRA, part 264, then can comply with either RCRA, part 264 or YYY provisions; if WMU not subject to RCRA, part 264, comply with YYY provisions.	If WMU subject to RCRA, part 265, then can comply with either RCRA, part 265 or YYY provisions; if WMU not subject to RCRA, part 265, comply with YYY provisions.	If WMU subject to Benzene Waste, then can comply with either Benzene Waste or YYY provisions; if WMU not subject to Benzene Waste, comply with YYY provisions.
Delay of repair	If WMU subject to HON, can comply with either HON or YYY provisions; if WMU not subject to HON, comply with YYY provisions.	Comply with std-stds provisions or YYY provisions.	If WMU subject to Petroleum Refinery, then can comply with either Petroleum Refinery or YYY provisions; if WMU not subject to Petroleum Refinery, comply with YYY provisions.	If WMU subject to RCRA, part 264, then can comply with either RCRA, part 264 or YYY provisions; if WMU not subject to RCRA, part 264, comply with YYY provisions.	If WMU subject to RCRA, part 265, then can comply with either RCRA, part 265 or YYY provisions; if WMU not subject to RCRA, part 265, comply with YYY provisions.	If WMU subject to Benzene Waste, then can comply with either Benzene Waste or YYY provisions; if WMU not subject to Benzene Waste, comply with YYY provisions.
Control device	If WMU subject to HON, can comply with either HON or YYY provisions; if WMU not subject to HON, comply with YYY provisions.	Comply with YYY provisions.	If WMU subject to Petroleum Refinery, then can comply with either Petroleum Refinery or YYY provisions; if WMU not subject to Petroleum Refinery, comply with YYY provisions.	If WMU subject to part RCRA 264, then can comply with either RCRA part 264 or YYY provisions; if WMU not subject to RCRA part 264, comply with YYY provisions.	If WMU subject to RCRA, part 265, then can comply with either RCRA part 265 or YYY provisions; if WMU not subject to RCRA part 265, comply with YYY provisions.	If WMU subject to Benzene Waste, then can comply with either Benzene Waste or YYY provisions; if WMU not subject to Benzene Waste, comply with YYY provisions.

* The owner or operator shall comply with the recordkeeping and reporting provisions in §§ 60.784 and 60.785 of this subpart when complying with the provisions for containers in subpart PP.

** The owner or operator shall comply with the reporting provisions in § 60.784 of this subpart when complying with the provisions of RCRA, 40 CFR part 265.

TABLE 6 TO SUBPART YYY—CONTROL REQUIREMENTS FOR ITEMS OF EQUIPMENT THAT MEET THE CRITERIA OF § 60.775

Item of equipment	Control requirement [a]
Drain or drain hub	(a) Tight fitting solid cover (TFSC); or (b) TFSC with a vent to either a fuel gas system or to a control device meeting the requirements of § 60.780; or (c) Water seal with submerged discharge or barrier to protect discharge from wind.
Manhole [b]	(a) TFSC; or (b) TFSC with a vent to a control device meeting the requirements of § 60.780; or (c) If the item is vented to the atmosphere, use a TFSC with a properly operating water seal at the entrance or exit to the item to restrict ventilation in the collection system. The vent pipe shall be at least 90 cm in length and not exceeding 10.2 cm in diameter.
Lift station	(a) TFSC; or (b) TFSC with a vent to a control device meeting the requirements of § 60.780; or

TABLE 6 TO SUBPART YYY—CONTROL REQUIREMENTS FOR ITEMS OF EQUIPMENT THAT MEET THE CRITERIA OF § 60.775—Continued

Item of equipment	Control requirement [a]
	(c) If the lift station is vented to the atmosphere, use a TFSC with a properly operating water seal at the entrance or exit to the item to restrict ventilation in the collection system. The vent pipe shall be at least 90 cm in length and not exceeding 10.2 cm in nominal inside diameter. The lift station shall be level controlled to minimize changes in the liquid level.
Trench	(a) TFSC; or
	(b) TSFC with a vent to a control device meeting the requirements of § 60.780; or
	(c) If the item is vented to the atmosphere, use a TFSC with a properly operating water seal at the entrance or exit to the item to restrict ventilation in the collection system. The vent pipe shall be at least 90 cm in length and not exceeding 10.2 cm in nominal inside diameter.
Pipe	Each pipe shall have no visible gaps in joints, seals, or other emission interfaces.
Oil/Water separator	(a) Equip with a fixed roof and closed vent system that routes vapors to a control device meeting the requirements of § 60.780; or
	(b) Equip with a floating roof that meets the equipment specifications of § 60.693 (a)(1)(i), (a)(1)(ii), (a)(2), (a)(3), and (a)(4).
Tank [c]	Maintain a fixed roof [d]. If the tank is sparged [e] or used for heating or treating by means of an exothermic reaction, a fixed roof and a closed vent system shall be maintained that routes the VOC vapors to a control device that meets the requirements of § 60.780.

[a] Where a tight fitting solid cover (TFSC) is required, it shall be maintained with no visible gaps or openings, except during periods of sampling, inspection, or maintenance.
[b] Manhole includes sumps and other points of access to a conveyance system.
[c] Applies to tanks with capacities of 38 m^3 or greater.
[d] A fixed roof may have openings necessary for proper venting of the tank, such as pressure/vacuum vent, j-pipe vent.
[e] The liquid in the tank is agitated by injecting compressed air or gas.

TABLE 7 TO SUBPART YYY—MONITORING REQUIREMENTS FOR TREATMENT PROCESSES

To comply with	Parameters to be monitored	Frequency	Methods
1. Required mass removal of each organic treated in a properly operated biological treatment unit § 60.779.	Appropriate parameters as specified in § 60.781(c) and approved by the permitting authority.	Appropriate frequency as specified in § 60.781(c) and as approved by permitting authority.	Appropriate methods as specified in § 60.781(c) and as approved by permitting authority.
2. Design steam stripper § 60.779(d).	Steam flow rate	Continuously	Integrating steam flow monitoring device equipped with a continuous recorder.
	Wastewater feed mass flow rate	Continuously	Liquid flow meter installed at stripper influent and equipped with a continuous recorder.
	Wastewater feed temperature	Continuously	Liquid temperature monitoring device installed at stripper influent and equipped with a continuous recorder.
3. Alternative monitoring parameters.	Other parameters may be monitored upon approval from the Administrator in accordance with the requirements specified in § 60.781(d).		

TABLE 8 TO SUBPART YYY—MONITORING REQUIREMENTS FOR CONTROL DEVICES

Control device	Monitoring equipment required	Parameters to be monitored	Frequency
All control devices	1. Flow indicator installed at all bypass lines to the atmosphere and equipped with continuous recorder [b] *or.*	1. Diversion to the atmosphere from the control device *or.*	Hourly records of whether the flow indicator was operating and whether a diversion was detected at any time during each hour. Record and report the times of all periods when emissions are diverted through a bypass line or the flow indicator is not operating.
	2. Valves sealed closed with car-seal or lock-and-key configuration.	2. Monthly inspections of sealed valves	Monthly.
Thermal Incinerator	Temperature monitoring device installed in firebox or in ductwork immediately downstream of firebox [a] and equipped with a continuous recorder [b].	Firebox temperature	Continuous.

TABLE 8 TO SUBPART YYY—MONITORING REQUIREMENTS FOR CONTROL DEVICES—Continued

Control device	Monitoring equipment required	Parameters to be monitored	Frequency
Catalytic Incinerator	Temperature monitoring device installed in gas stream immediately before and after catalyst bed and equipped with a continuous recorder [b].	1. Temperature upstream and downstream of catalyst bed. 2. Temperature difference across catalyst bed.	Continuous.
Flare	Heat sensing device installed at the pilot light and equipped with a continuous recorder [b].	Presence of a flame at the pilot light	Hourly records of whether the monitor was continuously operating and whether the pilot flame was continuously present during each hour.
Boiler or process heater <44 megawatts and vent stream is not mixed with the primary fuel.	Temperature monitoring device installed in firebox [a] and equipped with continuous recorder [b].	Combustion temperature	Continuous.
Condenser	Temperature monitoring device installed at condenser exit and equipped with continuous recorder [b].	Condenser exit (product side) temperature.	Continuous.
Carbon Adsorber (Regenerative).	Integrating regeneration stream flow monitoring device having an accuracy of ±10 percent, *and*. Carbon bed temperature monitoring device.	1. Total regeneration stream mass or volumetric flow during carbon bed regeneration cycle(s). 2. Temperature of carbon bed after regeneration [and within 15 minutes of completing any cooling cycle(s)].	For each regeneration cycle, record the total regeneration stream mass or volumetric flow. For each regeneration cycle and within 15 minutes of completing any cooling cycle, record the carbon bed temperature.
Carbon Adsorber (Non-regenerative).	Organic compound concentration monitoring device [c].	Organic compound concentration of adsorber exhaust.	Daily or at intervals no greater than 20 percent of the design carbon replacement interval, whichever is greater.
Alternative monitoring parameters.	Other parameters may be monitored upon approval from the Administrator in accordance with the requirements in § 60.781(e)(3).		

[a] Monitor may be installed in the firebox or in the ductwork immediately downstream of the firebox before any substantial heat exchange is encountered.
[b] "Continuous recorder" is defined in § 60.771 of this subpart.
[c] As an alternative to conducting this monitoring, an owner or operator may replace the carbon in the carbon adsorption system with fresh carbon at a regular predetermined time interval that is less than the carbon replacement interval that is determined by the maximum design flow rate and organic concentration in the gas stream vented to the carbon adsorption system.

TABLE 9 TO SUBPART YYY—INFORMATION ON PROCESS WASTEWATER STREAMS TO BE SUBMITTED WITH NOTIFICATION OF COMPLIANCE STATUS [a, b]

Process unit identification code [c]	Stream identification code	VOC concentration (ppmw) [d, e]	Flow rate (lpm) [e, f]	Group 1 or Group 2 [g]	Compliance approach [h]	Treatment process(es) identification [i]	Waste management unit(s) identification	Intended control device

[a] The information specified in this table 9 must be submitted; however, it may be submitted in any format. This table 9 presents an example format.
[b] Other requirements for the Notification of Compliance Status are specified in § 60.784(c).
[c] Also include a description of the process unit (e.g., benzene process unit).
[d] Except when § 60.773(c) is used, annual average concentration as specified in § 60.773(b) and § 60.782.
[e] When § 60.773(c) is used, indicate the wastewater stream is a designated Group 1 wastewater stream.
[f] Except when § 60.773(c) is used, annual average flowrate as specified in § 60.773(b) and § 60.782.
[g] Indicate whether stream is Group 1 or Group 2.
[h] Cite § 60.779 compliance option used.
[i] Identification codes should correspond to those listed in Table 10 of this subpart.

TABLE 10 TO SUBPART YYY—INFORMATION FOR TREATMENT PROCESSES TO BE SUBMITTED WITH NOTIFICATION OF COMPLIANCE STATUS [a,b]

Treatment process identification [c]	Description [d]	Wastewater stream(s) treated [e]	Monitoring parameters [f]

[a] The information specified in this table 10 must be submitted; however, it may be submitted in any format. This table 10 presents an example format.
[b] Other requirements for the Notification of Compliance Status are specified in § 60.784(c) of this subpart.
[c] Identification codes should correspond to those listed in Table 9 of this subpart.
[d] Description of treatment process (e.g., steam stripper).
[e] Stream identification code for each wastewater stream treated by each treatment unit. Identification codes should correspond to entries listed in Table 9 of this subpart.
[f] Parameter(s) to be monitored or measured in accordance with Table 7 and § 60.781 of this subpart.

TABLE 11 TO SUBPART YYY—INFORMATION FOR WASTE MANAGEMENT UNITS TO BE SUBMITTED WITH NOTIFICATION OF COMPLIANCE STATUS [a, b]

Waste management unit Identification [c]	Description [d]	Wastewater stream(s) received or managed [e]

[a] The information specified in this table 11 must be submitted; however, it may be submitted in any format. This table 11 presents an example format.
[b] Other requirements for the Notification of Compliance Status are specified in § 60.784(c) of this subpart.
[c] Identification codes should correspond to those listed in Table 9 of this subpart.
[d] Description of waste management unit.
[e] Stream identification code for each wastewater stream received or managed by each waste management unit. Identification codes should correspond to entries listed in Table 9 of this subpart.

TABLE 12 TO SUBPART YYY—INFORMATION ON RESIDUALS TO BE SUBMITTED WITH NOTIFICATION OF COMPLIANCE STATUS [a, b]

Residual identification [c]	Residual description [d]	Wastewater stream identification [e]	Treatment process [f]	Fate [g]	Control device identification code	Control device description [h]	Control device efficiency [i]

[a] The information specified in this table 12 must be submitted; however, it may be submitted in any format. This table 12 presents an example format.
[b] Other requirements for the Notification of Compliance Status are specified in § 60.784(c) of this subpart.
[c] Name or identification code of residual removed from Group 1 wastewater stream.
[d] Description of residual (e.g., steam stripper A–13 overhead condensates).
[e] Identification of stream from which residual is removed.
[f] Treatment process from which residual originates.
[g] Indicate whether residual is sold, returned to production process, or returned to waste management unit or treatment process; or whether VOC mass of residual is destroyed by 99 percent.
[h] If the fate of the residual is such that the VOC mass is destroyed by 99 percent, give description of device used for VOC destruction.
[i] The fate of the residual is such that the VOC mass is destroyed by 99 percent, provide an estimate of control device efficiency and attach substantiation in accordance with § 60.784(c)(5) of this subpart.

TABLE 13 TO SUBPART YYY—SEMIANNUAL REPORTING REQUIREMENTS FOR CONTROL DEVICES [§ 60.784(F)]

Control Device	Reporting Requirements
Thermal Incinerator	1. Report all daily average [a] temperatures that are above the maximum or below the minimum operating parameter value established in the NCS [b] or operating permit and all operating days when insufficient monitoring data are collected. [c]
Catalytic Incinerator	1. Report all daily average [a] upstream temperatures that are above the maximum or below the minimum operating parameter value established in the NCS [b] or operating permit.

TABLE 13 TO SUBPART YYY—SEMIANNUAL REPORTING REQUIREMENTS FOR CONTROL DEVICES [§ 60.784(F)]—Continued

Control Device	Reporting Requirements
	2. Report all daily average [a] temperature differences across the catalyst bed that are above the maximum or below the minimum operating parameter value established in the NCS [b] or operating permit. 3. Report all operating days when insufficient monitoring data are collected. [c]
Boiler or Process Heater with a design heat input capacity less than 44 megawatts and vent stream is not mixed with the primary fuel.	1. Report all daily average [a] firebox temperatures that are above the maximum or below the minimum operating parameter value established in the NCS [b] or operating permit and all operating days when insufficient monitoring data are collected. [c]
Flare	1. Report the duration of all periods when all pilot flames are absent.
Condenser	1. Report all daily average [a] exit temperatures that are above the maximum or below the minimum operating parameter value established in the NCS [b] or operating permit and all operating days when insufficient monitoring data are collected. [c]
Carbon Adsorber	1. Report all carbon bed regeneration cycles when the total regeneration stream mass or volumetric flow is above the maximum or below the minimum operating parameter value established in the NCS [b] or operating permit. 2. Report all carbon bed regeneration cycles during which the temperature of the carbon bed after regeneration is above the maximum or below the minimum operating parameter value established in the NCS [b] or operating permit. 3. Report all operating days when insufficient monitoring data are collected. [c]
All Control Devices	1. Report the times and durations of all periods when the vent stream is diverted through a bypass line or the monitor is not operating, or 2. Report all monthly inspections that show the valves are moved to the diverting position or the seal has been changed.

[a] The daily average is the average of all values recorded during the operating day, as specified in § 60.785(e) of this subpart.
[b] NCS = Notification of Compliance Status described in § 60.784(c) of this subpart.
[c] The semiannual reports shall include the duration of periods when monitoring data are not collected for each excursion as defined in § 60.784(d)(3) of this subpart.

TABLE 14 TO SUBPART YYY—COMPOUND AND DEFAULT BIORATES USED FOR COMPLIANCE DEMONSTRATIONS FOR ENHANCED BIOLOGICAL TREATMENT PROCESSES (SEE § 60.783(H))

Compound name	Biorate, K1 L/g MLVSS-hr
Acetonitrile	0.100
Acetophenone	0.538
Acrylonitrile	0.750
Biphenyl	5.643
Chlorobenzene	10.000
Dichloroethyl Ether (bis (2-chloroethyl ether)	0.246
Diethyl Sulfate	.0105
Dimethyl Hydrazine (1,1-)	0.227
Dimethyl Sulfate	0.178
Dinitrophenol (2,4-)	0.620
Dinitrotoluene (2,4-)	0.784
Dioxane (1,4-) (1,4-diethylene oxide)	0.393
Ethylene Glycol Dimethyl Ether	0.364
Ethylene Glycol Monobutyl Ether Acetate	0.496
Ethylene Glycol Monomethyl Ether Acetate	0.159
Hexachlorobenzene	16.179
Isophorone	0.598
Methanol	0.200
Methyl Methacrylate	4.300
Nitrobenzene	2.300
Toluidine (-o)	0.859
Trichlorobenzene (1,2,4-)	4.393
Trichlorophenol (2,4,5-)	4.477
Triethylamine	1.064

3. Part 60 is amended by adding appendix J to read as follows:

Appendix J to Part 60—How to Determine Henry's Law Constants, Fm Values, Fr Values, and Fe Values for Organic Compounds

1. *Use of Appendix and General Information.* This appendix has four sections. Section 2 contains the procedures for determining Henry's law constants, fraction measured (Fm) values, fraction removed values (Fr), and fraction emitted (Fe) values for an individual chemical. Section 3 describes how to locate certain resources. Section 4 contains five tables and thirteen forms.

1.1 You should use this appendix if you need to:

1. Determine whether a chemical has a Henry's law constant at 25° C that is less than 0.1 y/x atmosphere per mole fraction (see section 2.1).

2. Determine a fraction measured (Fm) value for a chemical (see section 2.2).

3. Subtract the concentration of a chemical from a Method 25D concentration (see section 2.3).

4. Determine the fraction removed (Fr) value for a chemical that has a Henry's law constant at 25° C that is greater than or equal to 0.1 y/x atmosphere per mole fraction (see section 2.4).

5. Determine the fraction emitted (Fe) value for a chemical that has a Henry's law constant at 25° C that is greater than or equal to 0.1 y/x atmosphere per mole fraction (see section 2.5).

6. Calculate a Henry's law constant at a specific temperature using a Henry's law constant at a different temperature for the same chemical (see section 2.6).

1.2 This appendix requires documentation for some procedures. The referencing subpart, i.e., the rule to which you are complying, may require additional recordkeeping and may specify records concerning this appendix that are to be included in reports.

1.3 When the term ''WATER8'' is used in this appendix, the term ''WATER8, or updates to WATER8'' must be used for the purposes of this appendix. When the term ''CHEM9'' is used in this appendix, the term ''CHEM9, or updates to CHEM9'' must be used for the purposes of this appendix. When the terms ''waste'' or ''wastewater'' are used in this appendix, the term ''waste or wastewater, as applicable to the referencing subpart'' must be used for the purposes of this appendix. When the terms ''Henry's law constant'' or ''Henry's law constants'' are used in this appendix, the terms ''Henry's law constant(s) with units of atmosphere per mole fraction'' must be used for the purposes of this subpart.

2. *Procedures.*

2.1 *How to determine whether a chemical has a Henry's law constant at 25° C that is less than 0.1 y/x.* You must use one of the following to determine whether a chemical has a Henry's law constant that is less than 0.1 y/x atmosphere per mole fraction.

2.1.1 *Use Table 1.* The chemicals listed in Table 1 have a Henry's law constant at 25° C that is less than 0.1 y/x atmosphere per mole fraction.

2.1.2 *Use CHEM9 or WATER8.* Use CHEM9 or WATER8 to determine the Henry's law constant at 25° C. You must know compound properties, such as solubility in water and vapor pressure, and the structure of the compound to estimate a Henry's law constant using CHEM9 or WATER8.

2.1.3 *Determine experimentally.* The Henry's law constant may be measured by several laboratory techniques. These techniques can be categorized as either two phase closed systems techniques or open system techniques.

2.1.3.1 *Two phase closed systems.* For two phase closed system techniques, the volume of each phase and two concentration measurements are needed. The concentration measurements are: (1) concentration in one of the phases, and (2) either the concentration in the other phase or the total concentration in both phases. Use Form 1 to calculate the Henry's law constant for two phase closed systems.

2.1.3.2 *Open systems.* For open systems, gas is passed through a liquid volume containing the compound. The Henry's law constant is calculated from the rate of stripping of the compound from the water. Use Form 2 to calculate the Henry's law constant for open systems.

2.1.4 *Calculate a Henry's law constant at 25° C from a Henry's law constant at a different temperature for the same chemical.* Use the procedures specified in section 2.6 to calculate a Henry's law constant at 25° C from a Henry's law constant at a different temperature for the same chemical.

2.2. *How to determine a Fm value for a chemical.* Fm means compound-specific fraction measured factor, and it has the units of mass measured by Method 25D divided by the total mass in the wastewater. You must use one of the following to determine the Fm value for a chemical.

2.2.1 *Use Table 1 or Table 2.* To determine the Fm value for a chemical with a Henry's law constant at 25° C that is less than 0.1 y/x atmosphere per mole fraction, use the Fm value listed for the chemical in Table 1. To determine the Fm value for a chemical with a Henry's law constant at 25° C that is greater than or equal to 0.1 y/x, use the Fm value listed for the chemical in Table 2.

Note to section 2.2.1: Table 1 and Table 2 include Fm values for Method 25D and for Method 305. Unless otherwise specified in this appendix or the referencing subpart, use the Fm values for Method 25D.

2.2.2 *Use CHEM9.* Use CHEM9 to determine an Fm value. You must know the structure of the chemical and certain other compound properties, e.g., boiling point, Antoine's coefficients, vapor pressure, and solubility in water, to estimate an fm value using CHEM9. The accuracy of the computer estimation procedure depends on the nature of the compound and the quality of the available data. The procedure is flexible in that the method can be used with a variety of different types of compound data. You must confirm and document the compound properties used as inputs for CHEM9 and the lack of availability for missing compound properties. In some cases, this method is not accurate, especially with missing compound properties. Before accepting the estimation values of CHEM9 in these cases, you must document the consistency of the predicted values with other related experimental data.

2.2.3 *Measure the Fm value.* Spike a sample of waste with a known amount of the compound of interest. Measure the concentration of the sample using Method 25D. The Fm value for the recovery of a specific chemical is the ratio of the Method 25D concentration to the actual concentration in the waste sample. You must minimize loss of organic compounds during sample collection and analysis, and maintain sample integrity. An example of acceptable sampling and handling procedures are the sampling and handling requirements in Method 25D.

2.2.4 *Extrapolating a Method 25D Fm Value from a Method 305 Fm value.* Method 305 measures the recovered concentration, not the actual concentration in the wastewater. The Method 25D correction value may be obtained from the Method 305 value and the ratio of the Method 25D value to the Method 305 value for that compound. This ratio for a compound is independent of the wastewater and may be determined once for each compound.

2.3 *How to subtract a chemical from a Method 25D concentration.* You must follow the procedures specified in sections 2.3.1 through 2.3.5 to subtract a chemical's concentration from the total concentration measured by Method 25D. You may only subtract from the total Method 25D concentration compounds for which you have a measured concentration (i.e., you must not subtract compounds for which test results are below the quantification limit.) If an Fm value cannot be determined for a chemical, the concentration of the chemical cannot be subtracted from the Method 25D results. You must follow the procedures in Form 3 to subtract a chemical from a Method 25D concentration. Form 4 provides an example.

2.3.2 *Determine the concentration for each chemical in the wastewater stream that will be subtracted from the Method 25D concentration.* The concentration for each chemical must be determined using a method and sampling procedure specified in the referencing subpart. Methods other than Method 25D and Method 305 are considered alternative methods for the purposes of this appendix.

2.3.3 *Determine the correct Fm value.* If an Fm value is needed, use the procedures in section 2.2 of this appendix to determine the correct Fm value.

2.3.4 *Adjust the concentration of chemicals which may be subtracted from the Method 25D concentration.* You must multiply the concentration of the chemical measured by the alternative method (i.e., a method that is not Method 25D or Method 305 and that is specified in the referencing subpart) by the Method 25D Fm. The product will be the adjusted concentration for that chemical. This adjustment must be done for each chemical you subtract from the concentration measured by Method 25D.

2.3.5 *Subtract.* Subtract the product(s) you calculated from the Method 25D concentration.

2.4 *How to determine an Fr value for a chemical with a Henry's law constant at 25° C that is greater than or equal to 0.1 y/x.* Fr means fraction removal value and is unitless. You must use one of the following to determine a Fr value.

2.4.1 *Use Table 2.* Use the Fr value listed for the chemical in Table 2. The chemicals listed in table 2 have a Henry's law constant at 25° C that is greater than or equal to 0.1 y/x.

2.4.2 *Use 0.99.* Assign an Fr value of 0.99 to any chemical. This is the highest Fr value that is assigned to a chemical.

2.4.3 *Use CHEM9.* Use CHEM9 to determine the Fr value of a chemical. You must know the compound structure and the Henry's law constant at 100° C to estimate an Fr value using CHEM9. The Henry's law constant at 100° C for a chemical must be determined as specified in either section 2.4.3.1, 2.4.3.2, or 2.4.3.3. The method used to determine the Henry's law constant at 100° C for a chemical must be documented.

2.4.3.1 *Determine Henry's law at 100° C experimentally.* The Henry's law constant

may be measured by several laboratory techniques. These techniques can be categorized as either two phase closed systems techniques or open system techniques.

2.4.3.1.1 *Two phase closed systems.* For two phase closed system techniques, the volume of each phase and two concentration measurements are needed. The concentration measurements are: (1) concentration in one of the phases, and (2) either the concentration in the other phase or the total concentration in both phases. Use Form 1 to calculate the Henry's law constant for two phase closed systems.

2.4.3.1.2 *Open systems.* For open systems, gas is passed through a liquid volume containing the compound. The Henry's law constant is calculated from the rate of stripping of the compound from the water. Use Form 2 to calculate the Henry's law constant for open systems.

2.4.3.2 *Calculate a Henry's law constant at 100° C from a Henry's law constant at a different temperature for the same chemical.* Use the procedures in section 2.6 to calculate a Henry's law constant at 100° C from a Henry's law constant at a different temperature for the same chemical.

2.4.3.3 *Literature Value.* Experimental values of Henry's law constants at a 100° C for some chemicals are available in data bases or reported in the literature. You must provide the reference for and description of any database or literature you used.

2.5 *How to determine an Fe value for a chemical that has a Henry's law constant at 25° C that is greater than or equal to 0.1 y/x.* Use the appropriate Fe value as specified in the referencing subpart.

2.5.1 *Default Fe values for emissions from both the individual drain system and the treatment process.* You must measure the temperature of the wastewater stream at the point of determination, unless another location is specified by the referencing subpart. If the temperature of the wastewater stream is less than or equal to 35° C, you may use the default Fe values listed in either Table 2 or Table 3. If the temperature of the wastewater stream is greater than 35° C, you must use the default Fe values listed in Table 3.

2.5.1.1 *Use Table 2.* To use Table 2, use the default Fe value listed for the chemical in Table 2.

2.5.1.2 *Use Table 3.* You must either use a default Fe listed in Table 3 or use Table 3 to interpolate an Fe value. To use Table 3, you must determine the chemical's Henry's law constant at the temperature you measured for the wastewater stream. You must find this Henry's law constant in the table and select an Fe value greater than or equal to the Fe value that corresponds to the Henry's law constant.

2.5.2 *Site-specific Fe values for emissions from the individual drain system.* Use WATER8 and Forms 6 and 7 for each type of waste management unit modeled and Forms 8 through 13, as appropriate for the different types of waste management units. (Note that this Fe value does not include Fe values for the treatment process.)

2.5.3 *Default Fe values for emissions from the biological treatment process (Fet).* The default Fe values in Table 4 and Table 5 are Fe values for the biological treatment system (i.e., the wastewater treatment plant) and have been assigned the abbreviation ''Fet.'' You must measure the temperature of the wastewater stream(s) treated in the biological treatment system at the inlet to the biological treatment system (e.g., at the bar screen). If the temperature of the wastewater stream(s) is less than or equal to 35° C, you must use either Table 4 or Table 5 to determine the Fet value. If the temperature of the wastewater stream is greater than 35° C, you must use Table 5 to determine the Fet value.

2.5.3.1 *Use Table 4.* To use Table 4, use the default Fet value listed for the chemical in Table 4.

2.5.3.2 *Use Table 5.* To use Table 5, you must either use a default Fet listed in Table 5 or use Table 5 to interpolate an Fet value. You must determine the chemical's Henry's law constant at the temperature you measured for the wastewater stream. You must find this Henry's law constant in the table and select an Fet value greater than or equal to the Fet value that corresponds to the Henry's law constant.

2.6 *How to calculate a Henry's law constant from a Henry's law constant at a different temperature for the same chemical.* Use WATER8 and Form 5 to estimate a Henry's law constant from a Henry's law constant at a different temperature for the same chemical.

3. *Location of resources.*

3.1 *Where to find information on CHEM9 and WATER8.*

3.1.1 *CHEM9 and WATER8 access via Internet.* You can find CHEM9 and WATER8 on the Internet by accessing EPA's Technology Transfer Network (TTN) via the Internet. The Internet address is: http://www.epa.gov/ttn/chief/software.html. If you need more information on the TTN, contact the systems operator at (919) 541–5384.

3.1.2 *Procedures used in CHEM9.* Reports describing the CHEM9 procedures for estimating Fm, Fr, and Fe values are in Docket Number A–94–32, Item IV–A–1. The database for CHEM9 is not available as a hard copy.

Docket No. A–94–32 is available for public inspection and copying between 8:00 a.m. and 5:30 p.m., Monday through Friday, at the EPA's Air and Radiation Docket and Information Center, Waterside Mall, Room M–1500, first floor, 401 M Street SW, Washington, DC 20460, or by calling (202) 260–7548 or 260–7549. A reasonable fee may be charged for copying.

3.2 *Methods.*

Method 25D can be found in 40 CFR part 60, Appendix A.

Method 305 can be found in 40 CFR part 63, Appendix A.

4. *Tables and Forms.* This section contains 5 tables and 13 forms.

TABLE 1 OF APPENDIX J.—FM VALUES FOR HENRY'S LAW CONSTANTS AT 25°C LESS THAN 0.1 (Y/X) ATMOSPHERES PER MOLE FRACTION

[Use with Section 2.1]

Compound	Y/X	Fm 25D	Fm 305
1H IMIDAZOLE	0.000004	0.001	0.001
2,4 D	0.000000	0.151	0.167
2,4,5 BENZOIC ACID	0.000007	0.000	0.000
2-HYDROXYETHANAL	0.001400	0.031	0.059
3,4-DIMETHYLPHENOL xylenol	0.004200	0.018	0.017
3,5-DIBROMO-4HYDROXYBENZONITRILE	0.011700	0.021	0.033
3-OXOPROPANOIC ACID	0.007900	0.002	0.004
4-OXOBUTANOIC ACID	0.011100	0.004	0.006
5-OXOPENTANOIC ACID	0.013900	0.005	0.007
ACETALDOL	0.001900	0.011	0.016
ACETAMIDE	0.000100	0.305	0.463
ACETYL-2-THIOUREA, 1-	0.001600	0.034	0.053
ACETYL-5-HYDROXYPIPERIDINE 3	0.038900	0.001	0.001
ACETYLAMINOFLUORENE, 2-	0.074400	0.020	0.018
ACETYLPIPERIDINE 3	0.006900	0.151	0.175
ACRIDINE ORANGE*	0.013300	0.050	0.049
ACRIDINE YELLOW*	0.000400	0.001	0.001
ACRYLAMIDE	0.000015	0.003	0.003
ACRYLIC ACID	0.011000	0.431	0.643
ADAMANTANE DICARBOXYLIC ACID	0.002600	0.001	0.001

TABLE 1 OF APPENDIX J.—FM VALUES FOR HENRY'S LAW CONSTANTS AT 25°C LESS THAN 0.1 (Y/X) ATMOSPHERES PER MOLE FRACTION—Continued

[Use with Section 2.1]

Compound	Y/X	Fm 25D	Fm 305
ADENINE	0.000005	0.001	0.002
ADIPIC ACID	0.000003	0.001	0.001
ADIPONITRILE	0.000700	0.004	0.004
ALACHLOR (M)	0.001800	0.090	0.090
alpha-PICOLINE	0.025900	0.870	0.842
AMETRYN	0.000001	0.001	0.001
AMINOBIPHENYL, 4-	0.017200	0.012	0.011
AMINOETHYLPIPERAZINE	0.000021	0.001	0.001
AMINOPHENOL, 3-	0.003400	0.035	0.040
AMINOPYRIDINE, 4-	0.000005	0.000	0.001
ANILINE	0.097800	0.142	0.138
ANISIDINE, o-	0.097200	0.011	0.013
ANTHRAQUINONE	0.000200	0.001	0.001
ATRAZINE (M)	0.000200	0.117	0.117
BENZENE ACETIC ACID	0.025500	0.014	0.015
BENZENE ARSONIC ACID (M)	0.000006	0.124	0.124
BENZENE DICARBOXYLIC ACID	0.000900	0.001	0.001
BENZENE SULFONIC ACID (M)	0.043900	0.146	0.146
BENZIDINE	0.000001	0.000	0.000
BENZO (A) ANTHRACENE	0.000077	0.121	0.095
BENZO(A) PYRENE	0.000077	1.267	1.000
BENZO (ghi) PERYLENE	0.002800	0.006	0.005
BENZO (k) FLUORANTHENE	0.000059	0.001	0.001
BENZOIC ACID	0.001000	0.003	0.003
BENZOTHIAZOLONE 2 (2H)-*	0.065600	0.121	0.123
BENZYL ALCOHOL	0.033900	0.069	0.067
BHC, gamma-	0.027400	1.035	0.973
BIS (2-ETHYLHEXYL) PHTHALATE	0.016700	0.317	0.327
BROMOCHLOROMETHYL ACETATE	0.010400	0.342	0.541
BUTYL CELLOSOLVE	0.014600	0.095	0.120
BUTYL-m-CRESOL MONO T	0.052100	0.042	0.039
BUTYL-p-CRESOL MONO T	0.052100	0.042	0.039
BUTYRIC ACID	0.096100	0.089	0.124
CAPROLACTAM	0.000200	0.002	0.003
CAPROLACTONE	0.071100	0.205	0.248
CATECHOL	0.000002	0.000	0.000
CHLORACETOPHENONE, 2-	0.048400	0.161	0.152
CHLORO (-p) CRESOL (-m)	0.009100	0.029	0.028
CHLORO-1, 2-ETHANE DIOL (M)	0.005400	0.999	0.999
CHLORO-2, 5-DIKETOPYRROLIDINE 3 (M)	0.003700	0.430	0.430
CHLOROACETIC ACID	0.003600	0.020	0.028
CHLOROANILINE, p-	0.014700	0.069	0.067
CHLOROBENZOPHENONE (PARA)	0.000200	0.313	0.283
CHLOROBENZYLATE	0.000028	0.000	0.000
CHLOROHYDRIN, a 3 CHLORO 1, 2 PROPAN	0.000300	0.003	0.004
CHLOROPHENOL POLYMERS (M)	0.005600	0.000	0.000
CHLOROPHENOL-4	0.062200	0.032	0.031
CHOLINE CHLORIDE	0.000600	0.012	0.015
CHRYSENE	0.000066	0.006	0.004
CITRIC ACID	0.000000	0.000	0.000
CREOSOTE (M)	0.004400	0.025	0.025
CRESOL	0.090000	0.049	0.047
CRESOL (-m)	0.039400	0.035	0.033
CRESOL (-o)	0.091200	0.057	0.055
CRESOL (-p)	0.039700	0.028	0.027
CUMYLPHENOL-4	0.093300	0.002	0.002
CYANIDE methyl	0.001500	0.328	0.417
CYANOMETHYL BENZOATE 4 (M)	0.000700	0.128	0.128
DIAZINON	0.001200	0.001	0.001
DIBENZO (a,h) ANTHRACENE	0.002100	0.001	0.001
DIBUTYLPHTHALATE	0.015600	0.002	0.002
DICHLORO—(2,6)-NITROANILINE (4) (M)	0.000400	0.122	0.122
DICHLOROANILINE 2, 3	0.029900	0.049	0.047
DICHLOROBENZONITRILE,2 ,6-	0.064400	0.338	0.322
DICHLOROPHENOL 2, 5	0.086100	0.151	0.148
DICHLOROTETRAHYDROFURAN 3, 4 (M)	0.007800	0.303	0.303
DICHLORVOS	0.019000	0.008	0.011
DIETHANOLAMINE	0.000000	0.000	0.000
DIETHYL (N, N) ANILINE	0.003200	0.964	0.907

TABLE 1 OF APPENDIX J.—FM VALUES FOR HENRY'S LAW CONSTANTS AT 25°C LESS THAN 0.1 (Y/X) ATMOSPHERES PER MOLE FRACTION—Continued

[Use with Section 2.1]

Compound	Y/X	Fm 25D	Fm 305
DIETHYL PROPIONAMIDE, 2aN (M)	0.001100	0.089	0.089
DIETHYLENE GLYCOL	0.077800	0.000	0.000
DIETHYLENE GLYCOL DIMETHYL ETHER	0.083800	0.105	0.150
DIETHYLENE GLYCOL MONOBUTYL ETHER	0.001200	0.003	0.003
DIETHYLENE GLYCOL MONOETHYL ETHER	0.002700	0.005	0.007
DIETHYLENE GLYCOL MONOETHYL ETHER A	0.035800	0.007	0.010
DIETHYLENE GLYCOL MONOMETHYL ETHER	0.003200	0.004	0.007
DIETHYLENETRIAMINE	0.000001	0.000	0.000
DIETHYLHYDRAZINE N, N	0.019000	0.184	0.253
DIETHYLTHIOPHOSPHATEBENZO M ETHYL P	0.001200	0.000	0.000
DIMETHOATE (M)	0.050900	0.110	0.110
DIMETHYL CARBAMOYL CHLORIDE	0.024700	0.116	0.151
DIMETHYL DISULFIDE	0.083300	0.455	1.000
DIMETHYL FORMAMIDE	0.010600	0.009	0.013
DIMETHYL HYDRAZINE (1, 1)	0.091100	0.277	0.382
DIMETHYL PHTHALATE	0.054800	0.006	0.007
DIMETHYLAMINOAZOBENZENE,4-	0.004100	0.022	0.023
DIMETHYLBENZ (A) ANTHRACENE (7, 12)	0.000015	0.008	0.006
DIMETHYLBENZIDINE 3,3	0.000075	0.000	0.000
DIMETHYLSULFONE	0.001300	0.002	0.003
DIMETHYLSULFOXIDE	0.026900	0.037	0.057
DINITRO-o-CRESOL (4, 6)	0.078000	0.009	0.016
DIPHENYLHYDRAZINE (1, 2)	0.013600	0.462	0.448
DIPROPYLENE GLYCOL	0.000900	0.002	0.003
ENDRIN	0.084400	0.005	0.004
EPINEPHRINE (M)	0.020300	0.133	0.133
ETHANOLAMINE (mono-)	0.017800	0.004	0.007
ETHYL CARBAMATE	0.000600	0.004	0.008
ETHYL MORPHOLINE, ethyl diethylene	0.011300	0.048	0.059
ETHYLENE GLYCOL	0.000100	0.002	0.005
ETHYLENE GLYCOL MONOBUTYL ETHER	0.029200	0.056	0.071
ETHYLENE GLYCOL MONOETHYL ETHER	0.061700	0.111	0.144
ETHYLENE GLYCOL MONOETHYL ETHER AC	0.098600	0.057	0.089
ETHYLENE GLYCOL MONOMETHYL ETHER	0.045800	0.101	0.163
ETHYLENE GLYCOL MONOPHENYL ETHER	0.003800	0.005	0.005
ETHYLENE GLYCOL MONOPROPYL ETHER	0.047400	0.182	0.242
ETHYLENE THIOUREA	0.000008	0.001	0.002
ETHYLPHENOL, 3-	0.005600	0.021	0.020
FLUOROACETIC ACID, SODIUM SALT*	0.000300	0.750	1.000
FORMALDEHYDE	0.018700	0.533	1.000
FORMAMIDE	0.065600	0.092	0.170
FORMIC ACID	0.038900	0.078	0.225
FUMARIC ACID	0.092200	0.000	0.000
GLUTARIC ACID	0.001100	0.000	0.000
GLYCERIN (GLYCEROL)	0.000700	0.000	0.000
GLYCINAMIDE	0.008200	0.019	0.089
GLYOXYLIC ACID	0.006200	0.001	0.002
GLYPHOSATE	0.000400	0.005	0.009
GUANIDINE, NITROSO*	0.048900	0.000	0.001
GUTHION	0.000093	0.001	0.001
GYLCIDOL	0.050100	0.024	0.032
HEXAMETHYLENE 1, 6 DIISOCYANATE	0.014800	0.005	0.007
HEXAMETHYLPHOSPHORAMIDE	0.000000	0.000	0.000
HEXANOIC ACID	0.058900	0.061	0.075
HYDRAZINE	0.037000	0.190	0.332
HYDROCYANIC ACID (M)	0.025800	0.999	0.999
HYDROQUINONE	0.000080	0.000	0.000
HYDROXY-(2)-PROPIONITRILE	0.004200	0.003	0.004
HYDROXYPROPIONALDEHYDE	0.013200	0.066	0.102
INDENO(1,2,3-cd)-PYRENE	0.000000	0.000	0.000
LEAD ACETATE (M)	0.000041	0.062	0.062
LEAD SUBACTEATE (M)	0.000800	0.000	0.000
LEUCINE (M)	0.030000	0.469	0.469
MALATHION (M)	0.006700	0.060	0.060
MALEIC ACID	0.000800	0.000	0.000
MALEIC ANHYDRIDE	0.012200	0.027	0.043
MALIC ACID (hydroxybutaneoic)	0.000000	0.000	0.000
MESITYL OXIDE (M)	0.019500	0.999	0.999
METHANE SULFONIC ACID*	0.026700	0.000	0.001

TABLE 1 OF APPENDIX J.—FM VALUES FOR HENRY'S LAW CONSTANTS AT 25°C LESS THAN 0.1 (Y/X) ATMOSPHERES PER MOLE FRACTION—Continued

[Use with Section 2.1]

Compound	Y/X	Fm 25D	Fm 305
METHOMYL	0.045100	0.008	0.013
METHOXYPHENOL P	0.017200	0.003	0.003
METHYL HYDRAZINE	0.024800	0.082	0.155
METHYL METHANESULFONATE	0.000039	0.001	0.001
METHYL PARATHION	0.000007	0.012	0.020
METHYL SULFURIC ACID (M)	0.031200	0.794	0.794
METHYL THIOPHENOL 4	0.024400	0.885	1.000
METHYL-2-METHOXYAZIRIDINE 1	0.024200	0.727	0.998
METHYLENE DIPHENYL DIISOCYANATE	0.002700	0.010	0.011
METHYLENE DIPHENYLAMINE (MDA)	0.001600	0.002	0.002
METHYLENE-BIS (2-CHLOROANILINE), 4, 4	0.018700	0.008	0.008
METHYLENEDIANILINE 4, 4	0.028500	0.001	0.001
METHYLETHYLIDENE BISPHENOL, 4, 4'	0.000001	0.000	0.000
METHYLFURFURAL 5	0.012200	0.859	1.000
METHYLIMINOACETIC ACID	0.055600	0.002	0.004
MONOMETHYL FORMANIDE	0.000054	0.003	0.005
NABAM	0.000000	0.000	0.000
NAPHTHOL, alpha-	0.001400	0.004	0.004
NAPHTHOL, beta-	0.000800	0.003	0.003
NAPHTHYLAMINE, alpha-	0.002800	0.005	0.005
NAPHTHYLAMINE, beta-	0.002000	0.004	0.004
NEOPENTYL GLYCOL	0.000900	0.004	0.005
NIACIN (M)	0.034200	0.606	0.606
NIACINAMIDE(M)	0.067800	0.623	0.623
NITROANILINE (-o) (M)	0.027800	0.351	0.351
NITROGLYCERIN	0.000000	0.013	0.047
NITROPHENOL, 2-	0.006500	0.011	0.016
NITROPHENOL, 4-	0.000073	0.001	0.001
NITROSODIMETHYLAMINE N	0.048800	0.103	0.285
NITROSODI-n-PROPYLAMINE N	0.025200	0.088	0.105
NITROSODIPHENYLAMINE N*	0.046000	0.026	0.025
NITROSOMORPHOLINE	0.004700	0.011	0.019
NITROSO-N-METHYLUREA N	0.001400	0.015	0.037
OODIETH . O2ETH . THIOETH . PHOSPHORATE (M)	0.000000	0.096	0.096
OXALIC ACID	0.000200	0.010	0.028
PARATHION	0.034000	0.001	0.001
PENTAERYTHRITOL	0.000021	0.000	0.000
PHENACETIN (M)	0.012400	0.135	0.135
PHENOL	0.072200	0.036	0.035
PHENYL MERCURIC ACETATE (M)	0.000700	0.057	0.057
PHENYLACETIC ACID (M)	0.045600	0.385	0.385
PHENYLENE DIAMINE (-m)	0.000600	0.000	0.000
PHENYLENE DIAMINE (-o)	0.000600	0.001	0.002
PHENYLENE DIAMINE (-p)	0.000070	0.001	0.001
PHORATE (M)	0.024300	0.095	0.095
PHTHALIC ANHYDRIDE	0.044100	0.016	0.019
PROPANE SULTONE, 1, 3-	0.000500	0.001	0.002
PROPANONAL (methylglyoxal)	0.001700	0.161	0.242
PROPIOLACTONE b	0.006400	0.199	0.304
PROPORUR (Baygon)	0.003200	0.004	0.004
PROPYLENE GLYCOL	0.083300	0.005	0.008
PYRIDINIUM BROMIDE (M)	0.091700	0.060	0.060
PYRUVIC ACID	0.000200	0.003	0.005
QUINOLINE	0.015000	0.002	0.002
QUINONE	0.057700	0.868	1.000
RESORCINOL	0.001000	0.000	0.000
SIMAZINE (M)	0.000045	0.124	0.124
SODIUM ACETATE	0.000200	0.042	0.079
SODIUM ACRYLATE	0.076100	0.073	0.108
SODIUM FORMATE	0.000094	0.356	0.988
STRYCHNIDIN-10-ONE, 2, 3-DIMETHOXY(M)	0.000800	0.028	0.028
STRYCHNINE (M)	0.000002	0.058	0.058
SUCCINIC ACID	0.000097	0.000	0.001
SUCCINIMIDE*	0.001800	0.000	0.001
SULFANILIC ACID (M)	0.088900	0.138	0.138
TEREPHTHALIC ACID	0.000600	0.001	0.001
TETRAETHYLDITHIOPYROPHOSPHATE	0.00040	.....	.....
TETRAETHYLENE GLYCOL MONOMETHYL ETH	0.000200	0.000	0.001
TETRAETHYLENE PENTAMINE	0.000000	0.000	0.000

TABLE 1 OF APPENDIX J.—FM VALUES FOR HENRY'S LAW CONSTANTS AT 25°C LESS THAN 0.1 (Y/X) ATMOSPHERES PER MOLE FRACTION—Continued

[Use with Section 2.1]

Compound	Y/X	Fm 25D	Fm 305
TETRAETHYLENE PENTAMINE	0.000000	0.000	0.000
TETRAHYDRO 3-FURANOL	0.034400	0.095	0.134
THIOFANOX (M)	0.000500	0.116	0.116
THIOSEMICARBAZIDE*	0.003300	0.000	0.000
THIOUREA, 1- (o-CHLOROPHENYL)-	0.000001	0.000	0.001
TOLUENE DIAMINE (2, 4)	0.000070	0.001	0.001
TOLUENE DIISOCYANATE (2, 4)	0.009200	0.000	0.000
TOLUENEDIAMINE (2, 6)	0.000001	0.000	0.000
TOLUENEDIAMINE (3, 4)	0.000200	0.002	0.002
TOLUIC ACID (para-)	0.000300	0.011	0.012
TOLUIDINE m	0.089400	0.123	0.118
TRICHLORO (1, 1, 2) TRIFLUOROETHANE	0.000008	1.042	1.000
TRIETHANOLAMINE	0.000008	0.000	0.000
TRIETHYLENE GLYCOL DIMETHYL ETHER	0.002600	0.017	0.025
TRIETHYLENE GLYCOL MONOMETHYL ETHER	0.001900	0.004	0.005
TRIETHYLENE TETRAMINE	0.000000	0.000	0.000
TRIPROPYLENE GLYCOL	0.005300	0.004	0.005
WARFARIN	0.000000	0.000	0.000

*Molecular structure only approximate.
(M) fraction measured (fm) estimated from Mwt correlation.

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
1 BROMO 2 CHLORO 2 BUTENE	0.990	0.786	1.000	0.761	
1 BUTYENE	0.990	1.172	1.000	0.872	
1 ETHYL 4 METHYLBENZENE	0.990	1.219	1.000	0.748	
1 HEPTANOL	0.946	0.525	0.564	0.186	
1 HEPTYNE	0.990	1.138	1.000	0.980	
1 HEXYNE	0.990	1.145	1.000	0.924	
1 ISOCYANO 3-METHYLBENZENE	0.990	0.870	0.913	0.210	
1 ISOPROPYL 4 METHYLBENZENE	0.990	1.193	1.000	0.804	
1 METHYLCYCLOHEXENE	0.990	1.138	1.000	0.980	
1 METHYLNAPHTHALENE	0.990	1.237	1.000	0.384	
1 NONYNE	0.990	1.128	1.000	0.980	
1 OCTENE	0.990	1.112	1.000	0.980	
1 OCTYNE	0.990	1.132	1.000	0.980	
1 PENTYNE	0.990	1.156	1.000	0.885	
1,1 DIETHOXYETHANE	0.985	0.810	0.996	0.320	
1,1,3 TRIMETHYLCYCLOPENTANE	0.990	1.124	1.000	0.980	
1,1-DIFLUOROETHANE	0.990	1.077	1.000	0.876	
1,2 DIETHOXYETHANE	0.932	0.762	0.999	0.309	
1,2,4,5 TETRAMETHYLBENZENE	0.990	1.194	1.000	0.887	
1,3-DIOXOLANE	0.642	0.764	1.000	0.232	646–06–0
1,4 PENTADIENE	0.990	1.176	1.000	0.980	
1,5 HEXADIENE	0.990	1.155	1.000	0.980	
1-NITROPROPANE	0.966	0.522	0.982	0.374	
1-PENTANOL	0.990	0.708	0.807	0.579	
1-PENTENE	0.990	1.124	1.000	0.980	
1-PROPOXY 2-PROPANOL	0.430	0.134	0.167	0.070	
2 BUTEN 1 OL	0.207	0.703	0.801	0.095	
2 HEPTANONE	0.990	0.955	0.991	0.356	
2 METHYL 1 BUTANOL	0.797	0.721	0.807	0.201	
2 METHYL 2 BUTENE	0.990	1.143	1.000	0.980	
2 METHYL 2 PENTANOL	0.959	0.806	0.869	0.257	
2 METHYL 3 PENTANOL	0.989	0.539	0.565	0.241	
2 METHYLHEXANE C7H16	0.990	1.099	1.000	0.980	
2 METHYLNAPHTHALENE	0.990	1.237	1.000	0.449	
2 NONANONE	0.990	0.959	0.970	0.441	
2 OCTANONE	0.990	0.961	0.983	0.350	
2 PENTANONE	0.942	0.919	0.998	0.350	
2 PENTENE	0.990	1.131	1.000	0.980	
2 PROPYLBENZENE	0.990	1.198	1.000	0.582	
2 UNDECANONE	0.990	0.927	0.922	0.495	
2-(1-METHOXY)-1-PROPANOL	0.648	0.202	0.251	0.093	
2,2 DIMETHYL PROPANOIC ACID	0.131	0.296	0.376	0.074	

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION—Continued

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
2,2 DIMETHYLBUTANE C6H14	0.990	1.108	1.000	0.901	
2,2 DIMETHYLPENTANE	0.990	1.106	1.000	0.980	
2,2,5 TRIMETHYLHEXANE C9H20	0.990	1.114	1.000	0.980	
2,3 DIMETHYL 1,3 BUTADIENE	0.990	1.168	1.000	0.942	
2,3 DIMETHYLBUTANE C6H14	0.990	1.115	1.000	0.980	
2,3 DIMETHYLBUTANOL	0.978	0.648	0.694	0.259	
2,3 DIMETHYLPENTANE C7H16	0.990	1.112	1.000	0.980	
2,3,4 TRIMETHYLPENTANE C8H18	0.990	1.121	1.000	0.980	
2,3-DIMETHYLPYRIDINE	0.048	1.048	1.000	0.110	
2,4 DIMETHYLPENTANE C7H16	0.990	1.112	1.000	0.980	
2,4,5 T.	.....	0.024	0.028	0.000	93–76–5
2,4-DIMETHYLPYRIDINE	0.044	1.048	1.000	0.105	
2,5-DIMETHYLPYRIDINE	0.055	1.048	1.000	0.122	
2,6,DIMETHYL2,5-HEPTADIEN4-ONE	0.990	0.906	0.882	0.354	
2,6-DIMETHYL2,5-HEPTADIEN 4-ONE	0.990	0.682	0.649	0.278	
2,6-DIMETHYLPYRIDINE	0.067	1.048	1.000	0.137	
2-CHLORO 2-METHYLBUTANE	0.990	1.078	1.000	0.726	
2-ETHYL 3-METHOXYPYRAZINE	0.990	0.039	0.050	0.151	
2-ETHYLPYRAZINE	0.746	0.452	0.527	0.070	
2-ETHYLPYRIDINE	0.080	1.041	1.000	0.141	
2-FLUOROPROPANE	0.990	1.099	1.000	0.980	
2-ISOBUTYL 3-METHOXYPYRAZINE	0.990	0.044	0.057	0.256	
2-ISOBUTYLPYRAZINE	0.969	0.362	0.395	0.096	
2-METHYL PENTANE C6H14	0.990	1.100	1.000	0.899	
2-METHYLPYRAZINE	0.626	0.505	0.613	0.068	
2-PENTANOL	0.810	0.721	0.807	0.205	
3 METHYL 1 BUTENE	0.990	1.143	1.000	0.980	
3 METHYL PYRIDINE	0.630	0.685	0.663	0.131	
3 METHYLHEPTANE C8H18	0.990	1.098	1.000	0.980	
3 METHYLHEXANE C7H16	0.990	1.099	1.000	0.980	
3,3 DIMETHYLPENTANE C7H16	0.990	1.106	1.000	0.980	
3,4-DIMETHYLPRYIDINE	0.025	1.048	1.000	0.083	
3,5-DIMETHYLPYRIDINE	0.044	1.048	1.000	0.105	
3-ETHYLPRYIDINE	0.080	1.041	1.000	0.141	
3-HEXANOL	0.990	0.638	0.694	0.294	
3-PENTEN-2-OL	0.860	0.610	0.656	0.230	
4 METHYL 1 PENTENE	0.990	1.134	1.000	0.980	
4 METHYL 2 PENTANOL	0.990	0.539	0.565	0.264	
4 METHYL 2 PENTANONE	0.385	0.923	0.968	0.145	
4 METHYLOCTANE C9H20	0.990	1.098	1.000	0.980	
4-ETHYLPYRIDINE	0.064	1.041	1.000	0.123	
4-METHYLPYRIDINE	0.990	1.033	1.000	0.109	
5 METHOXY 2 PENTANONE	0.798	0.327	0.382	0.142	
ACENAPHTHENE	0.990	1.111	0.899	0.804	83–32–9
ACENAPHTHYLENE	0.990	1.094	0.868	0.312	208–96–8
ACETAL	0.990	0.813	1.000	0.432	
ACETALDEHYDE	0.953	0.724	1.000	0.485	75–07–0
ACETATE (M)	0.990	0.558	0.558	0.794	
ACETIC ACID	0.066	0.101	0.189	0.120	64–19–7
ACETIC ANHYDRIDE	0.524	0.165	0.262	0.214	108–24–7
ACETONE	0.843	0.827	0.997	0.261	67–64–1
ACETONITRILE	0.641	0.778	0.989	0.359	75–05–8
ACETOPHENONE	0.735	0.334	0.314	0.137	96–86–2
ACETYL CHLORIDE	0.990	0.923	1.000	0.531	79–36–5
ACETYL DIETHYLMALONATE	0.978	0.018	0.025	0.156	
ACETYLENE	0.990	1.280	1.000	0.711	74–86–2
ACETYLFURAN 2 *	0.990	0.365	0.423	0.382	1192–62–7
ACETYLMETHYLPHTHALATE 4	0.990	0.036	0.048	0.127	
ACETYLPYRIDINE 3	0.990	0.927	1.000	0.980	1122–54–9
ACIFLUORFEN	0.990	0.198	0.223	0.601	
ACROLEIN	0.968	0.855	1.000	0.427	107–02–8
ACRYLONITRILE	0.969	0.876	0.999	0.429	107–13–1
ADAMANTANE DICHLORIDE	0.990	1.097	0.986	0.562	
AFLATOXINS (M)	0.990	0.063	0.063	0.406	1402–68–2
ALDICARB	0.027	0.002	0.002	0.007	116–06–3
ALDRIN	0.990	0.056	0.051	0.469	509–00–2
ALKYLIMINE CARBOXYLIC ACID N,SUB(M)	0.848	0.125	0.125	0.111	
ALLYL ALCOHOL	0.783	0.538	0.659	0.276	107–18–6
ALLYL CHLORIDE	0.990	1.092	1.000	0.887	107–05–1
ALLYL ETHER, diallyl ether	0.990	0.974	1.000	0.663	
ALPHA METHYL STYRENE	0.990	1.217	1.000	0.767	98–83–9

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION—Continued

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
ALPHA METHYL STYRENE DIMERS	0.990	1.186	0.975	0.855	
alpha-CHLORO-beta-METHYLNAPHTHALENE	0.990	1.197	1.000	0.828	86–52–2
ALPHA-HYDROXYACETALDEHYDE	0.990	0.031	0.059	0.515	
ALPHA-HYDROXYADIPIMIDE (M)	0.925	0.144	0.144	0.135	
AMINO-2-CHLOROTOLUENE 4	0.990	0.020	0.020	0.790	
AMINO-3-CHLORO-5-PHENYLCYCLOHEXA(M)	0.622	0.143	0.143	0.086	
AMINO-4-CHLORO-6-CYANOPYRIDINE 2(M)	0.990	0.148	0.148	0.411	
AMINO-4′-CHLOROBIPHENYL 4(M)	0.990	0.123	0.123	0.980	
AMINO-4-CHLOROPYRIDINE 2 (M)	0.990	0.514	0.514	0.710	1072–98–6
AMINO-4-NITROBENZYL ALCOHOL 2 (M)	0.742	0.149	0.149	0.102	
AMINO-4-NITROTOLUENE 2	0.990	0.000	0.001	0.802	99–55–8
AMINO-5-CHLOROPYRIDINE 2 (M)	0.990	0.514	0.514	0.384	1072–98–6
AMINOBENZOIC ACID (-p) (M)	0.624	0.368	0.368	0.086	150–13–0
AMINOCYCLOHEXANE	0.934	0.929	0.996	0.416	108–91–8
AMINOMETHYL-3-ISOXAZOLOL 5 (M)	0.990	0.760	0.760	0.287	2763–96–4
AMINOPHENOL(-o)	0.641	0.034	0.039	0.083	95–55–6
AMINOPHENOL(-p)	0.265	0.001	0.001	0.180	101–80–4
AMINO-p′-METHYLAZOBENZENE P (M)	0.990	0.119	0.119	0.852	
AMINOPROPIONITRILE 3 (M)	0.834	0.999	0.999	0.163	151–18–8
AMITROLE (M)	0.618	0.999	0.999	0.085	61–82–5
AMMONIA	0.990	0.520	1.000	0.732	7664–41–7
AMPHETAMINE(M)	0.990	0.401	0.401	0.323	60–15–1
AMYL ACETATE(-n)	0.990	0.426	0.504	0.462	628–63–7
ANETHOLE (M)	0.990	0.180	0.180	0.406	104–46–1
ANISOLE	0.990	1.036	1.000	0.731	100–66–3
ANTHRACENE	0.990	0.109	0.087	0.513	120–12–7
ARAMITE (M)	0.990	0.058	0.058	0.406	140–57–8
AURAMINE (M)	0.990	0.091	0.091	0.980	492–80–8
AZASERINE (M)	0.986	0.138	0.138	0.206	115–02–6
AZEPINE (M)	0.990	0.058	0.058	0.817	111–49–9
AZIRIDINE ethyleneimine	0.990	0.628	0.867	0.685	151–56–4
BENXENEDICARBOXYLIC ACID DIHEPTYL	0.990	0.113	0.119	0.667	
BENZ(c)ACRIDINE (M)	0.990	0.110	0.110	0.853	225–51–4
BENZAL CHLORIDE	0.990	1.159	0.996	0.798	98–87–3
BENZALDEHYDE	0.980	0.516	0.490	0.283	100–52–7
BENZALKONIUM CHLORIDE (M)	0.408	0.129	0.129	0.065	
BENZEN SULFONATE (M)	0.990	0.642	0.642	0.894	
BENZENE	0.990	1.227	1.000	0.797	71–43–2
BENZETHONIUM CHLORIDE (M)	0.956	0.001	0.001	0.140	121–54–0
BENZIDINE DIHYDROCHLORIDE(M)	0.990	0.096	0.096	0.980	531–85–1
BENZO(B)FLUORANTHENE	0.990	1.219	0.962	0.135	205–99–2
BENZO(j)FLUORANTHENE (M)	0.990	0.099	0.099	0.853	205–82–3
BENZODIOXANE-1,3 (M)	0.668	0.108	0.108	0.093	
BENZOFLUORANTHENE,3,4-(M)	0.990	0.099	0.099	0.853	205–99–2
BENZOFURAN 2,3	0.990	1.061	0.988	0.374	
BENZOIC ACID, 4 METHYL	0.642	0.102	0.108	0.103	
BENZONITRILE	0.990	0.397	0.373	0.170	100–47–0
BENZOPHENONE	0.990	0.052	0.046	0.834	119–61–9
BENZOPYRENE 3,4 (M)	0.990	0.099	0.099	0.318	50–32–8
BENZOQUINONE,p-(M)	0.990	0.862	0.862	0.794	106–51–4
BENZOTHIAZOLE *	0.990	0.059	0.060	0.341	95–16–9
BENZOTRICHLORIDE	0.990	1.069	0.958	0.558	98–07–7
BENZOYL CHLORIDE	0.990	1.132	0.979	0.468	98–88–4
BENZYL CHLORIDE	0.990	1.164	1.000	0.415	100–44–7
BENZYL METHYL ETHER	0.990	1.047	1.000	0.587	538–86–3
BHC,alpha-	0.990	1.063	1.000	0.729	319–84–6
BHC,beta-	0.990	1.063	1.000	0.854	319–85–7
BHC,delta-	0.990	1.063	1.000	0.588	319–86–8
BICYCLO(4,2,0) OCTA 1.3.5 TRIENE	0.990	1.222	1.000	0.759	
BICYCLO[2.2.1]-2,5-HEPTADIENE DI(M)	0.990	0.146	0.146	0.980	
BIPHENYL	0.990	1.074	0.864	0.445	92–52–4
BIS (2-CHLOROETHOXY) METHANE	0.282	0.170	0.196	0.067	111–91–1
BIS(1,1,2,2-TETRACHLOROPROPYL) ETHE	0.990	0.960	1.000	0.980	
BIS(2-CHLOROETHYL)ETHER	0.656	0.806	0.858	0.162	111–44–4
BIS(2-CHLOROISOPROPYL)ETHER	0.990	0.948	0.972	0.310	108–60–1
BIS(CHLOROMETHYL)ETHER	0.975	0.888	0.999	0.459	542–88–1
BISPHENOL(A)	0.990	0.011	0.011	0.665	80–05–7
BROMACIL	0.990	0.582	1.000	0.980	
BROMO-(1)-CHLOROETHANE-2	0.990	0.711	1.000	0.995	107–04–0
BROMO-3-CHLOROBUTADIENE 2	0.990	0.803	1.000	0.820	
BROMO-4-CHLORO-6-CYANOBENZYL ALC(M)	0.941	0.131	0.131	0.136	

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION—Continued

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
BROMO-4-CHLOROCYCLOHEXANE 1	0.990	0.819	0.986	0.980	
BROMO-4-CYANOMETHYL BENZOATE 2 (M)	0.990	0.105	0.105	0.980	
BROMO-4-CYANOMETHYL BENZOATE 3 (M)	0.990	0.105	0.105	0.885	
BROMOACETONE	0.520	0.356	0.590	0.145	598–31–2
BROMOBENZENE	0.990	1.182	1.000	0.745	108–86–1
BROMOBENZYL ALCOHOL-(m)	0.371	0.012	0.015	0.083	15852–73–
BROMOBENZYL ALCOHOL-(o)	0.371	0.012	0.015	0.083	18982–34–
BROMOBENZYL ALCOHOL-(p)	0.371	0.012	0.015	0.083	873–75–6
BROMOCHLOROBENZENE P	0.990	0.870	1.000	0.980	106–39–8
BROMOCHLOROBENZYL ALCOHOL	0.420	0.007	0.009	0.107	
BROMOCHLOROMETHANE	0.990	1.017	1.000	0.992	74–97–5
BROMODICHLOROMETHANE	0.990	0.735	1.000	0.980	75–27–4
BROMOETHYL ACETATE	0.911	0.470	0.801	0.458	927–68–4
BROMOETHYLENE	0.990	0.629	1.000	0.990	543–60–2
BROMOFORM	0.990	0.480	0.998	0.494	75–25–2
BROMOMETHANE	0.990	0.539	1.000	0.852	74–83–9
BROMOPHENYL PHENYL ETHER,4-	0.990	0.240	0.265	0.269	101–55–3
BROMOPROPIONITRILE 3 (M)	0.990	0.422	0.422	0.856	2417–90–5
BROMOTOLUENE 4	0.990	1.164	1.000	0.676	106–38–7
BROMOURACIL,5-(M)	0.990	0.130	0.130	0.980	51–20–7
BUTADIENE-(1,3)	0.990	1.187	1.000	0.979	106–99–0
BUTANE	0.990	1.080	1.000	0.980	106–97–8
BUTANEDINITRILE	0.990	0.007	0.009	0.182	110–61–2
BUTANENITRILE (M)	0.521	0.999	0.999	0.266	109–74–0
BUTANOL ISO	0.821	0.647	0.756	0.068	78–83–1
BUTANOL(S)	0.846	0.502	0.600	0.253	78–92–2
BUTANOL-1	0.818	0.502	0.600	0.177	71–36–3
BUTENE	0.990	1.131	1.000	0.980	
BUTYL ACETATE(-n)	0.990	0.808	0.995	0.368	123–86–4
BUTYL ACRYLATE	0.990	0.781	0.910	0.492	141–32–2
BUTYL BENZENE	0.990	1.181	1.000	0.980	104–51–8
BUTYL BENZYL PHTHALATE	0.990	0.052	0.053	0.852	85–68–7
BUTYL CARBITOL	0.990	0.006	0.008	0.980	112–34–5
BUTYL MERCAPTAN	0.990	0.692	1.000	0.980	
BUTYL-3-METHOXY PYRAZINE, 2-ISO (M)	0.990	0.142	0.142	0.980	24683–00-
BUTYLAMINE	0.904	0.813	0.948	0.241	109–73–9
BUTYLBUTOXY PROPIONATE	0.990	0.263	0.276	0.266	
BUTYLENE GLYCOL-(1,3)	0.780	0.003	0.004	0.096	107–88–0
BUTYLISOBUTYRATE	0.990	0.873	1.000	0.794	
BUTYRALDEHYDE	0.989	0.861	0.992	0.490	123–72–8
BUTYRALDEHYDE ISO	0.989	0.886	1.000	0.438	78–84–2
c10 linear	0.990	1.088	1.000	0.980	
c11 linear	0.990	1.088	1.000	0.980	
CACODYLIC ACID (M)	0.983	0.354	0.354	0.219	75–60–5
CAMPHENE (M)	0.990	0.383	0.383	0.588	79–92–5
CAPTAN	0.990	0.007	0.008	0.196	
CARBARYL sevin	0.990	0.015	0.016	0.202	63–25–2
CARBAZOLE (M)	0.990	0.141	0.141	0.980	86–74–8
CARBENDAZIM	0.957	0.023	0.038	0.070	
CARBON DIOXIDE (M)	0.990	0.999	0.999	0.896	
CARBON DISULFIDE	0.990	0.213	1.000	0.918	75–15–0
CARBON OXYFLUORIDE*	0.990	0.884	1.000	0.993	353–50–4
CARBON TETRACHLORIDE	0.990	1.027	1.000	0.900	56–23–5
CARBONYL FLUORIDE *	0.658	0.884	1.000	0.358	
CARBONYL SULFIDE	0.886	0.547	1.000	0.500	
CHLORAL	0.990	0.938	1.000	0.556	302–17–0
CHLORAMBEN	0.962	0.545	0.633	0.229	
CHLORAMBUCIL	0.957	0.031	0.031	0.101	305–03–3
CHLORDANE	0.990	0.438	0.407	0.151	57–74–9
CHLORENDIC ANHYDRIDE (M)	0.990	0.558	0.558	0.794	115–27–5
CHLORINATED TARS (M)	0.990	0.050	0.050	0.343	
CHLORNAPHAZINE	0.990	0.422	0.385	0.158	
CHLORO 2 BUTENE,1 trans	0.990	1.098	1.000	0.632	
CHLORO(-p)PHENYLHYDRAZINE(M)	0.990	0.286	0.286	0.398	
CHLORO-1,3-CYCLOPENTADIENE 5	0.990	1.148	1.000	0.948	
CHLORO-2,2-DIBROMOETHANE 1	0.990	0.569	0.919	0.526	
CHLORO-2,3-EPOXYPROPANE,1-(M)	0.977	0.999	0.999	0.321	106–89–8
CHLORO-2-METHOXYBENZOIC ACID 4 (M)	0.990	0.132	0.132	0.722	57479–70–
CHLORO-2-NITROBENZYL ALCOHOL 4 (M)	0.601	0.132	0.132	0.083	22996–18–
CHLORO-3-NITRO-5-PHENYLCYCLOHEXA (M)	0.631	0.131	0.131	0.087	
CHLORO-3-NITROANILINE 4 (M)	0.990	0.139	0.139	0.342	635–22–3

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION—Continued

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
CHLORO-4AMINOCOUMARAN-6 CARBOXYLI(M)	0.990	0.118	0.118	0.980	
CHLORO-4-CYANOBENZYL ALCOHOL 2 (M)	0.743	0.149	0.149	0.102	
CHLORO-4-HYDROXYBIPHENYL 3 (M)	0.990	0.123	0.123	0.980	92–04–6
CHLORO-4-METHOXY-6-AMINOBENZOIC(M)	0.990	0.125	0.125	0.449	
CHLORO-4-METHYL-N-METHYLBENZAMID(M)	0.832	0.134	0.134	0.109	
CHLORO-4-NITROANISOLE 2 (M)	0.990	0.131	0.131	0.980	
CHLORO-4-PHENYLPYRIDINE 2(M)	0.839	0.130	0.130	0.110	
CHLORO-5AMINO3PYRIDINE CARB.ACID (M)	0.990	0.134	0.134	0.439	
CHLORO-5-CYANOPHTHALIC ACID 4 (M)	0.990	0.112	0.112	0.980	
CHLORO-5-CYANOTOLUENE 3 (M)	0.990	0.150	0.150	0.601	
CHLORO-5-FLUOROTOLUENE 3	0.990	1.150	1.000	0.400	443–83–4
CHLORO-5-PHENOXYDIMETHYL PHTHALA(M)	0.990	0.065	0.065	0.980	
CHLOROACETALDEHYDE	0.762	0.855	0.997	0.324	107–20–0
CHLOROALLYL ALCOHOL 2	0.926	0.270	0.291	0.244	5976–47–6
CHLOROANILINE(2)	0.990	0.245	0.238	0.867	95–51–2
CHLOROANILINE(3)	0.990	0.108	0.105	0.867	108–42–9
CHLOROAZOBENZENE	0.990	1.204	1.000	0.852	
CHLOROBENZENE	0.990	1.157	1.000	0.728	108–90–7
CHLOROBENZENESULFONIC ACID (-p)(M)	0.826	0.137	0.137	0.108	100–03–8
CHLOROBENZILATE	0.876	0.000	0.000	0.030	510–15–6
CHLOROBENZOIC ACID,2	0.629	0.083	0.089	0.105	118–91–2
CHLOROBENZOIC ACID,3-	0.535	0.083	0.089	0.092	535–80–8
CHLOROBENZOIC ACID,4-	0.535	0.083	0.089	0.092	74–11–3
CHLOROBENZOTRICHLORIDE P	0.990	1.103	1.000	0.980	5216–25–1
CHLOROBENZOTRIFLUORIDE, P	0.990	1.131	1.000	0.980	
CHLOROBENZYL ALCOHOL-(m)	0.852	0.035	0.033	0.074	873–63–2
CHLOROBENZYL ALCOHOL-(o)	0.275	0.058	0.056	0.074	17849–38–
CHLOROBENZYL ALCOHOL-(p)	0.251	0.040	0.039	0.074	873–76–7
CHLOROBIPHENYL (-p)	0.990	1.204	1.000	0.840	2051–62–9
CHLOROBUTADIENE,1	0.990	1.124	1.000	0.850	
CHLOROCOUMARAN 2 (M)	0.990	0.135	0.135	0.832	2051–59–4
CHLOROCYANOBENZENE (1,4) (M)	0.990	0.362	0.362	0.980	873–32–5
CHLOROCYCLOHEXANE	0.990	1.081	1.000	0.980	542–18–7
CHLOROCYCLOHEXANOL 2	0.990	0.102	0.107	0.428	1561–86–0
CHLOROCYCLOHEXANOL 4	0.990	0.102	0.107	0.587	
CHLORODIACETYL (M)	0.990	0.651	0.651	0.980	
CHLORODIMETHYL PHTHALATE 3 (M)	0.990	0.111	0.111	0.980	
CHLORODIPHENYL THIOETHER P (M)	0.990	0.123	0.123	0.851	7005–72–3
CHLOROETHANE (ethyl chloride)	0.990	1.046	1.000	0.901	75–00–3
CHLOROETHANOL (ETHYLENE CHLOROHYDRI	0.480	0.256	0.309	0.221	107–07–3
CHLOROETHYL(2-) VINYL ETHER	0.990	0.934	1.000	0.910	110–75–8
CHLOROETHYLENE	0.990	1.064	1.000	0.757	
CHLOROFLUOROBENZENE P	0.990	1.152	1.000	0.980	352–33–0
CHLOROFLUOROMETHANE *	0.355	1.075	1.000	0.980	593–70–4
CHLOROFORM	0.990	1.023	1.000	0.775	67–66–3
CHLOROHYDROXYPHENYL4 METHYLBENZ(M)	0.990	0.094	0.094	0.980	
CHLOROMETHYL ACETYLENE *	0.990	1.121	1.000	0.980	
CHLOROMETHYL BENZOATE P (M)	0.990	0.140	0.140	0.980	1126–46–1
CHLOROMETHYL ETHYL KETONE	0.990	0.873	0.935	0.697	
CHLOROMETHYL METHYL ETHER	0.937	0.840	1.000	0.494	107–30–2
CHLOROMETHYL PHENYL KETONE	0.290	0.715	0.673	0.077	532–27–4
CHLOROMETHYL PHENYLHYDRAZINE P (M)	0.990	0.147	0.147	0.413	
CHLOROMETHYLAMINOIMINE (M)	0.990	0.999	0.999	0.913	
CHLORONAPHTHALENE,2–	0.990	1.177	0.980	0.870	91–58–7
CHLORONITROALKOXYIMINE (M)	0.958	0.110	0.110	0.142	
CHLORONITROBENZENE(-o)	0.990	0.519	0.625	0.808	88–73–3
CHLORONITROBENZENE, p	0.990	0.591	0.713	0.301	
CHLORO-N-METHYLBENZAMIDE P (M)	0.818	0.140	0.140	0.107	
CHLOROPHENOL-2	0.323	0.245	0.240	0.107	95–97–8
CHLOROPHENOL-3	0.635	0.057	0.057	0.078	108–43–0
CHLOROPHENYL PHENYL ETHER,4-*	0.990	0.861	0.775	0.389	7005–72–3
CHLOROPHENYLETHANOL 1,1	0.990	0.057	0.054	0.807	
CHLOROPHTHALIC ANHYDRIDE 4 (M)	0.595	0.133	0.133	0.083	
CHLORO-p'-METHYLBIPHENYL P (M)	0.990	0.124	0.124	0.850	1667–11–4
CHLOROPRENE	0.990	1.124	1.000	0.677	126–99–8
CHLOROPROPANE-1	0.990	1.055	1.000	0.858	540–54–5
CHLOROPROPANE-2	0.990	1.050	1.000	0.867	75–29–6
CHLOROPROPENE 3	0.990	1.092	1.000	0.980	557–98–2
CHLOROPROPIONITRILE,3–	0.359	0.580	0.622	0.111	542–76–7
CHLOROPROPYLENE-2	0.990	1.090	1.000	0.980	557–98–2
CHLORO-p-XYLENE	0.987	1.163	1.000	0.592	104–82–5

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION—Continued

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
CHLOROPYRIDINE 2 (M)	0.990	0.769	0.769	0.599	109–09–1
CHLOROSTYRENE (-4)	0.990	1.179	1.000	0.788	1331–28–8
CHLOROTETRAHYDROFURAN 3 (M)	0.990	0.642	0.642	0.407	
CHLOROTHIOPHENOL P *	0.990	0.893	1.000	0.980	106–54–7
CHLOROTOLUENE-4	0.990	1.164	1.000	0.741	106–43–4
CHLOROURACIL,5-(M)	0.990	0.138	0.138	0.980	1820–81–1
cis 1,2 DIMETHYLCYCLOHEXANE	0.990	1.117	1.000	0.980	
CITRUS RED #2 (M)	0.990	0.071	0.071	0.853	6358–53–8
COPPER PHTHALOCYANINE (M)	0.990	0.000	0.000	0.764	147–14–8
COUMARAN (M)	0.990	0.215	0.215	0.980	91–64–5
CROTONALDEHYDE	0.578	0.887	0.974	0.212	470–30–3
CROTONYLENE (2-BUTYNE)	0.990	1.185	1.000	0.980	503–17–3
CUMENE (isopropylbenzene)	0.990	1.197	1.000	0.876	98–82–8
CUMENE HYDROPEROXIDE	0.987	0.478	0.464	0.204	
CYANOBENZYL ALCOHOL P *	0.147	0.002	0.002	0.070	
CYANOGEN	0.990	0.800	1.000	0.747	460–19–5
CYANOGEN BROMIDE *	0.990	0.558	1.000	0.462	506–68–3
CYANOGEN CHLORIDE(M)	0.990	0.999	0.999	0.704	506–77–4
CYANOGUANIDINE (M)	0.990	0.999	0.999	0.648	461–58–5
CYANOMETHYLPHTHALATE 4 (M)	0.990	0.071	0.071	0.980	
CYANOPYRIDINE (-4) *	0.990	0.118	0.124	0.980	100–48–1
CYANOPYRIDINE 3 *	0.990	0.113	0.119	0.980	100–54–9
CYANOTOLUENE 4	0.990	0.450	0.419	0.980	
CYANURIC ACID (M)	0.491	0.505	0.505	0.072	108–80–5
CYCASIN (M)	0.990	0.099	0.099	0.794	14901–08-
CYCLOHEXADIENE1,4DIONE2,6BIS11DIMET	0.753	0.027	0.026	0.072	
CYCLOHEXANE	0.990	1.093	1.000	0.859	110–82–7
CYCLOHEXANOL	0.851	0.456	0.493	0.159	
CYCLOHEXANOL	0.925	0.243	0.262	0.136	108–93–0
CYCLOHEXANONE	0.198	0.703	0.740	0.088	108–94–1
CYCLOHEXENE	0.990	1.136	1.000	0.980	110–83–8
CYCLOHEXENE 1 ONE, 2	0.759	0.498	0.507	0.183	
CYCLOHEXYL ACETATE	0.990	0.846	0.963	0.273	622–45–7
CYCLOHEXYL-2,2-DIPHENYLETHYLAMIN(M)	0.990	0.097	0.097	0.384	
CYCLOHEXYL-4,6-DINITROPHENOL,2-(M)	0.990	0.092	0.092	0.980	131–89–5
CYCLOHEXYLAMINE	0.978	0.878	0.940	0.280	108–91–8
CYCLOHEXYLCYCLOHEXANONE 4	0.990	0.732	0.707	0.727	56025–96-
CYCLOPENTADIENE	0.990	1.198	1.000	0.980	
CYCLOPENTADIENE 1,3	0.990	1.198	1.000	0.713	
CYCLOPENTANE	0.990	1.093	1.000	0.980	
CYCLOPENTENE	0.990	1.144	1.000	0.979	
CYCLOPHOSPHAMIDE (M)	0.990	0.094	0.094	0.610	50–18–0
CYCLOPROPANE C3H6	0.990	1.093	1.000	0.980	
CYCLOHEXYL o,o-DIMETHYL PHOS.DIT(M)	0.99	0.105	0.980	0.980	
CYMENE,para	0.990	1.193	1.000	0.871	
CYTOSINE (M)	0.990	0.811	0.811	0.831	71–30–7
DAUNOMYCIN(M)	0.990	0.000	0.000	0.853	20830–81–
DAZOMET	0.900	0.085	0.153	0.066	
DDD,p,p'-	0.950	1.150	1.000	0.394	72–54–8
DDE,p,p'-	0.990	1.138	0.990	0.621	72–55–9
DDT	0.990	1.131	1.000	0.980	50–29–3
DECANAL	0.990	0.918	0.928	0.612	
DECENE, 8 METHYL 1-	0.990	1.116	1.000	0.980	
DIACETYL (M)	0.990	0.999	0.999	0.318	431–03–8
DIAMINO-5-SULFONYL BENZYL 2,4 (M)	0.990	0.133	0.133	0.628	
DIAMINODIPHENYLMETHANE P,P' (M)	0.990	0.126	0.126	0.980	101–77–9
DIAZOMETHANE	0.575	0.573	1.000	0.356	
DIBENZOFURANS	0.990	1.112	0.967	0.740	
DIBENZOPYRENE 1,2,7,8	0.990	0.803	0.633	0.720	
DIBROMO-3-CHLOROPROPANE,1,2	0.709	1.048	1.000	0.185	96–12–8
DIBROMOCHLOROMETHANE	0.990	0.585	1.000	0.643	124–48–1
DIBROMOETHANE–1,2	0.990	1.114	1.000	0.852	106–93–4
DIBROMOMETHANE	0.990	0.493	1.000	0.558	74–95–3
DIBUTYL ETHER	0.990	0.958	1.000	0.727	142–96–1
DIBUTYLAMINE	0.990	0.949	0.984	0.300	
DICHLORO 2-PROPANOL 1,3	0.990	0.237	0.257	0.570	96–23–1
DICHLORO PROPANOL 2,3	0.507	0.119	0.130	0.255	616–23–9
DICHLORO-1,3-CYCLOPENTADIENE 5,5(M)	0.990	0.413	0.413	0.980	
DICHLORO-2-BUTENE 1,2	0.990	1.079	1.000	0.562	
DICHLORO-2-BUTENE(1,4)	0.990	1.079	1.000	0.453	764–41–0
DICHLORO-2-BUTENE, 1,4	0.990	1.079	1.000	0.612	

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION—Continued

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
DICHLOROANILINE(2,3)	0.527	0.121	0.117	0.064	
DICHLOROBENZENE(1,2) (-o)	0.990	1.134	1.000	0.637	95–50–1
DICHLOROBENZENE(1,3) (-m)	0.990	1.134	1.000	0.719	541–73–1
DICHLOROBENZENE(1,4) (-p)	0.990	1.134	1.000	0.724	106–46–7
DICHLOROBENZIDINE,3,3'-	0.001	0.055	0.053	0.026	91–94–1
DICHLOROBENZOPHENONE P,P	0.978	0.366	0.332	0.093	90–98–2
DICHLOROBIPHENYL (PARA)	0.990	1.177	1.000	0.914	213029–08
DICHLOROBUTANE (1,4)	0.990	1.052	1.000	0.980	110–56–5
DICHLORODIPHENYLMETHANE (M)	0.990	0.107	0.107	0.855	2051–90–3
DICHLOROETHANE(1,1)	0.990	1.024	1.000	0.792	75–34–3
DICHLOROETHANE(1,2)	0.990	1.040	1.000	0.640	107–06–2
DICHLOROETHENE 1,2 trans	0.990	1.061	1.000	0.981	156–60–5
DICHLOROETHENE(1,1)	0.990	1.061	1.000	0.937	75–35–4
DICHLOROETHYL ETHER	0.872	0.711	0.757	0.212	
DICHLOROETHYLENE(1,2) cis	0.990	1.061	1.000	0.904	156–54–2
DICHLOROIODOMETHANE	0.990	0.553	0.975	0.362	
DICHLOROMONOFLUOROMETHANE	0.990	1.023	1.000	0.989	75–43–4
DICHLOROPHENOL	0.990	0.940	0.920	0.227	
DICHLOROPHENOL(2,4)	0.945	0.158	0.154	0.094	120–83–2
DICHLOROPHENOL(2,6)	0.846	0.213	0.209	0.094	87–65–0
DICHLOROPHENOXYACETIC ACID(2,4)	0.990	0.922	1.000	0.978	94–75–7
DICHLOROPROPANE 1,2	0.990	1.054	1.000	0.720	78–87–5
DICHLOROPROPENE(1,3)	0.990	1.071	1.000	0.759	542–75–6
DICHLOROPROPYLENE,1,2-(cis)	0.990	1.062	1.000	0.831	
DICHLOROPROPYLENE,1,2-(trans)	0.990	1.072	1.000	0.853	563–54–2
DICHLOROPROPYLENE-2,3	0.990	1.071	1.000	0.857	78–88–6
DICHLOROSTYRENE 2,6	0.990	1.149	1.000	0.823	
DICHLORO-TRANS-ETHYLENE(1,2)	0.990	1.061	1.000	0.980	540–59–0
DIELDRIN	0.990	0.259	0.235	0.225	60–57–1
DIETHYL AMINE	0.828	0.865	1.000	0.286	109–89–7
DIETHYL ETHER	0.990	0.856	1.000	0.423	602–97–6
DIETHYL ETHER ACID CHLORIDE (M)	0.990	0.379	0.379	0.980	
DIETHYL PHTHALATE	0.990	0.054	0.063	0.853	84–66–2
DIETHYL SULFATE	0.909	0.001	0.002	0.107	
DIETHYL THIOETHER (M)	0.990	0.999	0.999	0.980	352–93–2
DIETHYLBENZENE P	0.990	1.191	1.000	0.784	105–05–5
DIETHYLDIPHENYL UREA SYM(M)	0.990	0.091	0.091	0.859	85–98–3
DIETHYLENE GLYCOL DIETHYL ETHER	0.316	0.168	0.217	0.033	
DIETHYLUREA 1,1 (M)	0.729	0.726	0.726	0.101	634–95–7
DIHYDRO-5-OXAZALONE (DIHYDROAZLA (M)	0.990	0.982	0.982	0.722	
DIISOBUTYLENE	0.990	1.127	1.000	0.980	
DIISODECYL PHTHALATE	0.990	0.007	0.007	0.451	
DIISOPROPYL BENZENE (PARA)	0.990	1.184	1.000	0.980	100–18–5
DIISOPROPYL KETONE	0.990	0.973	1.000	0.483	
DIISOPROPYLAMINE	0.990	0.939	1.000	0.409	
DIMETHOXY METHANE	0.878	0.594	0.950	0.442	109–87–5
DIMETHOXY-(3,3')-BENZIDINE	0.990	0.000	0.000	0.660	119–90–4
DIMETHYL AMINE	0.321	0.709	0.996	0.198	124–40–3
DIMETHYL BENZ(A)ANT 7,12	0.990	1.214	0.973	0.857	
DIMETHYL BENZOIC ACID, 2,4	0.854	0.101	0.105	0.115	
DIMETHYL BENZOIC ACID, 3,5	0.854	0.101	0.105	0.115	
DIMETHYL BENZYLAMINE N,N	0.990	0.003	0.003	0.587	103–83–3
DIMETHYL METHYLTHIOCARBAMATE N,N(M)	0.990	0.676	0.676	0.863	
DIMETHYL NITROISOPROPYLAMINE N,N(M)	0.990	0.439	0.439	0.389	
DIMETHYL NITROSAMINE (M)	0.990	0.999	0.999	0.980	
DIMETHYL SULFATE	0.549	0.034	0.086	0.079	77–78–1
DIMETHYL SULFIDE	0.990	0.508	1.000	0.829	75–18–3
DIMETHYL TRISULFIDE	0.990	0.354	1.000	0.980	
DIMETHYL-1-NITROBENZENE 2,4	0.990	0.564	0.669	0.801	25168–04–
DIMETHYLACETAMIDE	0.547	0.707	0.994	0.284	
dimethylaniline N,N	0.990	0.000	0.001	0.342	57–14–7
DIMETHYLBENZYL HYDROPEROXIDE (M)	0.990	0.149	0.149	0.466	80–15–9
DIMETHYLETHYLAMINE	0.990	0.865	1.000	0.523	75–64–9
DIMETHYLGLYCOL	0.990	0.102	0.136	0.483	
DIMETHYLHYDANTOIN,5,5-(M)	0.990	0.521	0.521	0.980	77–71–4
DIMETHYLPHENOL (2,4)	0.990	0.050	0.047	0.552	105–67–9
DIMETHYLPHENYLCARBINOL (M)	0.990	0.385	0.385	0.794	617–94–7
DIMETHYLSULFOXIDE	0.854	0.821	0.990	0.419	
DINITROBENZENE M	0.023	0.564	1.000	0.285	99–65–0
DINITROPHENOL 2,4	0.990	0.004	0.008	0.059	51–28–5
DINITROTOLUENE 2,6	0.990	.....	.....	0.109	606–20–2

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION—Continued

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
DINITROTOLUENE (2,4)	0.390	0.052	0.085	0.178	121–14–2
DINOCAP (M)	0.990	0.043	0.043	0.980	39300–45–
DI-n-OCTYL PHTHALATE	0.990	0.000	0.000	0.980	117–84–0
DINOSEB (M)	0.990	0.105	0.105	0.575	88–85–7
DIOXANE (1,4)	0.387	0.618	0.869	0.181	123–91–1
DIOXIN (M)	0.990	0.064	0.064	0.279	828–00–2
DIPHENYL ETHER (M)	0.990	0.140	0.140	0.662	101–84–8
DIPHENYL THIOETHER (M)	0.990	0.132	0.132	0.838	139–66–2
DIPHENYLAMINE (M)	0.513	0.140	0.140	0.074	122–39–4
DIPHENYLBUTADIENE 1,3 (M)	0.990	0.122	0.122	0.647	886–65–7
DIPHENYLCHLOROMETHANE (M)	0.990	0.124	0.124	0.850	90–99–3
DIPHENYLDIKETONE (M)	0.990	0.120	0.120	0.851	134–81–6
DIPHENYLETHANE 1,1 (M)	0.990	0.134	0.134	0.551	
DIPHENYLETHANOL 1,1 (M)	0.416	0.126	0.126	0.066	599–67–7
DIPHENYLHYDRAZINE,1,1-(M)	0.990	0.133	0.133	0.796	530–50–7
DIPHENYLMETHANE	0.990	0.628	0.509	0.195	101–81–5
DIPROPYLAMINE	0.979	0.927	0.998	0.411	142–84–7
DIPROPYLBUTRAL	0.990	0.622	0.618	0.292	
DIPROPYLFORMAMIDE (M)	0.990	0.503	0.503	0.980	6282–00–4
DI-tert-BUTYL-p-CRESOL	0.990	0.031	0.028	0.072	128–37–0
DIVINYL KETONE (M)	0.990	0.999	0.999	0.457	
dodecane	0.990	1.089	1.000	0.980	
EDTA (M)	0.990	0.999	0.999	0.412	60–00–4
ENDOSULFAN	0.900	0.020	0.018	0.102	115–29–7
ENDOSULFAN SULFATE (M)	0.990	0.014	0.014	0.980	1031–07–8
ENDRIN ALDEHYDE (M)	0.990	0.999	0.999	0.412	
EPICHLOROHYDRIN	0.915	0.847	0.939	0.350	106–89–8
EPOXYBUTANE 1,2	0.990	0.879	1.000	0.582	
ETHANE	0.990	1.067	1.000	0.946	
ETHANOL	0.322	0.586	0.860	0.126	64–17–5
ETHENE	0.990	1.187	1.000	0.980	
ETHENYL 2 METHYL BENZENE, 1-	0.990	1.240	1.000	0.710	
ETHOXYETHANOL-2	0.545	0.144	0.207	0.134	110–80–5
ETHYL 2 METHYL BENZENE, 1-	0.990	1.198	1.000	0.731	
ETHYL ACETATE PEROXIDE (M)	0.990	0.659	0.659	0.706	
ETHYL ACRYLATE	0.990	0.788	1.000	0.483	140–88–5
ETHYL BUTANOATE	0.990	0.775	1.000	0.457	
ETHYL CYANIDE (PROPIONITRILE) (M)	0.990	0.999	0.999	0.580	107–12–0
ETHYL ETHER	0.990	0.856	1.000	0.506	60–29–7
ETHYL HEPTANOATE	0.990	0.868	1.000	0.470	
ETHYL ISOPROPYL PEROXIDE (M)	0.990	0.931	0.931	0.386	
ETHYL METHANOATE	0.990	0.537	1.000	0.566	
ETHYL PENTANOATE	0.990	0.813	1.000	0.428	
ETHYL PEROXIDE	0.341	0.146	0.283	0.112	
ETHYL PROPYL ETHER	0.990	0.894	1.000	0.571	
ETHYL S,S-DIPHENYL PHOSPHORODITH (M)	0.990	0.070	0.070	0.333	1709–49–8
ETHYL TOLUENE, 4	0.990	1.198	1.000	0.857	
ETHYL VINYL ETHER	0.990	0.890	1.000	0.652	
ETHYL(2) HEXANOL	0.990	0.256	0.268	0.266	104–76–7
ETHYL-(2)-PROPYL-(3) ACROLEIN (M)	0.977	0.999	0.999	0.257	645–62–5
ETHYLACETATE	0.987	0.722	1.000	0.404	141–78–6
ETHYLAMINE	0.358	0.711	0.999	0.280	75–04–7
ETHYLBENZENE	0.990	1.204	1.000	0.828	100–41–4
ETHYLENE	0.990	1.187	1.000	0.980	74–85–1
ETHYLENE DIAMINE	0.963	0.012	0.022	0.241	107–15–3
ETHYLENE DIBROMIDE	0.990	0.537	0.999	0.565	106–93–4
ETHYLENE GLYCOL DIMETHYL ETHER	0.905	0.601	0.860	0.316	110–71–4
ETHYLENE GLYCOL MONOBUTYL ETHER ACETATE	0.772	0.031	0.043	0.067	
ETHYLENE GLYCOL MONOMETHYL ETHER ACETATE	0.285	0.055	0.093	0.048	110–49–6
ETHYLENE OXIDE	0.986	0.712	1.000	0.503	75–21–8
ETHYLETHOXY PROPIONATE	0.940	0.491	0.577	0.213	
ETHYLHEXYL HEXANOL 2	0.990	0.065	0.064	0.125	
ETHYLHEXYLACRYLATE,2-	0.990	0.925	0.992	0.705	103–11–7
FENCHONE,d- (M)	0.990	0.149	0.149	0.406	4695–62–9
FLUORANTHENE	0.990	0.049	0.039	0.656	206–44–0
FLUORENE	0.990	0.965	0.774	0.314	86–73–7
FLUOROMETHANE	0.990	1.130	1.000	0.873	
FLUOROURACIL,5- (M)	0.990	0.999	0.999	0.412	51–21–8
FORMYL FLUORIDE	0.990	0.848	1.000	0.577	
FREON 11, fluorotrichloromethane	0.990	1.053	1.000	0.954	
FREON 12 DICHLORODIFLUOROMETHANE	0.990	1.059	1.000	0.980	75–71–8

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION—Continued

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
FREON 12, dichlorodifluoromethane	0.990	1.059	1.000	0.980	
FREONS (M)	0.990	0.644	0.644	0.980	
FURAN	0.990	0.983	1.000	0.755	110–00–9
FURFURAL	0.990	0.288	0.334	0.354	98–01–1
FUROIC ACID (M)	0.990	0.794	0.794	0.480	88–14–2
GEOSMIN (M)	0.990	0.134	0.134	0.406	19700–21–
GLYOXAL	0.502	0.490	0.888	0.297	
GUANINE (M)	0.990	0.149	0.149	0.980	73–40–5
HEPTACHLOR	0.990	0.619	0.566	0.647	76–44–8
HEPTACHLOR EPOXIDE (M)	0.976	0.030	0.030	0.162	1024–57–3
HEPTANAL	0.990	0.942	0.991	0.407	
HEPTANE ISO	0.990	1.099	1.000	0.980	31394–54–
HEPTANE(-n)	0.990	1.085	1.000	0.980	142–82–5
HEXACHLOROBENZENE	0.990	1.047	0.966	0.643	118–74–1
HEXACHLOROBUTADIENE	0.990	0.937	0.883	0.855	87–68–3
HEXACHLOROCYCLOHEXANE (GAMMA ISOMER)	0.990	0.141	0.132	0.106	58–89–9
HEXACHLOROCYCLOPENTADIE NE	0.990	0.886	0.826	0.803	77–47–4
HEXACHLOROETHANE	0.990	0.515	0.499	0.852	67–72–1
HEXACHLOROPENTADIENE (M)	0.990	0.088	0.088	0.860	
HEXADECANE N (M)	0.990	0.112	0.112	0.980	544–76–3
HEXAFLUOROACETONE	0.990	0.968	1.000	0.980	
HEXAFLUOROPROPENE	0.990	1.080	1.000	0.980	116–15–4
HEXAMETHYLENEDIAMINE (M)	0.971	0.724	0.724	0.213	124–09–4
HEXAMETHYLENIMINE	0.520	0.923	0.989	0.109	
HEXANAL	0.990	0.928	0.997	0.400	
HEXANE(-n)	0.990	1.084	1.000	1.000	110–54–3
HEXANOL 2 ETHYL	0.942	0.256	0.268	0.134	104–76–7
HEXANOL-1	0.963	0.322	0.355	0.180	111–27–3
HEXEN-2-ONE 5	0.979	0.885	0.915	0.347	
HEXENE	0.990	1.119	1.000	0.980	
HEXYL ETHANOATE	0.990	0.865	0.998	0.475	
HEXYLAMINE	0.948	0.803	0.870	0.239	
HYDROFLUORIC ACID (M)	0.990	0.558	0.558	0.537	7664–39–3
HYDROGEN SULFIDE	0.990	0.333	1.000	0.882	
HYDROXY DIMETHYL ETHER (M)	0.990	0.999	0.999	0.874	
HYDROXY–1,3-CYCLOPENTADIENE 5 (M)	0.990	0.999	0.999	0.728	
HYDROXY–4-METHYLTETRAHYDROFURAN(M)	0.990	0.948	0.948	0.385	
HYDROXY–5-METHYLDIMETHYL PHTHALA (M)	0.990	0.113	0.113	0.980	
HYDROXY6METHYLPYRIDINE3 CARBOXYLI (M)	0.990	0.148	0.148	0.409	38116–61–
HYDROXYACETIC ACID	0.760	0.000	0.001	0.570	79–14–1
HYDROXYCYCLOHEXANONE 4 (M)	0.631	0.761	0.761	0.087	
HYDROXYDIMETHYL PHTHALATE 4 (M)	0.990	0.120	0.120	0.980	
HYDROXYMETHYL ACETYLENE (M)	0.990	0.999	0.999	0.980	
HYDROXYMETHYL ISOPROPYL KETONE (M)	0.990	0.999	0.999	0.662	
HYDROXYMETHYL, N-METHYLETHYL AMI (M)	0.990	0.999	0.999	0.980	
HYDROXYMETHYL-N-CHLOROMETHYLETHY (M)	0.990	0.838	0.838	0.980	
HYDROXYMETHYLPHENYL CARBAMATE N (M)	0.920	0.147	0.147	0.137	
HYDROXYMETHYLTHIOBENZENE (M)	0.990	0.320	0.320	0.790	
HYDROXYMETHYLVINYL ETHER (M)	0.990	0.490	0.490	0.905	
HYDROXYPENTANE 3 (M)	0.990	0.999	0.999	0.450	
INDANOL,5-(M)	0.990	0.128	0.128	0.980	1470–94–6
INDOLE (M)	0.990	0.708	0.708	0.980	120–72–9
IODOCOUMARAN 2 (M)	0.990	0.102	0.102	0.980	
ISOBUTANE	0.990	1.103	1.000	0.963	
ISOBUTYL ETHANOATE	0.990	0.786	1.000	0.486	
ISOBUTYLBENZENE	0.990	1.191	1.000	0.905	
ISOBUTYLENE	0.990	1.141	1.000	0.916	
ISOCYANO 4 METHYL BENZENE *	0.980	0.422	0.384	0.198	
ISODECANOL	0.932	0.165	0.158	0.099	
ISODECYL OCTYL ESTER	0.990	1.033	1.000	0.906	
ISOPENTANE	0.990	1.101	1.000	0.954	
ISOPENTYL ETHANOATE	0.990	0.852	0.999	0.487	
ISOPENTYL METHANOATE	0.990	0.941	0.997	0.503	
ISOPHORONE	0.616	0.525	0.506	0.108	78–59–1
ISOPROPYL AMINE	0.990	0.811	1.000	0.538	75–31–0
ISOPROPYL ETHER	0.019	0.939	1.000	0.730	108–20–3
ISOPROPYL METHANOATE	0.990	0.886	1.000	0.578	
ISOPROPYL METHANOATE	0.990	0.865	1.000	0.547	
ISOPROPYL PROPANOATE	0.990	0.825	1.000	0.487	
ISOXAZOLOL,5-(AMINOMETHYL)-3-(M)	0.990	0.760	0.760	0.980	2763–96–4
LINDANE hexachlorocyclohexane	0.990	1.063	1.000	0.703	

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION—Continued

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
MELAMINE (M)	0.990	0.554	0.554	0.980	108–78–1
MERCAPTOBENZOTHIAZOLE,2	0.990	0.844	1.000	0.641	
MERCURY (M)	0.990	0.125	0.125	0.854	7439–97–6
METHACRYLIC ACID	0.990	0.068	0.091	0.194	79–41–4
METHANE	0.990	1.067	1.000	0.980	74–82–8
METHANETHIOL (M)	0.990	0.999	0.999	0.731	74–93–1
METHANOL	0.317	0.433	0.855	0.168	67–56–1
METHAPYRILENE (M)	0.990	0.094	0.094	0.980	91–80–5
METHOXYACETIC ACID	0.593	0.005	0.010	0.064	625–45–6
METHOXYACETONITRILE (M)	0.990	0.999	0.999	0.382	1738–36–9
METHOXYCHLOR	0.990	0.085	0.081	0.333	72–43–5
METHYL 1-PENTENE 2	0.990	1.125	1.000	0.980	763–29–1
METHYL 2-PROPYL ETHER	0.990	0.976	1.000	0.537	
METHYL ACETATE	0.989	0.590	0.906	0.454	79–20–9
METHYL ACRYLATE	0.990	0.748	1.000	0.478	96–33–3
METHYL ACRYLONITRILE (M)	0.990	0.999	0.999	0.980	126–98–7
METHYL AMINE	0.990	0.516	0.992	0.877	74–89–5
METHYL AMINOACETYLENE (M)	0.990	0.999	0.999	0.980	
METHYL AZIRIDINE 2	0.900	0.838	1.000	0.360	
METHYL BENZOATE	0.692	0.924	0.981	0.168	
METHYL BENZYL ALCOHOL 4	0.917	0.058	0.056	0.154	
METHYL BIPHENYL (-p) (M)	0.990	0.141	0.141	0.819	644–08–6
METHYL BUTANOATE	0.990	0.775	1.000	0.413	
METHYL CHLORIDE	0.990	1.040	1.000	0.840	74–87–3
METHYL CHLOROACETAMIDE N (M)	0.863	0.872	0.872	0.137	
METHYL CHLOROCARBONATE (M)	0.990	0.999	0.999	0.980	79–22–1
METHYL CHOLANTHRENE 3	0.990	1.234	0.990	0.322	56–49–5
METHYL COUMARAN 2 (M)	0.990	0.145	0.145	0.811	607–71–6
METHYL CYCLOHEXANE	0.990	1.107	1.000	0.980	108–87–2
METHYL ETHER dimethyl ether	0.990	0.698	1.000	0.730	115–10–6
METHYL ETHYL ETHER	0.990	0.791	1.000	0.617	
METHYL ETHYL KETONE, 2 butanone	0.958	0.872	0.990	0.477	78–93–3
METHYL FORMATE	0.590	0.535	0.997	0.548	107–31–3
METHYL HEXANOATE	0.990	0.843	1.000	0.441	
METHYL IODIDE	0.990	0.354	1.000	0.711	74–88–4
METHYL ISOAMYL KETONE (M)	0.990	0.761	0.761	0.318	110–12–3
METHYL ISOBUTYL KETONE	0.990	0.933	0.979	0.529	108–10–1
METHYL ISOCYANATE	0.990	0.272	1.000	0.870	624–83–9
METHYL ISOPROPYL KETONE	0.986	0.922	0.991	0.523	563–80–4
METHYL MERCAPTAN	0.990	0.333	1.000	0.719	
METHYL METHACRYLATE	0.986	0.801	0.999	0.366	80–62–6
METHYL MORPHOLINE	0.435	0.365	0.475	0.078	
METHYL NAPTHALENE (1-)	0.990	1.204	0.973	0.512	90–12–0
METHYL NAPTHALENE (-12)	0.990	1.219	0.986	0.246	91–57–6
METHYL OCTANOATE	0.990	0.888	1.000	0.524	
METHYL PENTANOATE	0.990	0.813	1.000	0.417	
METHYL PEROXIDE	0.587	0.024	0.070	0.159	
METHYL PROPANOATE	0.985	0.724	1.000	0.431	
METHYL PROPENE 2 (M)	0.990	0.999	0.999	0.980	115–11–7
METHYL PROPYL ETHER	0.990	0.848	1.000	0.598	
METHYL TERTIARY-BUTYL ETHER	0.990	0.911	1.000	0.573	1634–04–4
METHYL TETRAHYDROFURAN 2	0.990	0.914	1.000	0.357	
METHYL THIOURACIL (M)	0.990	0.283	0.283	0.753	56–04–2
METHYL-1,3-CYCLOPENTADIENE 5 (M)	0.990	0.999	0.999	0.924	26519–91–
METHYL-2,3,4-TRIHYDROQUINOLINE N (M)	0.912	0.218	0.218	0.137	
METHYL-2-AMINOETHYLAMINE (M)	0.990	0.999	0.999	0.871	109–81–9
METHYL-2-HYDROXYETHYLAMINE (M)	0.578	0.999	0.999	0.081	109–83–1
METHYL-3-ACETYLCYCLOPENTADIENE 1 (M)	0.990	0.897	0.897	0.754	
METHYL-3-NITROBENZYL ALCOHOL 4 (M)	0.767	0.141	0.141	0.103	40870–59–
METHYL-4-NITROBENZYL ALCOHOL 2 (M)	0.568	0.141	0.141	0.079	23876–13–
METHYL-5-THIOACETYLDIHYDRO1,3THI (M)	0.994	0.146	0.146	0.980	
METHYLACETONITRILE (M)	0.990	0.999	0.999	0.980	75–86–5
METHYLBUTADIENE (isoprene)	0.990	1.176	1.000	0.980	
METHYLBUTYLAMINE	0.809	0.791	0.883	0.178	
METHYLCYCLOPENTANE	0.990	1.109	1.000	0.980	
METHYLENE CHLORIDE, dichloromethane	0.990	1.017	1.000	0.770	75–09–2
METHYLFURAN 2 (M)	0.509	0.999	0.999	0.073	534–22–5
METHYLISOBORNEOL,2-(M)	0.990	0.141	0.141	0.794	NA
METHYLPHENYL CARBAMATE N (M)	0.906	0.320	0.320	0.137	
METHYL-PHENYLETHYLAMINE N (M)	0.990	0.401	0.401	0.587	589–08–2
METHYL-p'-METHYLTRIPHENYL PHOSPH (M)	0.990	0.079	0.079	0.862	

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION—Continued

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
METHYLSTYRENE (-4)	0.990	1.217	1.000	0.767	98–93–9
METHYLTIN TRICHLORIDE (M)	0.470	0.105	0.105	0.070	993–16–8
METHYL-TRIHYDRO-1,3-THIAZOLE 4 (M)	0.990	0.914	0.914	0.316	
MITOMYCIN C (M)	0.990	0.058	0.058	0.980	50–07–7
MNNG (M)	0.990	0.199	0.199	0.980	70–25–7
MONOCHLORODIFLUOROMETHANE	0.990	1.023	1.000	0.990	75–45–6
MORPHOLINE	0.990	0.148	0.207	0.437	110–91–8
MUSTARD GAS (M)	0.990	0.146	0.146	0.406	505–60–2
NAPHTHALENE	0.990	1.239	0.994	0.506	
NAPHTHALENE ACETIC ACID 2 METHYL,	10.99	0.863	0.830	0.567	
NAPHTHOQUINONE-1,4 (M)	0.958	0.146	0.146	0.164	130–15–4
NICKEL CYANIDE (M)	0.990	0.817	0.817	0.284	557–19–7
NITRO m XYLENE, 2	0.990	0.779	0.923	0.455	
NITRO-4-METHYLBENZOATE 3 (M)	0.990	0.128	0.128	0.980	
NITROANILINE P	0.990	0.000	0.000	0.411	100–01–6
NITROBENZENE	0.808	0.305	0.394	0.228	98–95–3
NITROBENZENESULFONYL CHLORIDE P (M)	0.990	0.114	0.114	0.458	98–74–8
NITROBENZYL ALCOHOL P (M)	0.990	0.149	0.149	0.356	619–73–8
NITROBIPHENYL,4-	0.976	0.044	0.046	0.075	92–93–3
NITROCELLULOSE (M)	0.990	0.000	0.000	0.558	9004–70–0
NITROETHANE	0.225	0.412	0.964	0.161	
NITROGEN MUSTARD N-OXIDE (M)	0.990	0.139	0.139	0.794	126–85–2
NITROMETHANE	0.990	0.255	0.954	0.883	75–52–5
NITROMETHYLBENZENE	0.990	0.463	0.570	0.270	
NITROPROPANE 2	0.985	0.531	0.989	0.437	79–46–9
NITROSOBENZYL ALCOHOL 4 (M)	0.901	0.405	0.405	0.136	
NITROSOPYRROLIDINE N (M)	0.990	0.997	0.997	0.980	930–55–2
NITROTOLUENE (-p)	0.990	0.339	0.417	0.45199–	99–0
NITROTOLUENE, m	0.990	0.475	0.585	0.279	
NITROTOLUENE, o	0.990	0.534	0.657	0.296	
NITROTOLUENE, o	0.988	0.534	0.657	0.266	
NONANAL	0.990	0.938	0.959	0.558	
NONANOL, n	0.856	0.099	0.103	0.091	
NONYLPHENOL(M)	0.990	0.115	0.115	0.794	25154–52
OCTAMETHYLPYROPHOSPHORAMIDE (M)	0.990	0.082	0.082	0.980	152–16–9
OCTANAL	0.990	0.946	0.979	0.465	
OCTANE	0.990	1.086	1.000	0.980	111–65–9
OCTANOL 1	0.990	0.184	0.195	0.240	111–87–5
OCTANOL 2	0.983	0.381	0.398	0.136	
OCTANOL 3	0.990	0.514	0.536	0.104	
OCTANOL 4	0.990	0.446	0.466	0.118	
OIL (decane)	0.990	1.088	1.000	0.951	
OXAMIC ACID (M)	0.990	0.999	0.999	0.317	471–47–6
PARABROMOPHENOL (M)	0.925	0.139	0.139	0.135	106–41–2
PARAFORMALDEHYDE (M)	0.990	0.000	0.000	0.558	30525–89-
PARALDEHYDE	0.795	0.717	0.991	0.232	123–63–7
PCB 1016 (monochlorobiphenyl)	0.990	1.204	1.000	0.345	12674–11-
PCB 1221 (monochlorobiphenyl)	0.990	1.204	1.000	0.418	11104–28-
PCB 1232 (dichlorobiphenyl)	0.990	1.177	1.000	0.543	11141–16-
PCB 1242 (trichlorobiphenyl)	0.990	1.075	0.929	0.488	53469–21-
PCB 1248 (quatrochlorobiphenyl)	0.990	1.142	1.000	0.640	12672–29-
PCB 1254(pentachlorobipheny l	0.990	0.698	0.618	0.813	11097–69-
PCB 1260 (hexachlorobiphenyl)	0.990	0.504	0.450	0.791	11096–82-
PCB'S (Aroclors)	0.990	1.142	1.000	0.507	
PENTACHLOROBENZENE	0.990	1.091	1.000	0.796	608–93–5
PENTACHLOROETHANE	0.990	0.991	0.966	0.877	76–01–7
PENTACHLORONITROBENZENE	0.990	0.774	0.839	0.405	
PENTACHLOROPHENOL	0.990	0.092	0.090	0.298	87–86–5
PENTADIENE 1,2	0.990	1.191	1.000	0.855	
PENTAERYTHRITOL TETRANITRATE (M)	0.976	0.067	0.067	0.162	78–11–5
PENTANAL	0.990	0.904	0.999	0.406	
PENTANE	0.990	1.082	1.000	0.925	
PENTYL PROPANOATE	0.990	0.868	1.000	0.537	
PENTYLAMINE	0.903	0.822	0.917	0.254	
PENTYLBENZENE	0.990	1.173	1.000	0.766	
PENTYLCYCLOPENTANE	0.990	1.103	1.000	0.980	
PERCHLOROMETHYL MERCAPTAN (M)	0.990	0.132	0.132	0.980	594–42–3
PERYLENE (M)	0.990	0.099	0.099	0.853	198–55–0
PHENANTHRENE	0.990	0.279	0.222	0.193	85–01–8
PHENOL,3-(1,1-DIMETHYLETHYL)-(M)	0.990	0.558	0.558	0.794	585–34–2
PHENOTHIAZINE (M)	0.990	0.125	0.125	0.874	92–84–2

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION—Continued

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
PHENYL ISOCYANATE (M)	0.990	0.674	0.674	0.855	103–71–9
PHENYLACETIC PEROXIDE (M)	0.917	0.149	0.149	0.137	
PHENYLCYCLOHEXANONE 4	0.990	1.029	0.914	0.826	4894–75–1
PHENYLHYDRAZINE (M)	0.990	0.860	0.860	0.314	100–63–0
PHENYLPHENOL P	0.990	0.001	0.001	0.710	92–69–3
PHENYLTHIOUREA (M)	0.990	0.149	0.149	0.863	103–85–5
PHOSGENE (decomposes)	0.990	0.868	1.000	0.872	75–44–5
PHOSPHINE	0.990	0.213	1.000	0.996	7803–51–2
PHTHALATE, DI N BUTYL–	0.971	0.006	0.006	0.095	
PHTHALATE, DI N OCTYL	0.990	0.042	0.044	0.574	
PHTHALIC ACID	0.990	0.714	0.924	0.858	88–99–3
PHTHALIMIDE	0.990	0.850	0.957	0.854	85–41–6
PICOLINE(2-) (M)	0.990	0.999	0.999	0.398	109–06–8
PINENE(alpha-)	0.990	1.165	1.000	0.890	80–56–8
PIPERAZINE	0.990	0.031	0.042	0.339	110–85–0
POLYCYCLIC KETONE O (M)	0.990	0.000	0.000	0.948	
PROPANAL	0.902	0.813	1.000	0.436	
PROPANE	0.990	1.075	1.000	0.880	74–98–6
PROPANE), 2,2'-OXYBIS(2-CHLORO-(M)	0.990	0.138	0.138	0.980	39638–32
PROPANOIC ACID	0.104	0.105	0.163	0.064	79–09–4
PROPANOL	0.595	0.305	0.421	0.185	
PROPANOL ISO	0.451	0.740	0.926	0.190	67–63–0
PROPENAL	0.943	0.855	1.000	0.487	
PROPENE	0.990	1.144	1.000	0.980	
PROPENYL BENZENE	0.990	1.217	1.000	0.860	
PROPIONALDEHYDE	0.990	0.813	0.999	0.406	123–38–6
PROPIONIC ACID	0.990	0.066	0.102	0.381	79–09–4
PROPIONITRILE (M)	0.990	0.999	0.999	0.580	107–12–0
PROPYL ACETATE ISO	0.990	0.786	1.000	0.453	108–21–4
PROPYL BUTANOATE	0.990	0.843	1.000	0.475	
PROPYL ETHER	0.990	0.921	1.000	0.716	111–43–3
PROPYL METHANOATE	0.990	0.714	1.000	0.506	
PROPYL PROPANOATE	0.990	0.813	1.000	0.446	
PROPYL THIOURACIL (M)	0.990	0.140	0.140	0.921	51–52–5
PROPYL(-n) ACETATE	0.990	0.773	0.999	0.448	109–60–4
PROPYL(-n) BENZENE	0.990	1.191	1.000	0.781	103–65–1
PROPYL-3-METHOXY PYRAZINE,2-ISO(M)	0.990	0.149	0.149	0.980	25773–40-
PROPYLAMINE	0.563	0.778	0.971	0.249	107–10–8
PROPYLCYCLOPENTANE	0.990	1.105	1.000	0.980	
PROPYLENE	0.990	1.144	1.000	0.980	115–07–1
PROPYLENE CHLOROHYDRIN	0.274	0.338	0.383	0.069	
PROPYLENE OXIDE	0.990	0.841	1.000	0.600	75–56–9
PROPYLENIMINE 1,2 2 methyl aziri	0.609	0.792	0.944	0.239	75–55–8
PROPYN-1-OL 2(PROPARLGYL)	0.550	0.271	0.321	0.225	107–19–7
PROPYNE	0.990	1.200	1.000	0.853	
PYRENE	0.990	0.046	0.036	0.113	129–00–0
PYRIDINE	0.956	0.608	0.600	0.255	110–86–1
PYRROLIDINE	0.198	0.814	0.936	0.072	
QUINALDINE (M)	0.990	0.999	0.999	0.853	91–63–4
RESERPINE (M)	0.990	0.000	0.000	0.648	50–55–5
s ACETYLMERCAPTOSUCCINIC ACID	0.318	0.030	0.050	0.069	
S4CHL.CYCLOHEX.00DIMETH .PHOS.DIT(M)	0.990	0.052	0.052	0.342	
SACCHARIN (M)	0.990	0.133	0.133	0.850	81–07–2
SAFROLE (M)	0.990	0.144	0.144	0.406	94–59–7
sec BUTYLBENZENE	0.990	1.187	1.000	0.860	
SILVEX	0.990	1.106	1.000	0.774	93–72–1
SODIUM DODECYL SULFATE (M)	0.988	0.081	0.081	0.195	151–21–3
SODIUM DODECYLBENZENE SULFONATE (M)	0.908	0.083	0.083	0.121	25155–30-
STREPTOZOTOCIN (M)	0.990	0.092	0.092	0.980	18883–66-
STYRENE	0.990	1.229	1.000	0.800	100–42–5
STYRENE OXIDE	0.990	0.883	0.830	0.341	
SULFIDE (M)	0.990	0.999	0.999	0.649	
TAMARON (METHAMIDIPHOS)	0.306	0.430	0.672	0.091	
TARS(M)	0.990	0.025	0.025	0.642	
t-BUTYL HYDROPEROXIDE	0.497	0.289	0.404	0.199	75–91–2
TERPINEOL, ALPHA	0.990	1.008	0.984	0.473	
tert BUTANOL	0.630	0.856	0.989	0.231	
tert-AMYLBENZENE	0.990	1.173	1.000	0.870	
tert-BUTYLBENZENE	0.990	1.192	1.000	0.855	
TETRACHLOROAQUINONE (M)	0.990	0.102	0.102	0.980	
TETRACHLOROBENZENE(1,2,3,4)	0.990	1.101	1.000	0.700	634–66–2

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION—Continued

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
TETRACHLOROBENZENE(1,2,3,5)	0.990	1.101	1.000	0.732	634–90–2
TETRACHLOROBENZENE(1,2,4,5)	0.990	1.101	1.000	0.732	95–94–3
TETRACHLORODIBENZOFURAN (2,3,7,8) (M)	0.990	0.072	0.072	0.332	51207–31-
TETRACHLORODIBENZO-p-DIOXIN(2,3,7,8)	0.990	0.109	0.101	0.173	1746–01–6
TETRACHLOROETHANE(1,1,1,2) (M)	0.990	0.141	0.141	0.459	630–20–6
TETRACHLOROETHANE(1,1,2,2)	0.990	1.015	0.999	0.397	79–34–5
TETRACHLOROETHENE	0.990	1.048	1.000	0.917	127–18–4
TETRACHLOROPHENOL(2,3,4,6)	0.447	1.024	1.000	0.091	58–90–2
TETRACHLOROPHENOL(2,3,5,6)	0.990	0.010	0.010	0.980	935–95–5
TETRACHLOROPROPENE(1,1,2,3) (M)	0.990	0.135	0.135	0.831	10436–39-
TETRADECANE	0.990	1.089	1.000	0.896	629–59–4
TETRAETHYL LEAD	0.990	0.958	0.889	0.980	78–00–2
TETRAETHYLENE GLYCOL (M)	0.892	0.128	0.128	0.117	112–60–7
TETRAETHYLENE PENTANE	0.990	1.183	1.000	0.881	
TETRAETHYLPYROPHOSPHATE (M)	0.990	0.080	0.080	0.980	107–49–3
TETRAFLUOROETHENE	0.990	1.080	1.000	0.980	
TETRAFLUOROMETHANE	0.990	1.037	1.000	0.980	
TETRAHYDROBENZALDEHYDE	0.912	0.635	0.641	0.213	
TETRAHYDROFURAN	0.830	0.860	1.000	0.322	109–99–9
TETRAHYDRONAPHTHALENE,1,2,3,4-(M)	0.887	0.452	0.452	0.794	119–64–2
TETRAHYDROPYRAN	0.980	0.898	1.000	0.381	142–68–7
TETRAHYDROTHIOPHENE	0.990	0.692	1.000	0.566	
TETRALIN	0.990	1.189	1.000	0.632	
TETRANITROMETHANE	0.990	0.267	1.000	0.852	509–14–8
THIOACETAMIDE (M)	0.990	0.999	0.999	0.375	62–55–5
THIOBENZYL ALCOHOL P (M)	0.887	0.588	0.588	0.136	100–53–8
THIOBISETHANE, 1,1'	0.990	0.692	1.000	0.763	
THIOCYANATE (TOTAL AS SCN-) (M)	0.990	0.642	0.642	0.894	NA
THIOMETHANOL (M)	0.990	0.999	0.999	0.499	74–93–1
THIOPHENOL (M)	0.659	0.826	0.826	0.933	108–98–5
THIOPROPIONAMIDE 2 (M)	0.696	0.948	0.948	0.097	
THIOUREA	0.892	0.011	0.024	0.472	62–56–6
THIRAM (M)	0.990	0.105	0.105	0.980	137–26–8
THYMINE (M)	0.990	0.556	0.556	0.806	65–71–4
TOLUENE	0.990	1.215	1.000	0.804	108–88–3
TOLUENE24DIAZOBIS-METATOLUENEDIA(M)	0.986	0.011	0.011	0.188	
TOLUENESULFONYL CHLORIDE	0.604	0.046	0.047	0.068	
TOLUIC ALDEHYDE	0.990	0.513	0.478	0.382	122–78–1
TOLUIDINE (-0)	0.459	0.159	0.152	0.052	95–53–4
TOLUIDINE HYDROCHLORIDE,o-(M)	0.990	0.258	0.258	0.980	636–21–5
TOLUIDINE P	0.850	0.274	0.262	0.208	106–49–0
TOXAPHENE	0.990	0.054	0.050	0.735	8001–35–2
trans 1,4 DIMETHYLCYCLOHEXANE	0.990	1.117	1.000	0.980	
trans 2 BUTENAL	0.387	0.911	1.000	0.267	
trans 2 HEPTENE	0.990	1.121	1.000	0.980	
trans 2 HEXENAL	0.856	0.963	1.000	0.295	
trans 2 OCTENAL	0.990	0.985	0.993	0.381	
trans, trans 2,4 HEXADIENAL	0.233	0.996	1.000	0.151	
TRIBROMOMETHYLPHOSPHATE (M)	0.980	0.052	0.052	0.169	
TRIBUTYL PHOSPHOROTRITHIOATE SSS	0.990	.	.	0.334	78–48–8
TRIBUTYL TIN ACETATE	0.990	0.929	0.980	0.789	
TRIBUTYLPHOSPHATE	0.990	1.073	0.988	0.980	126–73–8
TRICHLORO(1,1,2)TRIFLUO ROETHANE(M)	0.990	0.131	0.131	0.980	76–13–1
TRICHLORO–1,2,2-TRIFLUOROETHANE,1,1	0.990	1.033	1.000	0.980	76–13–1
TRICHLORO-1,3,5-TRIAZINE 2,4,6 (M)	0.990	0.133	0.133	0.552	108–77–0
TRICHLOROANISOLE 2,3,6 (M)	0.990	0.119	0.119	0.980	50375–10–
TRICHLOROBENZENE 1,2,3	0.990	1.114	1.000	0.808	87–61–6
TRICHLOROBENZENE 1,2,4	0.990	1.114	1.000	0.637	120–82–1
TRICHLOROBENZENE 1,3,5	0.990	1.114	1.000	0.877	108–70–3
TRICHLOROBUTANE 1,2,3 (M)	0.990	0.144	0.144	0.980	18338–40–
TRICHLOROETHANE 1,1,1	0.990	1.037	1.000	0.913	71–55–6
TRICHLOROETHANE 1,1,2	0.990	1.025	1.000	0.597	79–00–5
TRICHLOROETHYLENE	0.990	1.053	1.000	0.866	79–01–6
TRICHLOROFLUOROMETHANE	0.990	1.027	1.000	0.968	75–69–4
TRICHLOROPHENOL 2,4,5	0.964	0.111	0.108	0.086	95–95–4
TRICHLOROPHENOL 2,4,6	0.990	0.135	0.132	0.167	88–06–2
TRICHLOROPROPANE 1,1,1	0.990	1.048	1.000	0.897	7789–89–1
TRICHLOROPROPANE(1,1,2)	0.990	1.037	1.000	0.897	598–77–6
TRICHLOROPROPANE(1,2,2)	0.990	1.047	1.000	0.897	3175–23–3
TRICHLOROPROPANE(1,2,3)	0.990	1.048	1.000	0.894	96–18–4
TRICHLOROPROPENE (1,1,2)(M)	0.990	0.228	0.228	0.795	

TABLE 2 OF APPENDIX J.—FR, FM, AND FE [1] VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25° C GREATER THAN OR EQUAL TO 0.1 Y/X ATMOSPHERE PER MOLE FRACTION—Continued

Compound	FR	Fm25D	Fm305	Fe [1]	CAS
TRICOSANE N(M)	0.990	0.133	0.133	0.301	629–50–5
TRIETHYLAMINE	0.990	0.937	1.000	0.379	121–44–8
TRIETHYLENE GLYCOL(M)	0.846	0.150	0.150	0.111	112–27–6
TRIETHYLPHOSPHOROTHIOAT E,o,o,o-(M)	0.989	0.126	0.126	0.794	126–68–1
TRIFLUOROETHANE(1,1,1)	0.990	1.059	1.000	0.980	
TRIFLUOROMETHANE	0.990	1.057	1.000	0.980	
TRIFLURALIN	0.990	0.086	0.116	0.291	
TRIISOBUTYLENE	0.990	1.117	1.000	0.980	
TRIISOPROPYLAMINE	0.990	1.026	1.000	0.715	
TRIMELLITIC ANHYDRIDE (M)	0.629	0.129	0.129	0.087	552–30–7
TRIMETHYL BENZENE, 123	0.990	1.200	1.000	0.713	
TRIMETHYL-4-NITROANILINE 2,3,5 (M)	0.990	0.135	0.135	0.831	
TRIMETHYLAMINE	0.990	0.811	1.000	0.464	75–50–3
TRIMETHYLBENZENE (1,3,5)	0.990	1.200	1.000	0.766	108–67–3
TRIMETHYLPENTANE 2,2,4	0.990	1.116	1.000	1.000	540–84–1
TRIMETHYLSILANOL	0.990	0.533	1.000	0.980	
TRINITROBENZENE,sym-(M)	0.990	0.118	0.118	0.712	99–35–4
TRINITROTOLUENE(2,4,6)	0.223	0.004	0.009	0.120	118–96–7
TRIPHENYL PHOSPHINE (M)	0.990	0.094	0.094	0.321	603–35–0
TRIPHENYLMETHANE (M)	0.990	0.103	0.103	0.980	516–73–3
TRIPHENYLPHOSPHINE NICKEL CARBONM)	0.990	0.037	0.037	0.722	
TRIS (1-AZIRIDINYL) PHOSPHINESU(M)	0.990	0.130	0.130	0.379	52–24–4
TRIS (2,3-DIBROMOPROPYL)PHOSPHA(M)	0.990	0.000	0.000	0.980	126–72–7
TRISODIUM NITRILOTRIACETATE (M)	0.990	0.128	0.128	0.980	5064–31–3
TRYPAN BLUE(M)	0.990	0.000	0.000	0.853	72–57–1
URACIL (M)	0.990	0.794	0.794	0.857	66–22–8
URACIL MUSTARD (M)	0.990	0.099	0.099	0.853	66–75–1
UREA	0.990	0.016	0.030	0.582	57–13–6
URETHANE	0.990	0.024	0.039	0.370	51–79–6
VALERIC ACID (M)	0.990	0.963	0.963	0.287	109–52–4
VINYL ACETATE	0.990	0.748	1.000	0.592	108–05–4
VINYL ACETYLENE	0.990	1.232	1.000	0.890	
VINYL BROMIDE	0.990	0.629	1.000	0.849	
VINYL CHLORIDE	0.990	1.081	1.000	0.971	75–01–4
VINYL DIHYDROPYRAN	0.990	0.935	1.000	0.554	
VINYL METHYL ETHER	0.990	0.831	1.000	0.590	
VINYLCYCLOHEXENE 4(M)	0.990	0.860	0.860	0.980	100–40–3
VINYLIDENE CHLORIDE	0.990	1.061	1.000	0.889	75–35–4
XYLENE	0.990	1.206	1.000	0.788	1330–20–7
XYLENE(-m)	0.990	1.206	1.000	0.821	108–38–3
XYLENE(-o)	0.990	1.206	1.000	0.787	95–47–6
XYLENE(-p)	0.990	1.206	1.000	0.824	106–67–9
XYLIDINE dimethylaniline	0.606	0.131	0.124	0.074	
XYLYL CHLORIDE M (M)	0.990	0.310	0.310	0.592	620–19–9
XYLYL CHLORIDE O (M)	0.990	0.310	0.310	0.592	552–45–4

* Molecular structure only approximate.
(M) fraction measured (fm) estimated from Mwt correlation.
[1] The Fe values listed in Table 2 are Fe values for emissions from both the individual drain system and the treatment process. Use these Fe values with Section 2.5.1).

TABLE 3 OF APPENDIX J—FE VALUES FOR EMISSIONS FROM BOTH THE INDIVIDUAL DRAIN SYSTEM AND THE TREATMENT PROCESS

[Use with section 2.5.1]

Henry's Law Constant	Fe Value
0.00025	0.001
0.00051	0.002
0.00076	0.003
0.00127	0.005
0.00178	0.007
0.00254	0.010
0.00381	0.015
0.00508	0.020
0.00635	0.25
0.00762	0.030
0.00890	0.035
0.01017	0.040
0.01144	0.045
0.02327	0.050

TABLE 3 OF APPENDIX J—FE VALUES FOR EMISSIONS FROM BOTH THE INDIVIDUAL DRAIN SYSTEM AND THE TREATMENT PROCESS—Continued

[Use with section 2.5.1]

Henry's Law Constant	Fe Value
0.07862	0.060
0.13396	0.070
0.18931	0.080
0.24465	0.090
0.30	0.10
0.54	0.11
0.77	0.12
01.005	0.13
1.24	0.14
1.48	0.15
1.71	0.16
1.94	0.17
2.18	0.18
2.42	0.19
2.65	0.20
2.88	0.21
3.12	0.22
3.36	0.23
3.59	0.24
3.82	0.25
4.06	0.26
4.30	0.27
4.53	0.27
4.53	0.28
4.76	0.29
5	0.30
6.1	0.31
8.3	0.31
10.5	0.35
12.7	0.37
14.9	0.39
17.1	0.41
19.3	0.43
22.4	0.45
27.9	0.47
33.4	0.49
39	0.51
44.5	0.53
50	0.55
83.3	0.57
116.7	0.59
150	0.61
183.3	0.63
216.7	0.65
250	0.67
283.3	0.69
316.7	0.71
350	0.73
383.3	0.75
416.7	0.77
450	0.79
483.3	0.81
516.7	0.83
550	0.85
1003.8	0.87
1457.5	0.89
1911.5	0.91
2365.4	0.93
2819.2	0.95
3273.1	0.97
3500	0.98

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
1 BROMO 2 CHLORO 2 BUTENE	311.66	0.544	
1 BUTYENE	1048.21	0.733	
1 ETHYL 4 METHYLBENZENE	277.78	0.511	
1 HEPTANOL	1.03	0.186	
1 HEPTYNE	3703.67	0.654	
1 HEXYNE	2222.20	0.675	
1 ISOCYANO 3-METHYLBENZENE	1.54	0.210	
1 ISOPROPYL 4 METHYLBENZENE	427.35	0.495	
1 METHYLCYCLOHEXENE	4273.46	0.664	
1 METHYLNAPHTHALENE	14.25	0.325	
1 NONYNE	8051.45	0.603	
1 OCTENE	50505.00	0.729	
1 OCTYNE	4629.58	0.624	
1 PENTYNE	1355.00	0.699	
1,1 DIETHOXYETHANE	5.56	0.320	
1,1,3 TRIMETHYLCYCLOPENTANE	86805.00	0.802	
1,1-DIFLUOROETHANE	1133.78	0.699	
1,2 DIETHOXYETHANE	3.47	0.309	
1,2,4,5 TETRAMETHYLBENZENE	1388.88	0.512	
1,3-DIOXOLANE	1.36	0.232	646–06–0
1,4 PENTADIENE	6613.69	0.742	
1,5 HEXADIENE	7507.43	0.702	
1-NITROPROPANE	4.63	0.374	
1-PENTANOL	69.44	0.576	
1-PENTENE	22222.00	0.812	
1-PROPOXY 2-PROPANOL	0.13	0.046	
2 BUTEN 1 0L	0.19	0.095	
2 HEPTANONE	8.05	0.356	
2 METHYL 1 BUTANOL	0.78	0.201	
2 METHYL 2 BUTENE	12346.00	0.782	
2 METHYL 2 PENTANOL	1.79	0.257	
2 METHYL 3 PENTANOL	1.92	0.241	
2 METHYLHEXANE C7H16	29239.00	0.737	
2 METHYLNAPHTHALENE	22.22	0.344	
2 NONANONE	20.58	0.366	
2 OCTANONE	10.48	0.348	
2 PENTANONE	3.47	0.350	
2 PENTENE	12920.00	0.779	
2 PROPYLBENZENE	71.22	0.435	
2 UNDECANONE	34.72	0.353	
2-(1-METHOXY))-1-PROPANOL	0.26	0.080	
2,2 DIMETHYL PROPANOIC ACID	0.16	0.062	
2,2 DIMETHYLBUTANE C6H14	1700.00	0.654	
2,2 DIMETHYLPENTANE	173610.00	0.881	
2,2,5 TRIMETHYLHEXANE C9H20	191570.00	0.795	
2,3 DIMETHYL 1,3 BUTADIENE	2645.48	0.671	
2,3 DIMETHYLBUTANE C6H14	71224.00	0.856	
2,3 DIMETHYLBUTANOL	1.85	0.259	
2,3 DIMETHYLPENTANE C7H16	95784.00	0.835	
2,3,4 TRIMETHYLPENTANE C8H18	104820.00	0.793	
2,3-DIMETHYLPYRIDINE	0.40	0.110	
2,4 DIMETHYLPENTANE C7H16	163400.00	0.875	
2,4,5 T	1.00	0.000	93–76–5
2,4-DIMETHYLPYRIDINE	0.37	0.105	
2,5-DIMETHYLPYRIDINE	0.46	0.122	
2,6, DIMETHYL 2,5-HEPTADIEN 4-ONE	11.00	0.336	
2,6-DIMETHYL 2,5-HEPTADIEN 4-ONE *	4.17	0.278	
2,6-DIMETHYLPYRIDINE	0.56	0.137	
2-CHLORO 2-METHYLBUTANE	220.00	0.589	
2-ETHYL 3-METHOXYPYRAZINE	0.82	0.151	
2-ETHYLPYRAZINE	0.14	0.049	
2-ETHYLPYRIDINE	0.58	0.141	
2-FLUOROPROPANE	13423.00	0.818	
2-ISOBUTYL 3-METHOXYPYRAZINE	2.78	0.256	
2-ISOBUTYLPYRAZINE	0.28	0.071	
2-METHYL PENTANE C6H14	1670.00	0.651	
2-METHYLPYRAZINE	0.12	0.052	
2-PENTANOL	0.82	0.205	
3 METHYL 1 BUTENE	29239.00	0.832	

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION—Continued

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
3 METHYL PYRIDINE	0.43	0.131	
3 METHYLHEPTANE C8H18	205760.00	0.848	
3 METHYLHEXANE C7H16	132270.00	0.860	
3,3 DIMETHYLPENTANE C7H16	102880.00	0.844	
3,4-DIMETHYLPRYIDINE	0.21	0.068	
3,5-DIMETHYLPYRIDINE	0.37	0.105	
3-ETHYLPRYIDINE	0.58	0.141	
3-HEXANOL	2.78	0.294	
3-PENTEN-2-OL	1.01	0.230	
4 METHYL 1 PENTENE	34722.00	0.800	
4 METHYL 2 PENTANOL	2.53	0.264	
4 METHYL 2 PENTANONE	0.51	0.145	
4 METHYLOCTANE C9H20	555550.00	0.868	
4-ETHYLPYRIDINE	0.46	0.123	
4-METHYLPYRIDINE	0.33	0.109	
5 METHOXY 2 PENTANONE	0.67	0.142	
ACENAPHTHENE	428.33	0.498	83–32–9
ACENAPHTHYLENE	6.33	0.286	208–96–8
ACETAL	19.61	0.398	
ACETALDEHYDE	4.87	0.449	75–07–0
ACETATE (M)	400.00	0.504	
ACETIC ACID	0.31	0.120	64–19–7
ACETIC ANHYDRIDE	0.33	0.214	108–24–7
ACETONE	1.39	0.261	67–64–1
ACETONITRILE	1.11	0.333	75–05–8
ACETOPHENONE	0.51	0.127	96–86–2
ACETYL CHLORIDE	11.00	0.531	79–36–5
ACETYL DIETHYLMALONATE	1.08	0.156	
ACETYLENE	70.00	0.711	74–86–2
ACETYLFURAN 2*	6.11	0.3821	1192–62–7
ACETYLMETHYLPHTHALATE 4	0.94	0.114	
ACETYLPYRIDINE 3	16833.00	0.882	1122–54–9
ACIFLUORFEN	83.89	0.300	
ACROLEIN	4.57	0.393	107–02–8
ACRYLONITRILE	5.44	0.393	107–13–1
ADAMANTANE DICHLORIDE	57.78	0.392	
AFLATOXINS (M)	16.67	0.295	1402–68–2
ALDICARB	16.67	0.000	116–06–3
ALDRIN	27.56	0.269	509–00–2
ALKYLIMINE CARBOXYLIC ACID N, SUB (M)	0.56	0.089	
ALLYL ALCOHOL	1.00	0.276	107–18–6
ALLYL CHLORIDE	515.00	0.728	107–05–1
ALLYL ETHER, diallyl ether	125.55	0.535	
ALPHA METHYL STYRENE	328.33	0.588	98–83–9
ALPHA METHYL STYRENE DIMERS	655.55	0.370	
alpha-CHLORO-beta-METHYLNAPHTHALENE	490.55	0.441	86–52–2
ALPHA-HYDROXYACETALDEHYDE	5.28	0.515	
ALPHA-HYDROXYADIPIMIDE (M)	0.90	0.135	
AMINO-2-CHLOROTOLUENE 4	388.89	0.563	
AMINO-3-CHLORO-5-PHENYLCYCLOHEXA (M)	0.22	0.049	
AMINO-4-CHLORO-6-CYANOPYRIDINE 2 (M)	17.22	0.332	
AMINO-4′-CHLOROBIPHENYL 4 (M)	1398300.00	0.887	
AMINO-4-CHLOROPYRIDINE 2 (M)	176.68	0.463	1072–98–6
AMINO-4-NITROBENZYL ALCOHOL 2 (M)	0.34	0.072	
AMINO-4-NITROTOLUENE 2	422.77	0.621	99–55–8
AMINO-5-CHLOROPYRIDINE 2 (M)	14.28	0.342	1072–98–6
AMINOBENZOIC ACID (-p) (M)	0.22	0.058	150–13–0
AMINOCYCLOHEXANE	13.78	0.416	108–91–8
AMINOMETHYL-3-ISOXAZOLOL 5 (M)	4.17	0.287	2763–96–4
AMINOPHENOL (-o)	0.20	0.082	95–55–6
AMINOPHENOL (-p)	1.09	0.180	101–80–4
AMINO-p′-METHYLAZOBENZENE P (M)	588.88	0.476	
AMINOPROPIONITRILE 3 (M)	0.51	0.163	151–18–8
AMITROLE (M)	0.22	0.081	61–82–5
AMMONIA	18.22	0.732	7664–41–7
AMPHETAMINE (M)	7.50	0.305	60–15–1
AMYL ACETATE (-n)	25.78	0.313	628–63–7
ANETHOLE (M)	16.67	0.371	104–46–1
ANISOLE	231.48	0.584	100–66–3

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION—Continued

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
ANTHRACENE	39.68	0.384	120–12–7
ARAMITE (M)	16.67	0.292	140–57–8
AURAMINE (M)	10739.00	0.547	492–80–8
AZASERINE (M)	2.38	0.206	115–02–6
AZEPINE (M)	462.77	0.534	111–49–9
AZIRIDINE ethylene imine	25.22	0.630	151–56–4
BENXENEDICARBOXYLIC ACID DIHEPTYL E	128.33	0.296	
BENZ (c) ACRIDINE (M)	611.11	0.533	225–51–4
BENZAL CHLORIDE	411.66	0.616	98–87–3
BENZALDEHYDE	2.35	0.283	100–52–7
BENZALKONIUM CHLORIDE (M)	0.11	0.022	
BENZEN SULFONATE (M)	1555.54	0.602	
BENZENE	308.34	0.592	71–43–2
BENZETHONIUM CHLORIDE (M)	1.24	0.089	121–54–0
BENZIDINE DIHYDROCHLORIDE (M)	588880.00	0.936	531–85–1
BENZO (B) FLUORANTHENE	1.12	0.117	205–99–2
BENZO (j) FLUORANTHENE (M)	611.11	0.525	205–82–3
BENZODIOXANE-1,3 (M)	0.26	0.046	
BENZOFLUORANTHENE,3,4- (M)	611.11	0.368	205–99–2
BENZOFURAN 2,3	13.17	0.370	
BENZOIC ACID, 4 METHYL	0.38	0.093	
BENZONITRILE	0.76	0.170	100–47–0
BENZOPHENONE	506.11	0.454	119–61–9
BENZOPYRENE 3,4 (M)	7.00	0.250	50–32–8
BENZOQUINONE,p- (M)	400.00	0.750	106–51–4
BENZOTHIAZOLE*	7.50	0.341	95–16–9
BENZOTRICHLORIDE	54.50	0.409	98–07–7
BENZOYL CHLORIDE	10.44	0.391	98–88–4
BENZYL CHLORIDE	17.72	0.395	100–44–7
BENZYL METHYL ETHER	75.00	0.469	538–86–3
BHC,alpha-	227.22	0.412	319–84–6
BHC,beta-	638.88	0.472	319–85–7
BHC,delta-	75.56	0.340	319–86–8
BICYCLO(4,2,0) OCTA 1.3.5 TRIENE	307.22	0.561	
BICYCLO[2.2.1]-2,5-HEPTADIENE DI(M)	4388.85	0.681	
BIPHENYL	22.67	0.345	92–52–4
BIS (2-CHLOROETHOXY) METHANE	0.12	0.028	111–91–1
BIS(1,1,2,2-TETRACHLOROPROPYL) ETHE	2416600.00	0.872	
BIS(2-CHLOROETHYL)ETHER	0.72	0.162	111–44–4
BIS(2-CHLOROISOPROPYL)ETHER	6.11	0.295	108–60–1
BIS(CHLOROMETHYL)ETHER	5.02	0.421	542–88–1
BISPHENOL(A)	126.67	0.362	80–05–7
BROMACIL	7609700.00	0.631	
BROMO-(1)-CHLOROETHANE–2	9944300.00	0.995	107–04–0
BROMO-3-CHLOROBUTADIENE 2	469.44	0.590	
BROMO-4-CHLORO–6-CYANOBENZYL ALC(M)	1.05	0.136	
BROMO-4-CHLOROCYCLOHEXANE 1	5544.39	0.692	
BROMO-4-CYANOMETHYL BENZOATE 2 (M)	6666.60	0.646	
BROMO-4-CYANOMETHYL BENZOATE 3 (M)	1338.88	0.584	
BROMOACETONE	0.54	0.145	598–31–2
BROMOBENZENE	270.00	0.524	108–86–1
BROMOBENZYL ALCOHOL -(m)	0.21	0.046	15852–73–
BROMOBENZYL ALCOHOL -(o)	0.21	0.046	18982–34–
BROMOBENZYL ALCOHOL -(p)	0.21	0.046	873–75–6
BROMOCHLOROBENZENE P	13278000.00	0.963	106–39–8
BROMOCHLOROBENZYL ALCOHOL	0.46	0.069	
BROMOCHLOROMETHANE	1438900.00	0.992	74–97–5
BROMODICHLOROMETHANE	11389.00	0.796	75–27–4
BROMOETHYL ACETATE	23.22	0.458	927–68–4
BROMOETHYLENE	744440.00	0.990	543–60–2
BROMOFORM	29.56	0.397	75–25–2
BROMOMETHANE	381.06	0.698	74–83–9
BROMOPHENYL PHENYL ETHER,4–	4.27	0.217	101–55–3
BROMOPROPIONITRILE 3 (M)	678.71	0.605	2417–90–5
BROMOTOLUENE 4	133.89	0.454	106–38–7
BROMOURACIL,5-(M)	588880.00	0.942	51–20–7
BUTADIENE-(1,3)	3961.07	0.745	106–99–0
BUTANE	16167.00	0.826	106–97–8
BUTANEDINITRILE	0.50	0.182	110–61–2

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION—Continued

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
BUTANENITRILE (M)	1.53	0.266	109–74–0
BUTANOL ISO	0.12	0.065	78–83–1
BUTANOL(S)	0.71	0.253	78–92–2
BUTANOL-1	0.49	0.177	71–36–3
BUTENE	39682.00	0.884	
BUTYL ACETATE(-n)	9.11	0.368	123–86–4
BUTYL ACRYLATE	33.94	0.442	141–32–2
BUTYL BENZENE	4905.51	0.573	104–51–8
BUTYL BENZYL PHTHALATE	599.99	0.495	85–68–7
BUTYL CARBITOL	4505.51	0.687	112–34–5
BUTYL MERCAPTAN	12500.00	0.758	
BUTYL-3-METHOXY PYRAZINE,2-ISO (M)	10739.00	0.579	24683–00–
BUTYLAMINE	0.84	0.241	109–73–9
BUTYLBUTOXY PROPIONATE	4.20	0.224	
BUTYLENE GLYCOL-(1,3)	0.20	0.096	107–88–0
BUTYLISOBUTYRATE	399.44	0.597	
BUTYRALDEHYDE	14.33	0.490	123–72–8
BUTYRALDEHYDE ISO	8.17	0.438	78–84–2
c10 linear	396820.00	0.784	
c11 linear	1010100.00	0.799	
CACODYLIC ACID (M)	2.14	0.219	75–60–5
CAMPHENE (M)	75.56	0.483	79–92–5
CAPTAN	2.60	0.170	
CARBARYL sevin	1.80	0.180	63–25–2
CARBAZOLE (M)	2444400.00	0.973	86–74–8
CARBENDAZIM	0.14	0.029	
CARBON DIOXIDE (M)	1587.29	0.668	
CARBON DISULFIDE	1063.99	0.669	75–15–0
CARBON OXYFLUORIDE *	3527.74	0.993	353–50–4
CARBON TETRACHLORIDE	1677.80	0.634	56–23–5
CARBONYL FLUORIDE *	2.78	0.358	
CARBONYL SULFIDE	5.49	0.500	
CHLORAL	53.89	0.514	302–17–0
CHLORAMBEN	1.89	0.209	
CHLORAMBUCIL	0.31	0.039	305–03–3
CHLORDANE	2.04	0.130	57–74–9
CHLORENDIC ANHYDRIDE (M)	400.00	0.504	115–27–5
CHLORINATED TARS (M)	9.72	0.252	
CHLORNAPHAZINE	1.67	0.141	
CHLORO 2 BUTENE, 1 trans	104.44	0.598	
CHLORO(-p)PHENYLHYDRAZINE (M)	15.78	0.367	
CHLORO-1,3-CYCLOPENTADIENE 5	2777.75	0.740	
CHLORO-2,2-DIBROMOETHANE 1	43.50	0.502	
CHLORO-2,3-EPOXYPROPANE,1-(M)	1.79	0.321	106–89–8
CHLORO-2-METHOXYBENZOIC ACID 4 (M)	207.78	0.507	57479–70–
CHLORO-2-NITROBENZYL ALCOHOL 4 (M)	0.21	0.041	22996–18–
CHLORO-3-NITRO-5-PHENYLCYCLOHEXA (M)	0.23	0.044	
CHLORO-3-NITROANILINE 4 (M)	9.61	0.317	635–22–3
CHLORO-4AMINOCOUMARAN-6CARBOXYLI (M)	5407.73	0.643	
CHLORO-4-CYANOBENZYL ALCOHOL 2 (M)	0.34	0.071	
CHLORO-4-HYDROXYBIPHENYL 3 (M)	29944.00	0.751	92–04–6
CHLORO-4-METHOXY–6-AMINOBENZOIC (M)	22.22	0.353	
CHLORO-4-METHYL-N-METHYLBENZAMID (M)	0.51	0.085	
CHLORO-4-NITROANISOLE 2 (M)	4749200.00	0.965	
CHLORO-4-PHENYLPYRIDINE 2 (M)	0.53	0.085	
CHLORO-5AMINO3PYRIDINE CARB.ACID (M)	20.33	0.357	
CHLORO-5-CYANOPHTHALIC ACID 4 (M)	11423.00	0.677	
CHLORO-5-CYANOTOLUENE 3 (M)	83.89	0.467	
CHLORO-5-FLUOROTOLUENE 3	16.06	0.339	443–83–4
CHLORO-5-PHENOXYDIMETHYL PHTHALA (M)	8888.80	0.645	
CHLOROACETALDEHYDE	1.44	0.324	107–20–0
CHLOROALLYL ALCOHOL 2	1.02	0.244	5976–47–6
CHLOROANILINE (2)	933.32	0.658	95–51–2
CHLOROANILINE (3)	933.32	0.653	108–42–9
CHLOROAZOBENZENE	599.99	0.444	
CHLOROBENZENE	209.00	0.446	108–90–7
CHLOROBENZENESULFONIC ACID (-p) (M)	0.49	0.085	100–03–8
CHLOROBENZILATE	0.21	0.026	510–15–6
CHLOROBENZOIC ACID,2	0.41	0.091	118–91–2

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION—Continued

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
CHLOROBENZOIC ACID,3-	0.26	0.061	535–80–8
CHLOROBENZOIC ACID,4-	0.26	0.061	74–11–3
CHLOROBENZOTRICHLORIDE P	6388.83	0.523	5216–25–1
CHLOROBENZOTRIFLUORIDE, P	31415.00	0.544	
CHLOROBENZYL ALCOHOL -(m)	0.16	0.040	873–63–2
CHLOROBENZYL ALCOHOL -(o)	0.16	0.040	17849–38–
CHLOROBENZYL ALCOHOL -(p)	0.16	0.040	873–76–7
CHLOROBIPHENYL (-p)	522.22	0.452	2051–62–9
CHLOROBUTADIENE,1	561.11	0.629	
CHLOROCOUMARAN 2 (M)	501.66	0.562	2051–59–4
CHLOROCYANOBENZENE (1,4) (M)	955550.00	0.956	873–32–5
CHLOROCYCLOHEXANE	822210.00	0.973	542–18–7
CHLOROCYCLOHEXANOL 2	14.94	0.428	1561–86–0
CHLOROCYCLOHEXANOL 4	75.00	0.554	
CHLORODIACETYL (M)	588880.00	0.949	
CHLORODIMETHYL PHTHALATE 3 (M)	6388.83	0.646	
CHLORODIPHENYL THIOETHER P (M)	566.66	0.558	7005–72–3
CHLOROETHANE (ethyl chloride)	672.00	0.723	75–00–3
CHLOROETHANOL (ETHYLENE CHLOROHYDRI	0.59	0.221	107–07–3
CHLOROETHYL(2-) VINYL ETHER	1922.20	0.758	110–75–8
CHLOROETHYLENE	301.66	0.747	
CHLOROFLUOROBENZENE P	9055500.00	0.971	352–33–0
CHLOROFLUOROMETHANE *	94999.00	0.972	593–70–4
CHLOROFORM	221.33	0.612	67–66–3
CHLOROHYDROXYPHENYL4 METHYL BENZ (M)	6648.85	0.641	
CHLOROMETHYL ACETYLENE *	6917.51	0.789	
CHLOROMETHYL BENZOATE P (M)	4738.84	0.650	1126–46–1
CHLOROMETHYL ETHYL KETONE	147.78	0.679	
CHLOROMETHYL METHYL ETHER	4.79	0.458	107–30–2
CHLOROMETHYL PHENYL KETONE	0.17	0.042	532–27–4
CHLOROMETHYL PHENYLHYDRAZINE P (M)	17.44	0.363	
CHLOROMETHYLAMINOIMINE (M)	1988.32	0.670	
CHLORONAPHTHALENE,2-	1011.10	0.533	91–58–7
CHLORONITROALKOXYIMINE (M)	1.28	0.136	
CHLORONITROBENZENE(-o)	437.77	0.585	88–73–3
CHLORONITROBENZENE, p	5.08	0.289	
CHLORO-N-METHYLBENZAMIDE P (M)	0.47	0.085	
CHLOROPHENOL-2	0.46	0.106	95–97–8
CHLOROPHENOL-3	0.18	0.054	108–43–0
CHLOROPHENYL PHENYL ETHER,4-*	14.78	0.310	7005–72–3
CHLOROPHENYLETHANOL 1,1	435.00	0.617	
CHLOROPHTHALIC ANHYDRIDE 4 (M)	0.20	0.040	
CHLORO-p′-METHYLBIPHENYL P (M)	561.11	0.558	1667–11–4
CHLOROPRENE	51.63	0.597	126–99–8
CHLOROPROPANE-1	722.22	0.742	540–54–5
CHLOROPROPANE-2	944.44	0.745	75–29–6
CHLOROPROPENE 3	19944.00	0.913	557–98–2
CHLOROPROPIONITRILE,3-	0.28	0.111	542–76–7
CHLOROPROPYLENE-2	19944.00	0.839	557–98–2
CHLORO-p-XYLENE	78.33	0.421	104–82–5
CHLOROPYRIDINE 2 (M)	82.78	0.496	109–09–1
CHLOROSTYRENE (-4)	385.00	0.522	1331–28–8
CHLOROTETRAHYDROFURAN 3 (M)	16.83	0.387	
CHLOROTHIOPHENOL P *	4016.63	0.604	106–54–7
CHLOROTOLUENE-4	258.89	0.511	106–43–4
CHLOROURACIL,5-(M)	588880.00	0.943	1820–81–1
cis 1,2 DIMETHYLCYCLOHEXANE	19841.00	0.682	
CITRUS RED #2 (M)	611.11	0.509	6358–53–8
COPPER PHTHALOCYANINE (M)	320.00	0.353	147–14–8
COUMARAN (M)	5344.39	0.694	91–64–5
CROTONALDEHYDE	0.86	0.212	470–30–3
CROTONYLENE (2-BUTYNE)	375550.00	0.977	503–17–3
CUMENE (isopropylbenzene)	727.77	0.545	98–82–8
CUMENE HYDROPEROXIDE	1.73	0.204	
CYANOBENZYL ALCOHOL P*	0.13	0.040	
CYANOGEN	275.55	0.734	460–19–5
CYANOGEN BROMIDE*	11.33	0.462	506–68–3
CYANOGEN CHLORIDE(M)	149.78	0.704	506–77–4
CYANOGUANIDINE (M)	115.55	0.484	461–58–5

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION—Continued

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
CYANOMETHYLPHTHALATE 4 (M)	2116400.00	0.882	
CYANOPYRIDINE (-4)*	14444.00	0.800	100–48–1
CYANOPYRIDINE 3*	14444.00	0.807	100–54–9
CYANOTOLUENE 4	816660.00	0.955	
CYANURIC ACID (M)	0.14	0.042	108–80–5
CYCASIN (M)	400.00	0.439	14901–08–
CYCLOHEXADIENE 1,4DIONE2,6BIS11D IMET	0.14	0.028	
CYCLOHEXANE	761.10	0.626	110–82–7
CYCLOHEXANOL	0.61	0.159	
CYCLOHEXANOL	0.25	0.136	108–93–0
CYCLOHEXANONE	0.23	0.088	108–94–1
CYCLOHEXENE	572220.00	0.960	110–83–8
CYCLOHEXENE 1 ONE, 2	0.73	0.183	
CYCLOHEXYL ACETATE	3.95	0.273	622–45–7
CYCLOHEXYL-2,2-DIPHENYLETHYLAMIN(M)	14.28	0.279	
CYCLOHEXYL-4,6-DINITROPHENOL,2-(M)	245550000.00	0.943	131–89–5
CYCLOHEXYLAMINE	2.35	0.280	108–91–8
CYCLOHEXYLCYCLOHEXANONE 4	223.33	0.436	56025–96-
CYCLOPENTADIENE	1072200.00	0.980	
CYCLOPENTADIENE 1,3	183.89	0.615	
CYCLOPENTANE	8417.42	0.767	
CYCLOPENTENE	3472.19	0.731	
CYCLOPHOSPHAMIDE (M)	89.71	0.544	50–18–0
CYCLOPROPANE C3H6	5050.46	0.833	
CYLCOHEXYL o,o-DIMETHYL PHOS.DIT(M)	87719.00	0.778	
CYMENE,para	1016.66	0.519	
CYTOSINE (M)	198.29	0.831	71–30–7
DAUNOMYCIN(M)	611.11	0.466	20830–81–
DAZOMET	0.11	0.029	
DDD,p,p′-	15.33	0.258	72–54–8
DDE,p,p′-	97.78	0.328	72–55–9
DDT	6333.27	0.398	50–29–3
DECANAL	91.07	0.415	
DECENE, 8 METHYL 1-	4461.07	0.507	
DIACETYL (M)	4.78	0.318	431–03–8
DIAMINO-5-SULFONYL BENZYL 2,4 (M)	101.70	0.396	
DIAMINODIPHENYLMETHANE P,P′ (M)	27246.00	0.606	101–77–9
DIAZOMETHANE	0.72	0.329	
DIBENZOFURANS	221.66	0.365	
DIBENZOPYRENE 1,2,7,8	202.22	0.318	
DIBROMO-3-CHLOROPROPANE,1,2	1.31	0.173	96–12–8
DIBROMOCHLOROMETHANE	43.50	0.643	124–48–1
DIBROMOETHANE-1,2	605.55	0.675	106–93–4
DIBROMOMETHANE	55.44	0.542	74–95–3
DIBUTYL ETHER	222.22	0.499	142–96–1
DIBUTYLAMINE	5.05	0.293	
DICHLORO 2-PROPANOL 1,3	25.56	0.570	96–23–1
DICHLORO PROPANOL 2,3	1.30	0.255	616–23–9
DICHLORO-1,3-CYCLOPENTADIENE 5,5(M)	3738.85	0.655	
DICHLORO-2-BUTENE 1,2	55.17	0.562	
DICHLORO-2-BUTENE(1,4)	14.39	0.453	764–41–0
DICHLORO-2-BUTENE, 1,4	91.67	0.594	
DICHLOROANILINE(2,3)	0.10	0.026	
DICHLOROBENZENE(1,2) (-o)	107.78	0.559	95–50–1
DICHLOROBENZENE(1,3) (-m)	200.55	0.510	541–73–1
DICHLOROBENZENE(1,4) (-p)	176.11	0.502	106–46–7
DICHLOROBENZIDINE,3,3'-	0.15	0.023	91–94–1
DICHLOROBENZOPHENONE P,P	0.26	0.038	90–98–2
DICHLOROBIPHENYL (PARA)	1999.98	0.425	213029–08
DICHLOROBUTANE (1,4)	176660.00	0.978	110–56–5
DICHLORODIPHENYLMETHANE (M)	661.11	0.554	2051–90–3
DICHLOROETHANE(1,1)	312.23	0.562	75–34–3
DICHLOROETHANE(1,2)	65.38	0.524	107–06–2
DICHLOROETHENE 1,2 trans	3582.00	0.775	156–60–5
DICHLOROETHENE(1,1)	1438.90	0.680	75–35–4
DICHLOROETHYL ETHER	1.14	0.197	
DICHLOROETHYLENE(1,2) cis	861.00	0.664	156–54–2
DICHLOROIODOMETHANE	11.89	0.350	
DICHLOROMONOFLUOROMETHANE	51166000.00	0.989	75–43–4

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION—Continued

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
DICHLOROPHENOL	2.78	0.227	
DICHLOROPHENOL(2,4)	0.27	0.055	120–83–2
DICHLOROPHENOL(2,6)	0.27	0.055	87–65–0
DICHLOROPHENOXYACETIC ACID(2,4)	3449.97	0.626	94–75–7
DICHLOROPROPANE 1,2	159.00	0.540	78–87–5
DICHLOROPROPENE(1,3)	197.22	0.594	542–75–6
DICHLOROPROPYLENE,1,2-(cis)	498.88	0.608	
DICHLOROPROPYLENE,1,2-(trans)	611.11	0.625	563–54–2
DICHLOROPROPYLENE–2,3	716.66	0.694	78–88–6
DICHLOROSTYRENE 2,6	477.77	0.467	
DICHLORO-TRANS-ETHYLENE(1,2)	4722.18	0.725	540–59–0
DIELDRIN	3.24	0.160	60–57–1
DIETHYL AMINE	1.42	0.286	109–89–7
DIETHYL ETHER	14.72	0.423	602–97–6
DIETHYL ETHER ACID CHLORIDE (M)	69148.00	0.836	
DIETHYL PHTHALATE	616.66	0.514	84–66–2
DIETHYL SULFATE	0.34	0.101	
DIETHYL THIOETHER(M)	25000.00	0.719	352–93–2
DIETHYLBENZENE P	372.77	0.481	105–05–5
DIETHYLDIPHENYL UREA SYM(M)	744.44	0.466	85–98–3
DIETHYLENE GLYCOL DIETHYL ETHER	0.12	0.031	
DIETHYLUREA 1,1 (M)	0.32	0.085	634–95–7
DIHYDRO-5-OXAZALONE (DIHYDROAZLA(M)	209.68	0.493	
DIISOBUTYLENE	6531.46	0.594	
DIISODECYL PHTHALATE	22.67	0.238	
DIISOPROPYL BENZENE (PARA)	5944.39	0.507	100–18–5
DIISOPROPYL KETONE	31.56	0.441	
DIISOPROPYLAMINE	17.06	0.403	
DIMETHOXY METHANE	6.72	0.442	109–87–5
DIMETHOXY-(3,3')-BENZIDINE	135.55	0.422	119–90–4
DIMETHYL AMINE	0.29	0.198	124–40–3
DIMETHYL BENZ(A)ANT 7,12	705.55	0.373	
DIMETHYL BENZOIC ACID, 2,4	0.59	0.115	
DIMETHYL BENZOIC ACID, 3,5	0.59	0.115	
DIMETHYL BENZYLAMINE N,N	75.00	0.481	103–83–3
DIMETHYL METHYLTHIOCARBAMATE N,N(M)	835.09	0.585	
DIMETHYL NITROISOPROPYLAMINE N,N(M)	14.78	0.340	
DIMETHYL NITROSAMINE (M)	10739.00	0.952	
DIMETHYL SULFATE	0.22	0.074	77–78–1
DIMETHYL SULFIDE	302.78	0.679	75–18–3
DIMETHYL TRISULFIDE	168470.00	0.568	
DIMETHYL-1-NITROBENZENE 2,4	420.00	0.550	25168–04–
DIMETHYLACETAMIDE	0.57	0.284	
Dimethylaniline N,N	0.77	0.316	57–14–7
DIMETHYLBENZYL HYDROPEROXIDE (M)	26.72	0.391	80–15–9
DIMETHYLETHYLAMINE	21.39	0.523	75–64–9
DIMETHYLGLYCOL	5.05	0.483	
DIMETHYLHYDANTOIN,5,5-(M)	10739.00	0.596	77–71–4
DIMETHYLPHENOL(2,4)	51.17	0.400	105–67–9
DIMETHYLPHENYLCARBINOL (M)	400.00	0.497	617–94–7
DIMETHYLSULFOXIDE	2.59	0.419	
DINITROBENZENE M	1.22	0.285	99–65–0
DINITROPHENOL 2,4	0.28	0.055	51–28–5
DINITROTOLUENE 2,6	0.51	0.091	606–20–2
DINITROTOLUENE(2,4)	0.40	0.165	121–14–2
DINOCAP (M)	>10000	0.935	39300–45–
DI-n-OCTYL PHTHALATE	7611.04	0.318	117–84–0
DINOSEB (M)	66.67	0.375	88–85–7
DIOXANE(1,4)	0.31	0.168	123–91–1
DIOXIN (M)	4.51	0.279	828–00–2
DIPHENYL ETHER (M)	124.44	0.509	101–84–8
DIPHENYL THIOETHER(M)	517.22	0.593	139–66–2
DIPHENYLAMINE (M)	0.15	0.046	122–39–4
DIPHENYLBUTADIENE 1,3 (M)	114.44	0.488	886–65–7
DIPHENYLCHLOROMETHANE (M)	561.11	0.591	90–99–3
DIPHENYLDIKETONE (M)	583.33	0.590	134–81–6
DIPHENYLETHANE 1,1(M)	50.56	0.439	
DIPHENYLETHANOL 1,1 (M)	0.11	0.023	599–67–7
DIPHENYLHYDRAZINE,1,1-(M)	405.55	0.580	530–50–7

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION—Continued

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
DIPHENYLMETHANE	2.02	0.195	101–81–5
DIPROPYLAMINE	14.06	0.411	142–84–7
DIPROPYLBUTRAL	4.82	0.264	
DIPROPYLFORMAMIDE(M)	10739.00	0.595	6282–00–4
DI-tert-BUTYL-p-CRESOL	0.14	0.027	128–37–0
DIVINYL KETONE (M)	24.33	0.419	
Dodecane	396820.00	0.663	
EDTA(M)	16.67	0.412	60–00–4
ENDOSULFAN	0.35	0.036	115–29–7
ENDOSULFAN SULFATE(M)	2642200.00	0.906	1031–07–8
ENDRIN ALDEHYDE (M)	16.67	0.412	
EPICHLOROHYDRIN	1.86	0.325	106–89–8
EPOXYBUTANE 1,2	25.61	0.513	
ETHANE	2738.86	0.833	
ETHANOL	0.31	0.126	64–17–5
ETHENE	11820.00	0.905	
ETHENYL 2 METHYL BENZENE, 1-	176.67	0.494	
ETHOXYETHANOL–2	0.35	0.134	110–80–5
ETHYL 2 METHYL BENZENE, 1-	231.48	0.488	
ETHYL ACETATE PEROXIDE (M)	166.67	0.463	
ETHYL ACRYLATE	14.11	0.425	140–88–5
ETHYL BUTANOATE	19.84	0.457	
ETHYL CYANIDE (PROPIONITRILE) (M)	15.28	0.580	107–12–0
ETHYL ETHER	37.78	0.500	60–29–7
ETHYL HEPTANOATE	27.78	0.385	
ETHYL ISOPROPYL PEROXIDE (M)	14.44	0.356	
ETHYL METHANOATE	15.43	0.566	
ETHYL PENTANOATE	19.16	0.419	
ETHYL PEROXIDE	0.16	0.112	
ETHYL PROPYL ETHER	63.86	0.532	
ETHYL S,S-DIPHENYL PHOSPHORODITH (M).	8.61	0.246	1709–49–8
ETHYL TOLUENE, 4	711.10	0.538	
ETHYL VINYL ETHER	118.33	0.603	
ETHYL(2) HEXANOL	3.43	0.266	104–76–7
ETHYL-(2)–PROPYL-(3) ACROLEIN (M)	1.79	0.257	645–62–5
ETHYLACETATE	7.11	0.404	141–78–6
ETHYLAMINE	0.57	0.280	75–04–7
ETHYLBENZENE	437.81	0.557	100–41–4
ETHYLENE	24555.00	0.931	74–85–1
ETHYLENE DIAMINE	0.47	0.241	107–15–3
ETHYLENE DIBROMIDE	36.11	0.471	106–93–4
ETHYLENE GLYCOL DIMETHYL ETHER	1.95	0.292	110–71–4
ETHYLENE GLYCOL MONOBUTYL ETHER ACET.	0.27	0.062	
ETHYLENE GLYCOL MONOMETHYL ETHER ACET.	0.12	0.046	110–49–6
ETHYLENE OXIDE	13.23	0.450	75–21–8
ETHYLETHOXY PROPIONATE	1.50	0.213	
ETHYLHEXYL HEXANOL 2	0.88	0.113	
ETHYLHEXYLACRYLATE,2-	163.33	0.425	103–11–7
FENCHONE, d- (M)	16.67	0.368	4695–62–9
FLUORANTHENE	120.77	0.457	206–44–0
FLUORENE	6.50	0.282	86–73–7
FLUOROMETHANE	1068.37	0.824	
FLUOROURACIL, 5- (M)	16.67	0.412	51–21–8
FORMYL FLUORIDE	18.52	0.577	
FREON 11, fluorotrichloromethane	2911.08	0.669	
FREON 12 DICHLORODIFLUOROMETHANE	22278.00	0.818	75–71–8
FREON 12, dichlorodifluoromethane	43386.00	0.839	
FREONS (M)	22278.00	0.746	
FURAN	296.66	0.650	110–00–9
FURFURAL	4.51	0.354	98–01–1
FUROIC ACID(M)	30.62	0.382	88–14–2
GEOSMIN (M)	16.67	0.350	19700–21–
GLYOXAL	0.61	0.297	
GUANINE (M)	10739.00	0.962	73–40–5
HEPTACHLOR	127.78	0.337	76–44–8
HEPTACHLOR EPOXIDE (M)	1.76	0.118	1024–57–3
HEPTANAL	16.84	0.394	
HEPTANE ISO	241660.00	0.887	31394–54–

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION—Continued

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
HEPTANE(-n)	112220.00	0.836	142–82–5
HEXACHLOROBENZENE	94.45	0.351	118–74–1
HEXACHLOROBUTADIENE	572.23	0.505	87–68–3
HEXACHLOROCYCLOHEXANE (GAMMA ISOMER	0.43	0.058	58–89–9
HEXACHLOROCYCLOPENTADIENE	369.44	0.456	77–47–4
HEXACHLOROETHANE	463.89	0.440	67–72–1
HEXACHLOROPENTADIENE (M)	766.66	0.550	
HEXADECANE N (M)	1400000.00	0.963	544–76–3
HEXAFLUOROACETONE	9017200.00	0.912	
HEXAFLUOROPROPENE	191570.00	0.710	116–15–4
HEXAMETHYLENEDIAMINE (M)	1.60	0.213	124–09–4
HEXAMETHYLENIMINE	0.35	0.109	
HEXANAL	11.82	0.400	
HEXANE(-n)	42667.00	0.801	110–54–3
HEXANOL 2 ETHYL	0.64	0.134	104–76–7
HEXANOL-1	1.01	0.180	111–27–3
HEXEN-2-ONE 5	4.44	0.347	
HEXENE	23148.00	0.769	
HEXYL ETHANOATE	29.24	0.396	
HEXYLAMINE	1.50	0.239	
HYDROFLUORIC ACID (M)	13.17	0.537	7664–39–3
HYDROGEN SULFIDE	1277.77	0.785	
HYDROXY DIMETHYL ETHER (M)	1083.32	0.580	
HYDROXY-1, 3-CYCLOPENTADIENE 5 (M)	225.00	0.519	
HYDROXY-4 METHYLTETRAHYDROFURAN (M)	14.33	0.356	
HYDROXY-5 METHYLDIMETHYL PHTHALA (M)	6277.72	0.543	
HYDROXY 6 METHYLPYRIDINE 3 CARBOXYL I (M)	17.00	0.326	38116–61–
HYDROXYACETIC ACID	10.56	0.570	79–14–1
HYDROXYCYCLOHEXANONE 4 (M)	0.23	0.069	
HYDROXYDIMETHYL PHTHALATE 4 (M)	5833.28	0.545	
HYDROXYMETHYL ACETYLENE (M)	58129.00	0.730	
HYDROXYMETHYL ISOPROPYL KETONE (M)	125.00	0.477	
HYDROXYMETHYL, N-METHYLETHYL AMI (M)	24722.00	0.650	
HYDROXYMETHYL-N-CHLOROMETHYLETHY (M)	22732.00	0.634	
HYDROXYMETHYLPHENYL CARBAMATE N (M)	0.87	0.137	
HYDROXYMETHYLTHIOBENZENE (M)	388.89	0.493	
HYDROXYMETHYLVINYL ETHER (M)	1805.54	0.553	
HYDROXYPENTANE 3 (M)	22.39	0.391	
INDANOL,5-(M)	10739.00	0.568	1470–94–6
INDOLE (M)	10739.00	0.763	120–72–9
IODOCOUMARAN 2 (M)	107890.00	0.898	
ISOBUTANE	3105.53	0.728	
ISOBUTYL ETHANOATE	25.25	0.486	
ISOBUTYLBENZENE	1792.10	0.550	
ISOBUTYLENE	2038.87	0.722	
ISOCYANO 4 METHYL BENZENE*	1.49	0.198	
ISODECANOL	0.30	0.069	
ISODECYL OCTYL ESTER	1827.76	0.364	
ISOPENTANE	2905.53	0.684	
ISOPENTYL ETHANOATE	32.68	0.435	
ISOPENTYL METHANOATE	37.04	0.484	
ISOPHORONE	0.37	0.100	78–59–1
ISOPROPYL AMINE	19.89	0.538	75–31–0
ISOPROPYL ETHER	231.00	0.487	108–20–3
ISOPROPYL METHANOATE	46.30	0.578	
ISOPROPYL METHANOATE	32.68	0.547	
ISOPROPYL PROPANOATE	32.68	0.459	
ISOXAZOLOL,5-(AMINOMETHYL)-3-(M)	10739.00	0.603	2763–96–4
LINDANE hexachlorocyclohexane	116.67	0.541	
MELAMINE (M)	4611.07	0.577	108–78–1
MERCAPTOBENZOTHIAZOLE, 2	110.55	0.450	
MERCURY (M)	633.33	0.587	7439–97–6
METHACRYLIC ACID	0.63	0.194	79–41–4
METHANE	74444.00	0.980	74–82–8
METHANETHIOL (M)	232.22	0.611	74–93–1
METHANOL	0.29	0.155	67–56–1
METHAPYRILENE (M)	10739.00	0.549	91–80–5
METHOXYACETIC ACID	0.10	0.053	625–45–6
METHOXYACETONITRILE (M)	9.89	0.382	1738–36–9

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION—Continued

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
METHOXYCHLOR	14.39	0.241	72–43–5
METHYL 1-PENTENE 2	583330.00	0.954	763–29–1
METHYL 2-PROPYL ETHER	46.30	0.400	
METHYL ACETATE	5.67	0.454	79–20–9
METHYL ACRYLATE	30.17	0.408	96–33–3
METHYL ACRYLONITRILE (M)	21778.00	0.661	126–98–7
METHYL AMINE	298.89	0.877	74–89–5
METHYL AMINOACETYLENE (M)	7499.93	0.644	
METHYL AZIRIDINE 2	1.76	0.360	
METHYL BENZOATE	0.99	0.168	
METHYL BENZYL ALCOHOL 4	0.77	0.154	
METHYL BIPHENYL (-p) (M)	467.77	0.595	644–08–6
METHYL BUTANOATE	11.34	0.413	
METHYL CHLORIDE	490.00	0.626	74–87–3
METHYL CHLOROACETAMIDE N (M)	0.60	0.137	
METHYL CHLOROCARBONATE (M)	13111.00	0.726	79–22–1
METHYL CHOLANTHRENE 3	7.44	0.234	56–49–5
METHYL COUMARAN 2 (M)	445.00	0.587	607–71–6
METHYL CYCLOHEXANE	54388.00	0.802	108–87–2
METHYL ETHER dimethyl ether	176.67	0.730	115–10–6
METHYL ETHYL ETHER	61.73	0.617	
METHYL ETHYL KETONE, 2 butanone	7.22	0.435	78–93–3
METHYL FORMATE	12.35	0.548	107–31–3
METHYL HEXANOATE	20.58	0.393	
METHYL IODIDE	140.55	0.563	74–88–4
METHYL ISOAMYL KETONE (M)	7.00	0.304	110–12–3
METHYL ISOBUTYL KETONE	21.67	0.457	108–10–1
METHYL ISOCYANATE	583.33	0.650	624–83–9
METHYL ISOPROPYL KETONE	25.44	0.523	563–80–4
METHYL MERCAPTAN	200.00	0.700	
METHYL METHACRYLATE	7.83	0.322	80–62–6
METHYL MORPHOLINE	0.18	0.069	
METHYL NAPTHALENE(1-)	39.44	0.370	90–12–0
METHYL NAPTHALENE(2-)	3.22	0.246	91–57–6
METHYL OCTANOATE	42.74	0.387	
METHYL PENTANOATE	17.92	0.414	
METHYL PEROXIDE	0.18	0.159	
METHYL PROPANOATE	8.96	0.431	
METHYL PROPENE 2 (M)	388890.00	0.963	115–11–7
METHYL PROPYL ETHER	81.70	0.594	
METHYL TERTIARY-BUTYL ETHER	30.84	0.494	1634–04–4
METHYL TETRAHYDROFURAN 2	5.05	0.357	
METHYL THIOURACIL(M)	291.63	0.479	56–04–2
METHYL-1,3-CYCLOPENTADIENE 5 (M)	2227.76	0.679	26519–91–
METHYL-2,3,4-TRIHYDROQUINOLINE N(M)	0.81	0.137	
METHYL-2-AMINOETHYLAMINE(M)	1027.77	0.635	109–81–9
METHYL-2-HYDROXYETHYLAMINE (M)	0.19	0.080	109–83–1
METHYL-3-ACETYLCYCLOPENTADIENE 1(M)	294.44	0.588	
METHYL-3-NITROBENZYL ALCOHOL 4 (M)	0.37	0.073	40870–59–
METHYL-4-NITROBENZYL ALCOHOL 2 (M)	0.19	0.041	23876–13–
METHYL-5-THIOACETYLDIHYDRO1, 3THI (M)	43427.00	0.648	
METHYLACETONITRILE (M)	19944.00	0.643	75–86–5
METHYLBUTADIENE (isoprene)	4273.46	0.726	
METHYLBUTYLAMINE	0.62	0.178	
METHYLCYCLOPENTANE	19841.00	0.776	
METHYLENE CHLORIDE, dichloromethane	164.45	0.647	75–09–2
METHYLFURAN 2 (M)	0.15	0.064	534–22–5
METHYLISOBORNEOL,2-(M)	400.00	0.477	NA
METHYLPHENYL CARBAMATE N(M)	0.78	0.137	
METHYL-PHENYLETHYLAMINE N(M)	75.00	0.412	589–08–2
METHYL-p′-METHYLTRIPHENYL PHOSPH(M)	811.10	0.584	
METHYLSTYRENE (-4)	328.33	0.532	98–93–9
METHYLTIN TRICHLORIDE (M)	0.13	0.022	993–16–8
METHYL-TRIHYDRO–1,3-THIAZOLE 4 (M)	5.83	0.316	
MITOMYCIN C(M)	10739.00	0.532	50–07–7
MNNG(M)	10739.00	0.587	70–25–7
MONOCHLORODIFLUOROMETHANE	23666000.00	0.990	75–45–6
MORPHOLINE	3.18	0.437	110–91–8
MUSTARD GAS(M)	16.67	0.364	505–60–2

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION—Continued

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
NAPHTHALENE	26.84	0.413	
NAPHTHALENE ACETIC ACID 2 METHYL, 1	61.11	0.357	
NAPHTHOQUINONE–1,4(M)	128	0.164	130–15–4
NICKEL CYANIDE (M)	3.08	0.284	557–19–7
NITRO m XYLENE, 2	23.72	0.370	
NITRO-4-METHYLBENZOATE 3(M)	133990.00	0.733	
NITROANILINE P	12.61	0.411	100–01–6
NITROBENZENE	1.33	0.210	98–95–3
NITROBENZENESULFONYL CHLORIDE P(M)	24.61	0.316	98–74–8
NITROBENZYL ALCOHOL P (M)	11.17	0.314	619–73–8
NITROBIPHENYL,4-	0.40	0.068	92–93–3
NITROCELLULOSE (M)	55.56	0.109	9004–70–0
NITROETHANE	0.40	0.161	
NITROGEN MUSTARD N-OXIDE(M)	400.00	0.475	126–85–2
NITROMETHANE	1305.54	0.859	75–52–5
NITRO METHYLBENZENE	3.59	0.270	
NITROPROPANE 2	6.61	0.396	79–46–9
NITROSOBENZYL ALCOHOL 4 (M)	0.75	0.136	
NITROSOPYRROLIDINE N (M)	694440.00	0.884	930–55–2
NITROTOLUENE (-p)	22.67	0.399	99–99–0
NITROTOLUENE, m	3.97	0.279	
NITROTOLUENE, o	4.88	0.296	
NITROTOLUENE, o	3.27	0.266	
NONANAL	55.56	0.413	
NONANOL, n	0.25	0.065	
NONYLPHENOL(M)	400.00	0.452	25154–52–
OCTAMETHYLPYROPHOSPHORAMIDE (M)	>10000	0.941	152–16–9
OCTANAL	26.46	0.394	
OCTANE	215000.00	0.839	111–65–9
OCTANOL 1	2.41	0.240	111–87–5
OCTANOL 2	0.66	0.136	
OCTANOL 3	0.39	0.098	
OCTANOL 4	0.52	0.118	
OIL (decane)	2844.42	0.513	
OXAMIC ACID(M)	4.94	0.317	471–47–6
PARABROMOPHENOL (M)	0.90	0.135	106–41–2
PARAFORMALDEHYDE (M)	55.56	0.225	30525–89–
PARALDEHYDE	2.04	0.232	123–63–7
PCB 1016 (monochlorobiphenyl)	10.00	0.289	12674–11–
PCB 1221 (monochlorobiphenyl)	18.00	0.342	11104–28–
PCB 1232 (dichlorobiphenyl)	48.00	0.370	11141–16–
PCB 1242 (trichlorobiphenyl)	33.00	0.317	53469–21–
PCB 1248 (quatrochlorobiphenyl)	110.00	0.326	12672–29–
PCB 1254 (pentachlorobiphenyl	450.00	0.539	11097–69–
PCB 1260 (hexachlorobiphenyl)	394.00	0.333	11096–82–
PCB'S (Aroclors)	48.00	0.338	
PENTACHLOROBENZENE	405.55	0.396	608–93–5
PENTACHLOROETHANE	1166.66	0.608	76–01–7
PENTACHLORONITROBENZENE	21.39	0.286	
PENTACHLOROPHENOL	4.90	0.261	87–86–5
PENTADIENE 1,2	661.11	0.666	
PENTAERYTHRITOL TETRANITRATE (M)	1.76	0.133	78–11–5
PENTANAL	8.17	0.406	
PENTANE	2244.42	0.676	
PENTYL PROPANOATE	46.30	0.418	
PENTYLAMINE	1.36	0.254	
PENTYLBENZENE	326.79	0.458	
PENTYLCYCLOPENTANE	101010.00	0.700	
PERCHLOROMETHYL MERCAPTAN (M)	588880.00	0.942	594–42–3
PERYLENE (M)	611.11	0.525	198–55–0
PHENANTHRENE	1.98	0.193	85–01–8
PHENOL,3-(1,1-DIMETHYLETHYL)-(M)	400.00	0.504	585–34–2
PHENOTHIAZINE (M)	1105.54	0.613	92–84–2
PHENYL ISOCYANATE (M)	661.11	0.533	103–71–9
PHENYLACETIC PEROXIDE (M)	0.84	0.137	
PHENYLCYCLOHEXANONE 4	486.11	0.501	4894–75–1
PHENYLHYDRAZINE (M)	6.00	0.314	100–63–0
PHENYLPHENOL P	177.78	0.440	92–69–3
PHENYLTHIOUREA (M)	854.57	0.738	103–85–5

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION—Continued

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
PHOSGENE (decomposes)	780.00	0.584	75–44–5
PHOSPHINE	12611.00	0.799	7803–51–2
PHTHALATE, DI N BUTYL-	0.27	0.039	
PHTHALATE, DI N OCTYL	66.11	0.273	
PHTHALIC ACID	733.33	0.716	88–99–3
PHTHALIMIDE	633.33	0.710	85–41–6
PICOLINE(2-) (M)	7.06	0.398	109–06–8
PINENE (alpha-)	1455.54	0.540	80–56–8
PIPERAZINE	2.34	0.339	110–85–0
POLYCYCLIC KETONE O (M)	2777.75	0.415	
PROPANAL	4.27	0.436	
PROPANE	1222.21	0.755	74–98–6
PROPANE),2,2′-OXYBIS(2-CHLORO-(M)	588880.00	0.943	39638–32–
PROPANOIC ACID	0.10	0.062	79–09–4
PROPANOL	0.37	0.185	
PROPANOL ISO	0.43	0.190	67–63–0
PROPENAL	7.51	0.487	
PROPENE	11574.00	0.843	
PROPENYL BENZENE	767.99	0.567	
PROPIONALDEHYDE	3.32	0.375	123–38–6
PROPIONIC ACID	2.71	0.381	79–09–4
PROPIONITRILE (M)	15.28	0.580	107–12–0
PROPYL ACETATE ISO	17.61	0.453	108–21–4
PROPYL BUTANOATE	29.24	0.417	
PROPYL ETHER	191.57	0.565	111–43–3
PROPYL METHANOATE	20.58	0.506	
PROPYL PROPANOATE	21.37	0.427	
PROPYL THIOURACIL(M)	2171.99	0.588	51–52–5
PROPYL(-n) ACETATE	16.33	0.448	109–60–4
PROPYL(-n) BENZENE	366.11	0.520	103–65–1
PROPYL-3-METHOXY PYRAZINE,2-ISO(M)	10739.00	0.584	25773–40–
PROPYLAMINE	0.68	0.249	107–10–8
PROPYLCYCLOPENTANE	50505.00	0.752	
PROPYLENE	117220.00	0.962	115–07–1
PROPYLENE CHLOROHYDRIN	0.13	0.064	
PROPYLENE OXIDE	19.77	0.544	75–56–9
PROPYLENIMINE 1,2 2 METHYL aziri	0.52	0.222	75–55–8
PROPYN-1-OL 2(PROPARLGYL)	0.48	0.225	107–19–7
PROPYNE	610.50	0.763	
PYRENE	0.60	0.089	129–00–0
PYRIDINE	1.31	0.255	110–86–1
PYRROLIDINE	0.13	0.072	
QUINALDINE (M)	611.11	0.597	91–63–4
RESERPINE (M)	115.55	0.384	50–55–5
s ACETYLMERCAPTOSUCCINIC ACID	0.13	0.035	
S4CHL.CYCLOHEX.00DIMETH.PHOS.DI T(M)	9.61	0.243	
SACCHARIN (M)	559.24	0.679	81–07–2
SAFROLE (M)	16.67	0.362	94–59–7
sec BUTYLBENZENE	771.60	0.528	
SILVEX	346.11	0.431	93–72–1
SODIUM DODECYL SULFATE (M)	2.53	0.187	151–21–3
SODIUM DODECYLBENZENE SULFONATE(M)	0.79	0.094	25155–30–
STREPTOZOTOCIN (M)	10739.00	0.969	18883–66–
STYRENE	144.71	0.702	100–42–5
STYRENE OXIDE	4.96	0.305	
SULFIDE (M)	115.75	0.613	
TAMARON (METHAMIDIPHOS)	0.25	0.075	
TARS(M)	111.11	0.370	
t-BUTYL HYDROPEROXIDE	0.72	0.199	75–91–2
TERPINEOL, ALPHA	28.67	0.370	
tert BUTANOL	0.79	0.231	
tert-AMYLBENZENE	1010.09	0.503	
tert-BUTYLBENZENE	661.37	0.527	
TETRACHLOROAQUINONE (M)	6230900.00	0.961	
TETRACHLOROBENZENE(1,2,3,4)	150.00	0.383	634–66–2
TETRACHLOROBENZENE(1,2,3,5)	236.66	0.401	634–90–2
TETRACHLOROBENZENE(1,2,4,5)	236.66	0.438	95–94–3
TETRACHLORODIBENZOFURAN(2,3,7,8) (M)	8.50	0.255	51207–31–
TETRACHLORODIBENZO-p-DIOXIN(2,3,7,8)	2.21	0.145	1746–01–6

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION—Continued

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
TETRACHLOROETHANE(1,1,1,2) (M)	111.11	0.493	630–20–6
TETRACHLOROETHANE(1,1,2,2)	13.86	0.397	79–34–5
TETRACHLOROETHENE	983.34	0.667	127–18–4
TETRACHLOROPHENOL(2,3,4,6)	0.25	0.039	58–90–2
TETRACHLOROPHENOL(2,3,5,6)	6166600.00	0.879	935–95–5
TETRACHLOROPROPENE(1,1,2,3) (M)	499.44	0.562	10436–39–
TETRADECANE	1594.43	0.395	629–59–4
TETRAETHYL LEAD	4494.40	0.659	78–00–2
TETRAETHYLENE GLYCOL (M)	0.71	0.107	112–60–7
TETRAETHYLENE PENTANE	1249.99	0.707	
TETRAETHYLPYROPHOSPHATE (M)	>100000	0.940	107–49–3
TETRAFLUOROETHENE	34722.00	0.761	
TETRAFLUOROMETHANE	264550.00	0.920	
TETRAHYDROBENZALDEHYDE	1.29	0.213	
TETRAHYDROFURAN	2.72	0.322	109–99–9
TETRAHYDRONAPHTHALENE,1,2,3,4-(M)	400.00	0.500	119–64–2
TETRAHYDROPYRAN	6.94	0.381	142–68–7
TETRAHYDROTHIOPHENE	60.56	0.514	
TETRALIN	104.44	0.439	
TETRANITROMETHANE	605.55	0.718	509–14–8
THIOACETAMIDE (M)	7.53	0.375	62–55–5
THIOBENZYL ALCOHOL P (M)	0.69	0.136	100–53–8
THIOBISETHANE, 1,1′	317.78	0.593	
THIOCYANATE (TOTAL AS SCN-) (M)	1555.54	0.602	NA
NATHIOMETHANOL (M)	28.98	0.499	74–93–1
THIOPHENOL(M)	2433.14	0.660	108–98–5
THIOPROPIONAMIDE 2(M)	0.29	0.085	
THIOUREA	8.89	0.472	62–56–6
THIRAM (M)	11716.00	0.621	137–26–8
THYMINE (M)	433.31	0.802	65–71–4
TOLUENE	356.67	0.551	108–88–3
TOLUENE24DIAZOBIS-METATOLUENEDIA(M)	2.38	0.133	
TOLUENESULFONYL CHLORIDE	0.12	0.028	
TOLUIC ALDEHYDE	14.06	0.382	122–78–1
TOLUIDINE (-0)	0.13	0.049	95–53–4
TOLUIDINE HYDROCHLORIDE,o-(M)	588880.00	0.947	636–21–5
TOLUIDINE P	1.06	0.208	106–49–0
TOXAPHENE	271.66	0.416	8001–35–2
trans 1,4 DIMETHYLCYCLOHEXANE	50505.00	0.752	
trans 2 BUTENAL	1.09	0.267	
trans 2 HEPTENE	23148.00	0.724	
trans 2 HEXENAL	2.78	0.295	
trans 2 OCTENAL	13.89	0.358	
trans, trans 2,4 HEXADIENAL	0.56	0.151	
TRIBROMOMETHYLPHOSPHATE (M)	1.93	0.136	
TRIBUTYL PHOSPHOROTRITHIOATE SSS	8.72	0.230	78–48–8
TRIBUTYL TIN ACETATE	386.66	0.386	
TRIBUTYLPHOSPHATE	2193900.00	0.778	126–73–8
TRICHLORO(1,1,2)TRIFLUOROETHANE ((M)	24166.00	0.739	76–13–1
TRICHLORO-1,2,2-TRIFLUOROETHANE,1,1	28996.00	0.693	76–13–1
TRICHLORO-1,3,5-TRIAZINE 2,4,6 (M)	51.22	0.413	108–77–0
TRICHLOROANISOLE 2,3,6 (M)	588880.00	0.940	50375–10–
TRICHLOROBENZENE 1,2,3	437.22	0.472	87–61–6
TRICHLOROBENZENE 1,2,4	106.67	0.417	120–82–1
TRICHLOROBENZENE 1,3,5	1161.10	0.512	108–70–3
TRICHLOROBUTANE 1,2,3 (M)	258890.00	0.910	18338–40–
TRICHLOROETHANE 1,1,1	966.67	0.666	71–55–6
TRICHLOROETHANE 1,1,2	45.77	0.495	79–00–5
TRICHLOROETHYLENE	566.67	0.636	79–01–6
TRICHLOROFLUOROMETHANE	3238.86	0.677	75–69–4
TRICHLOROPHENOL 2,4,5	0.48	0.079	95–95–4
TRICHLOROPHENOL 2,4,6	0.98	0.154	88–06–2
TRICHLOROPROPANE 1,1,1	1611.10	0.819	7789–89–1
TRICHLOROPROPANE(1,1,2)	1611.10	0.703	598–77–6
TRICHLOROPROPANE(1,2,2)	1611.10	0.721	3175–23–3
TRICHLOROPROPANE(1,2,3)	1555.54	0.817	96–18–4
TRICHLOROPROPENE (1,1,2)(M)	403.89	0.569	
TRICOSANE N(M)	5.12	0.270	629–50–5
TRIETHYLAMINE	6.94	0.339	121–44–8

TABLE 4 OF APPENDIX J—FET VALUES FOR COMPOUNDS WITH HENRY'S LAW CONSTANTS AT 25 °C GREATER THAN OR EQUAL TO 0.1 (Y/X) ATMOSPHERE PER MOLE FRACTION—Continued

[Use with section 2.5.3]

Compound	Y/X	Fet	CAS
TRIETHYLENE GLYCOL(M)	0.55	0.106	112–27–6
TRIETHYLPHOSPHOROTHIOATE,o,o,o-(M)	400.00	0.462	126–68–1
TRIFLUOROETHANE(1,1,1)	4666600.00	0.979	
TRIFLUOROMETHANE	4273.46	0.730	
TRIFLURALIN	8.89	0.230	
TRIISOBUTYLENE	5094.39	0.479	
TRIISOPROPYLAMINE	190.55	0.392	
TRIMELLITIC ANHYDRIDE (M)	0.23	0.046	552–30–7
TRIMETHYL BENZENE, 123	184.57	0.465	
TRIMETHYL-4-NITROANILINE 2,3,5 (M)	500.00	0.484	
TRIMETHYLAMINE	5.79	0.464	75–50–3
TRIMETHYLBENZENE (1,3,5)	326.79	0.502	108–67–3
TRIMETHYLPENTANE 2,2,4	185450.00	0.834	540–84–1
TRIMETHYLSILANOL	8716.44	0.752	
TRINITROBENZENE,sym- (M)	182.49	0.466	99–35–4
TRINITROTOLUENE(2,4,6)	0.76	0.105	118–96–7
TRIPHENYL PHOSPHINE (M)	7.28	0.249	603–35–0
TRIPHENYLMETHANE (M)	194440.00	0.922	516–73–3
TRIPHENYLPHOSPHINE NICKEL CARBON(M)	209.44	0.365	
TRIS (1-AZIRIDINYL) PHOSPHINE SU(M)	13.69	0.304	52–24–4
TRIS (2,3-DIBROMOPROPYL) PHOSPHA(M)	4417800.00	0.939	126–72–7
TRISODIUM NITRILOTRIACETATE (M)	10739.00	0.568	5064–31–3
TRYPAN BLUE(M)	611.11	0.417	72–57–1
URACIL (M)	427.89	0.857	66–22–8
URACIL MUSTARD (M)	611.11	0.525	66–75–1
UREA	14.67	0.582	57–13–6
URETHANE	3.26	0.370	51–79–6
VALERIC ACID (M)	3.73	0.287	109–52–4
VINYL ACETATE	28.21	0.521	108–05–4
VINYL ACETYLENE	1461.97	0.746	
VINYL BROMIDE	375.55	0.693	
VINYL CHLORIDE	1472.00	0.854	75–01–4
VINYL DIHYDROPYRAN	52.89	0.536	
VINYL METHYL ETHER	39.61	0.590	
VINYLCYCLOHEXENE 4(M)	102220.00	0.905	100–40–3
VINYLIDENE CHLORIDE	1438.90	0.680	75–35–4
XYLENE	291.66	0.562	1330–20–7
XYLENE(-m)	413.00	0.549	108–38–3
XYLENE(-o)	271.00	0.569	95–47–6
XYLENE(-p)	413.34	0.561	106–67–9
XYLIDINE dimethylaniline	0.15	0.048	
XYLYL CHLORIDE M (M)	78.33	0.470	620–19–9
XYLYL CHLORIDE O (M)	78.33	0.470	552–45–4

*Molecular structure only approximate.
(M) fraction measured (fm) estimated from Mwt correlation.

TABLE 5 OF APPENDIX J—FE VALUES FOR EMISSIONS FROM BIOLOGICAL TREATMENT SYSTEMS (FET VALUES)

[Use with section 2.5.3]

Henry's Law Constant	Fet Value
0.002	0.001
0.004	0.002
0.006	0.003
0.01	0.005
0.014	0.007
0.02	0.010
0.03	0.015
0.04	0.020
0.05	0.25
0.06	0.030
0.07	0.035
0.08	0.040
0.09	0.045
0.1	0.050
0.158	0.060
0.22	0.070
0.27	0.080

TABLE 5 OF APPENDIX J—FE VALUES FOR EMISSIONS FROM BIOLOGICAL TREATMENT SYSTEMS (FET VALUES)—Continued

[Use with section 2.5.3]

Henry's Law Constant	Fet Value
0.28	0.090
0.285	0.10
0.288	0.11
0.354	0.12
0.45	0.13
0.5	0.14
0.55	0.15
0.628	0.16
0.71	0.17
0.85	0.18
1.01	0.19
1.10	0.20
1.2	0.21
1.3	0.22
1.75	0.23
1.93	0.24
2.03	0.25
2.3	0.26
2.6	0.27
2.8	0.28
2.9	0.29
3	0.30
3.3	0.31
4.17	0.33
4.6	0.35
8	0.37
9.6	0.39
11	0.40
13	0.41
15	0.43
16	0.44
17	0.45
75	0.47
144	0.50
206	0.52
411	0.54
500	0.56
615	0.58
716	0.60
811	0.62
1000	0.64
4000	0.66
8000	0.68
9000	0.70
11000	0.72
12000	0.74
20000	0.76
30000	0.78
50000	0.80
210000	0.82

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FORM 1 OF APPENDIX J--CALCULATION OF THE HENRY'S LAW CONSTANT AT 25°C FOR A COMPOUND IN A SEALED BATCH TEST (i.e., Two Phase Closed System) (use with Section 2.1.3.1 and 2.4.3.1.1)

NAME OF THE FACILITY _____
WASTE STREAM IDENTIFICATION _____
COMPOUND _____
REACTOR HEADSPACE VOLUME, (L) 1 _____
REACTOR LIQUID VOLUME (L) 2 _____
TEMPERATURE of the liquid in the unit (deg.C) 3 _____

A Data set	B Time (hr)	C Liquid Conc. (mg/L)	D Gas Conc. (mg/L)	E Keq D/C
1	_____	_____	_____	_____
2	_____	_____	_____	_____
3	_____	_____	_____	_____
4	_____	_____	_____	_____
5	_____	_____	_____	_____

Temperature in degrees Kelvin.
Add 273.16 to the number on line 3. 4 _____
Molar ratio. Multiply the number on line 4 by 4.555. 5 _____
Henry's law value (mg/L gas per mg/L liquid).
The average value in column E. 6 _____
Henry's law value (mole fract. gas per mole fract. liquid)
Multiply line 6 by line 5. 7 _____

FORM 2 OF APPENDIX J--DATA FORM FOR THE CALCULATION OF THE HENRY'S LAW CONSTANT AT 25°C FROM THE STRIPPING IN AN AERATED BATCH TEST (i.e., open system) (use with Section 2.1.3.2 and 2.4.3.1.2).

NAME OF THE FACILITY _____
WASTE STREAM IDENTIFICATION _____
COMPOUND _____
Concentration basis (liquid or gas) _____

TEMPERATURE of the liquid in the unit (deg.C) 1_____
GAS FLOW RATE (L/hr) 2 _____
LIQUID VOLUME (L) 3_____
Co concentration measurement at time=0 (mg/L) 4_____

A data point	B time (hr)	C Concentration, C (mg/L)	D C/Co	E -ln(C/Co)
1	_____	_____	_____	_____
2	_____	_____	_____	_____
3	_____	_____	_____	_____
4	_____	_____	_____	_____
5	_____	_____	_____	_____
6	_____	_____	_____	_____

CALCULATIONS. Use additional lines as needed in an expansion of the above table. Plot the values in column E (y axis) vs the data in column B (x axis). Reject outliers. Curve fit with a straight line. Calculate the slope and enter the slope on line 7.

Temperature in degrees Kelvin.
Add 273.16 to the number on line 1. 5_____
MOLAR RATIO. Multiply the number on line 5 by 4.555. 6_____
Slope of the plot of -ln(C/Co) vs time (per hour) 7_____

Calculated Keq value (mg/L gas per mg/L liquid). Divide the number on line 7 by the number on line 2 and multiply the results by the number on line 3.
Enter the results on line 8. 8_____

Henry's law value (mole fract. gas per mole fract. liquid)
Multiply the number on line 8 by the number on line 6. 9_____

FORM 3 OF APPENDIX J--HOW TO SUBTRACT A CHEMICAL FROM A METHOD 25D CONCENTRATION
(use with Section 2.3)

NAME OF THE FACILITY _____
STREAM IDENTIFICATION _____

1. Report the average value of the Method 25D samples. You must take at least the minimum number of samples required by the referencing subpart. Report the results for each sample taken (ppmw). If you include any samples, you must explain why the samples should not be included in the average.

Measurements of volatile content with EPA Method 25D
Enter each result on lines 1-5 (ppmw)

1 _____
2 _____
3 _____
4 _____
5 _____

2. Report average value of Method 25D results.

Average value of Method 25D - results (ppmw)	1.	

3. Subtract from average value of Method 25D samples.

No.	Chemical (A)	Concentration (ppmw) (B)	FM M25D (C)	FM Adjusted Concentration (ppmw) (D) = (B)*(C)
1				
2				
3				
4				
5				
6				
7				
8				
9				

10				
11				
12				
13				
14				
15				
16				
17				
18				
19				

Sum of adjusted concentrations.	2.
Total Method 25D concentration adjusted to subtract chemicals Subtract Line 2 from Line 1 (Do not enter less than zero)	3.

FORM 4 OF APPENDIX J--EXAMPLE OF HOW TO SUBTRACT A CHEMICAL FROM A METHOD 25D CONCENTRATION (use with Section 2.3)

NAME OF THE FACILITY Plant A
STREAM IDENTIFICATION Waste 3A

1. Report the average value of the Method 25D samples. You must take at least the minimum number of samples required by the referencing subpart. Report the results for each sample taken (ppmw). If you include any samples, you must explain why the samples should not be included in the average.

Measurements of volatile content with EPA Method 25D 100

Enter each result on lines 1-5 (ppmw)

2	57
3	88
4	110
5	

2. Report average value of Method 25D results.

Average value of Method 25D - results (ppmw)	1.	88.75

3. Subtract from average value of Method 25D samples.

No.	Chemical (A)	Concentration (ppmw) (B)	FM M25D (C)	FM Adjusted Concentration (ppmw) (D) = (B)*(C)
1	Dichlorophenol 2,5	150	0.151	22.65

Sum of adjusted concentrations.	2.	22.65

Total Method 25D concentration adjusted to subtract chemicals. Subtract Line 2 from Line 1 (Do not enter less than zero.)	3.	66.1

FORM 5 OF APPENDIX J--HOW TO CALCULATE A HENRY'S LAW CONSTANT FROM A HENRY'S LAW CONSTANT AT A DIFFERENT TEMPERATURE FOR THE SAME CHEMICAL

(use with Sections 2.1.4, 2.4.3.2, and 2.6)

NAME OF THE FACILITY		
CHEMICAL FOR EVALUATION		
MEASURED HENRY'S LAW CONSTANT (atm/mol fraction)	1	
MEASUREMENT TEMPERATURE (deg.C)	2	
ADJUSTMENT TEMPERATURE FOR HENRY'S LAW CONSTANT (deg.C)	3	
WATER8 PREDICTED HENRY'S LAW CONSTANT AT THE MEASUREMENT TEMPERATURE	4	
WATER8 PREDICTED HENRY'S LAW CONSTANT AT THE ADJUSTMENT TEMPERATURE	5	
RATIO OF HENRY'S LAW CONSTANTS. DIVIDE THE NUMBER ON LINE 5 BY THE NUMBER ON LINE 4.	6	
ADJUSTED HENRY'S LAW CONSTANT. MULTIPLY THE NUMBER ON LINE 6 BY THE NUMBER ON LINE 1.	7	

Discuss the assumptions and data inputs used for WATER8

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FORM 6 OF APPENDIX J—GENERAL SYSTEM SPECIFICATIONS (use with Section 2.5.2)

You must use site-specific values for parameters 5, 6, and 10.

5 Humidity of inlet air (%) ..... _____
6 Temperature of air (°C) ..... _____
10 Wind velocity (cm/s at 10 m) ..... _____

For the rest of items, you may use the default values in WATER8 or site-specific values. You should document the methods used. You only have to report site-specific data on this form; you do not have to report the WATER8 default values.

1 Total water added at the unit (l/s) ..... _____
2 Area of openings at unit (cm^2) ..... _____
3 Radius of drop pipe (cm) ..... _____
4 Drop length to conduit (cm) ..... _____
7 Drain air velocity (ft/min) ..... _____
8 Manhole air velocity (ft/min) ..... _____
9 Conduit air velocity (ft/min) ..... _____
11 Distance to next unit (cm) ..... _____
12 Slope of underflow conduit ..... _____
13 Friction factor liquid ..... _____
14 Friction factor gas ..... _____
15 Radius of underflow conduit (cm) ..... _____
16 Underflow Temperature (°C) ..... _____
17 Oscillation cycle time (min) ..... _____
18 Design collection velocities (ft/s) ..... _____
19 Design branch line fraction full ..... _____
20 Fraction of wind speed on open drains ..... _____
21 Number of iterations for calculations ..... _____
22 Specified line vent rates, =1 ..... _____
23 Iterations in vent convergence pass ..... _____
24 Number of passes in vent conv. ..... _____
25 Allowable vent error ..... _____
26 Acceleration factor for vent convergence ..... _____
27 Change in pressure ..... _____
28 Oil molecular weight ..... _____
29 Oil density (g/cc) ..... _____

FORM 7 OF APPENDIX J—DESCRIPTION OF GENERAL COLLECTION ELEMENTS (use with Section 2.5.2)

Applicable units include closed trenches, open hub drains, covered drains, openings in a conduit, and manhole covers. Waste may be added either at the unit or through a drop pipe. Each unit has a potential vent or waste addition, followed by an enclosed conduit that ends at the next downstream unit.

1 Description of unit ..... _____
2 Underflow Temperature (°C) ..... _____
3 Total water added at the unit (l/s) ..... _____

The following three specifications refer to the potential vent or waste drop pipe.

4 Area of openings at unit (cm^2) ..... _____
5 Radius of drop pipe (cm) ..... _____
6 Drop length to conduit (cm) ..... _____

The term open surface refers to the surface near the vent or waste addition.

7 Open surface=1 ..... _____
8 Subsurface entrance=1 ..... _____
9 Subsurface exit =1 ..... _____

The following three specifications refer to the enclosed conduit downstream of the unit.

10 Radius of underflow conduit (cm) ..... _____
11 Distance to next unit (cm) ..... _____
12 Slope of underflow conduit ..... _____

The specified air velocity is only used if Form 6 general system specification 22 equals 1.

16 Velocity air at opening (ft/min) ..... _____
17 Municipal waste in conduit =1 ..... _____
18 Assume equilibrium in unit, =1 ..... _____

If waste is added at the unit, specify the waste number. The waste composition is described elsewhere.

19 Waste 1 added to system at unit number ..... _____
20 Waste 2 added to system at unit number ..... _____
21 Waste 3 added to system at unit number ..... _____

FORM 8 OF APPENDIX J—THE DESCRIPTION OF OPEN TRENCHES (use with Section 2.5.2)

1 Description of unit ..... _____
2 Underflow T (°C) ..... _____
3 Total water added at the unit (l/s) ..... _____
8 Subsurface entrance=1 ..... _____
9 Subsurface exit=1 ..... _____
10 Width of underflow conduit (cm) ..... _____
11 Distance to next unit (cm) ..... _____

12 Slope of underflow conduit ..... _____
19 Waste 1 added to system at unit number ..... _____
20 Waste 2 added to system at unit number ..... _____
21 Waste 3 added to system at unit number ..... _____

FORM 9 OF APPENDIX J—THE DESCRIPTION OF AN OPEN SUMP (use with Section 2.5.2)

1. Description of unit ..... _____
2. Underflow Temperature (°C) ..... _____
3. Total water added at the unit (l/s) ..... _____
4. Area of openings at unit (cm^2) ..... _____
5. Radius of drop pipe (cm) ..... _____
6. Drop length to conduit (cm) ..... _____
7. Open surface=1 ..... _____
8. Subsurface entrance=1 ..... _____
9. Subsurface exit =1 ..... _____
10. Radius of underflow conduit (cm) ..... _____
11. Distance to next unit (cm) ..... _____
12. Slope of underflow conduit ..... _____
13. Area of surface(cm^2) ..... _____
14. Flow entrance depth under surface (cm) ..... _____
15. Depth of liquid in sump (cm) ..... _____
16. Velocity air at opening (ft/min) ..... _____
17. Municipal waste in conduit =1 ..... _____
18. Assume equilibrium in unit, =1 ..... _____
19. Waste 1 added to system at unit number ..... _____
20. Waste 2 added to system at unit number ..... _____
21. Waste 3 added to system at unit number ..... _____

FORM 10 OF APPENDIX J—THE DESCRIPTION OF AN OPEN J DRAIN (use with Section 2.5.2)

1. Description of unit ..... _____
2. Underflow Temperature (°C) ..... _____
3. Total water added at the unit (l/s) ..... _____
4. Distance to trap liquid surface (cm) ..... _____
5. Radius of drop pipe (cm) ..... _____
6. Drop length to conduit (cm) ..... _____
7. Open surface=1 ..... _____
8. Subsurface entrance=1 ..... _____
9. Subsurface exit =1 ..... _____
10. Radius of underflow conduit (cm) ..... _____
11. Distance to next unit (cm) ..... _____
12. Slope of underflow conduit ..... _____
13. Depth of water level (cm) ..... _____
14. Displacement in oscillation (cm) ..... _____
17. Municipal waste in conduit =1 ..... _____
18. Assume equilibrium in unit, =1 ..... _____
19. Waste 1 added to system at unit number ..... _____
20. Waste 2 added to system at unit number ..... _____
21. Waste 3 added to system at unit number ..... _____

FORM 11 OF APPENDIX J—THE DESCRIPTION OF SEALED COLLECTION ELEMENTS (use with Section 2.5.2)

1. Description of unit ..... _____
2. Underflow Temperature © ..... _____
3. Total water added at the unit (l/s) ..... _____
4. Area of openings at unit (cm2) ..... _____
5. Radius of drop pipe (cm) ..... _____
6. Drop length to conduit (cm) ..... _____
7. Open surface=1 ..... _____
8. Subsurface entrance=1 ..... _____
9. Subsurface exit =1 ..... _____
10. Radius of underflow conduit (cm) ..... _____
11. Distance to next unit (cm) ..... _____
12. Slope of underflow conduit ..... _____
17. Municipal waste in conduit =1 ..... _____
18. Assume equilibrium in unit, =1 ..... _____
19. Waste 1 added to system at unit number ..... _____
20. Waste 2 added to system at unit number ..... _____
21. Waste 3 added to system at unit number ..... _____

FORM 12 OF APPENDIX J—THE DESCRIPTION OF WEIRS AND WATERFALLS (use with Section 2.5.2)

1. Description of unit ..... _____
2. Underflow Temperature (°C) ..... _____
3. Total water added at the unit (l/s) ..... _____
4. Waterfall width at surface (m) ..... _____
5. Waterfall drop height (cm) ..... _____
6. Tailwater depth (m) ..... _____
7. Open surface=1 ..... _____
8. Subsurface entrance=1 ..... _____

9. Subsurface exit =1 ..... _____
10. Radius of underflow conduit (cm) ..... _____
11. Distance to next unit (cm) ..... _____
12. Slope of underflow conduit ..... _____
19. Waste 1 added to system at unit number ..... _____
20. Waste 2 added to system at unit number ..... _____
21. Waste 3 added to system at unit number ..... _____

FORM 13 OF APPENDIX J—THE DESCRIPTION OF LIFT STATIONS (use with Section 2.5.2)

1. Description of unit ..... _____
2. Underflow Temperature (°C) ..... _____
3. Total water added at the unit (l/s) ..... _____
4. Area of openings at unit (cm^2) ..... _____
5. Radius of drop pipe (cm) ..... _____
6. Drop length to conduit (cm) ..... _____
7. Open surface=1 ..... _____
8. Subsurface entrance=1 ..... _____
9. Ssubsurface exit =1 ..... _____
10. Radius of underflow conduit (cm) ..... _____
11. Distance to next unit (cm) ..... _____
12. Slope of underflow conduit ..... _____
13. Fractional approach to equilibrium ..... _____
14. If covered, then enter 1 ..... _____
19. Waste 1 added to system at unit number ..... _____
20. Waste 2 added to system at unit number ..... _____
21. Waste 3 added to system at unit number ..... _____

Definitions of Terms

Area of openings at unit (cm^2) The area that can vent headspace gas or permit outside air to enter the collection system. This area is generally less than or equal to the area of the drop pipe opening.

Area of surface (cm^2) (sump) The area of the surface exposed to the wind or to the headspace in a sump. This area generally corresponds to the physical area of the sump exposed surface horizontal cross-section.

Assume equilibrium in unit, =1 If condition are present in the unit such that equilibrium is expected (agitated surface, sealed waterfall, splash loading, low gas and liquid flow, or other factors) enter a 1 as a computer flag.

Cover An enclosure that prevents the exchange of ambient air and the headspace air. If there are openings in the cover, then air may be exchanged with the headspace air. The openings in the cover are specified as *area of openings at unit*.

Covered, then enter 1 The input value is a computer program flag that specifies that the unit is sealed and outside wind will not blow across the surface of the liquid in the unit. If the unit is covered, this does not indicate that the surface of the liquid is not exposed to headspace gas.

Depth of liquid in sump (cm) The depth in centimeters from the top of the liquid surface in the sump to the base of the sump. The depth is always positive.

Depth of water level (cm) (J trap) The depth in centimeters from the top of the liquid surface in the water seal to the base of the water seal. This depth is always positive and would correspond to the wet distance on a dip-stick. This variable may be used for periodically active hubs.

Description of unit This is a general description that identifies the unit that is being specified. Examples can include ''Tank A45'', ''Drain E–17'', ''Sewer WW4'', or other description. This description will appear on some of the reports.

Displacement in oscillation (cm) (J trap) Distance of surface level fluctuation in the J trap. The value of the displacement is used in an air emission model to estimate air exchange.

Distance to next unit (cm) The distance of the run of the underflow conduit that connects the unit to the next unit downstream.

Distance to trap liquid surface (cm) (J trap) The depth in centimeters from the top of the open hub top to the liquid surface within the J trap. The depth is always positive and would correspond to the dry distance on a dip-stick.

Drop length to conduit (cm) The length in centimeters from the top of the hub in the drop pipe to the typical liquid surface in the underflow conduit. The length is always positive.

Drop length to conduit (cm) (J trap) The length in centimeters from the water seal in the J trap to the typical liquid surface in the underflow conduit. The length is always positive.

Flow entrance depth under surface (cm) The length between the surface of the liquid in the sump and the base of the inlet conduit. This length is always positive and represents the effective depth of flow for the mass transfer model.

Fractional approach to equilibrium The fraction of equilibrium between the liquid and the headspace in the lift station unit. The lift station model uses this value as an input parameter because analysis of laboratory data indicated that the vent gas in an enclosed unit with a waterfall was approximately 50% of the equilibrium value. For water falling in a more open unit, consider using the waterfall unit instead of the lift station model.

Headspace The headspace is the air over the wastewater in the enclosed underflow conduit.

Municipal waste in conduit=1 The input value is a computer program flag which identifies which mass transfer model is used for the calculations. A value of zero is the default value and the mass transfer is calculated using the trench model correlation derived from Owens. A value of 1 would calculate mass transfer through the Parkhurst-Pomeroy correlation for municipal sewers. Additional options for mass transfer options may be added in the future.

Open surface=1 The input value is a computer program flag which indicates that the surface of the unit receiving the waste is open to the atmosphere. Zero is the default value (closed unit). Many of the collection system units have this option for flexibility. This flag does not refer to the underflow conduit, only to the units. The flow of headspace in the drop pipe will be of less importance if the drop pipe connects to a unit that is open.

Open surface=1 (J trap) The input value is a computer program flag which indicates that the surface of the unit receiving the waste is open to the atmosphere. Zero is the default value, and it is considered very unusual to use an open J trap for discharge into a unit with an exposed surface.

Open surface=1 (sump) The input value is a computer program flag which indicates that the surface of the unit receiving the waste is open to the atmosphere. Zero is the default value, and a value of 1 indicates that there are potential air emissions from wind blowing across the surface. Grates and perforated covers are considered characteristic of an open surface.

Oscillation cycle time (min) The cycle time or period of the water level rise and drop in an open water trap. Variations in the internal headspace pressure will cause water level oscillations.

Radius of drop pipe (cm) The radius in centimeters in the drop pipe that connects the hub to the unit. There is no water seal on the drop pipe (see J trap).

Radius of drop pipe (cm) (J trap) The radius in centimeters in the drop pipe forming a water seal in the J trap. The drop pipe connects the hub to the water seal in the J trap.

Radius of underflow conduit (cm) One half the diameter of a circular exiting pipe that connects the unit to the next unit downstream. This pipe is considered closed and not exposed to leaks and air exchange with the environment during the run of the pipe. If the conduit is not closed, consider the trench model.

Rise The difference in elevation in an underflow conduit that connects collection system units.

Run The path in an underflow conduit that connects collection system units.

Slope of underflow conduit The ratio of the rise to the run in the underflow conduit. The slope is always positive and measured from downstream to upstream in each run.

Subsurface entrance=1 This input value is a computer program flag which indicates that the headspace is blocked from flowing into or out of the upstream underflow conduits. A value of zero indicates that there is no headspace blockage.

Subsurface exit=1 This input value is a computer program flag which indicates that the headspace is blocked from flowing into or out of the underflow conduit downstream. A value of zero indicates that there is no headspace blockage.

Total water added at the unit (l/s) This is an optional specification of the total amount of water added to the collection system at the unit. This specification is only used if water is added to the specified wastewater streams at the unit. This optional specification could be used if the total wastewater flow at the unit differed from the sum of the flows of the wastes upstream of the unit.

Underflow conduit The exiting pipe or trench that connects the unit to the next unit downstream. This conduit may be (1) closed and not exposed to leaks and air exchange with the environment during the run of the pipe or (2) exposed to leaks and air exchange with the environment.

Underflow Temperature (C) The entrance temperature of the liquid into the unit. The temperature of the waste stream is specified separately.

Velocity air at opening (ft/min) The velocity of flow into the unit at the specified unit openings (see area of openings at unit). This value is only used if a special flag is set. (See Form 6 general specifications 22. Specified line vent rates, =1)

Waste added to system at unit number The input information of waste streams into the collection system units is accomplished by specifying the waste number. The waste number refers to a data base element that includes the drop distance into the hub, the flow rate, the temperature, concentrations, the oil content and other information.

Waterfall drop height (cm) The distance from the top of the waterfall to the tailwater surface level (unit liquid underflow level) . This value is always positive.

Waterfall: Open surface=1 The input value is a computer program flag which indicates that the waterfall is open to the atmosphere. Zero is the default value (waterfall is enclosed).

Waterfall: tailwater depth (m) The depth of flow in the underflow conduit under the waterfall.

Waterfall width at surface (m) The width of the waterfall across the at the upper liquid level. The flow rate is used with the width to estimate the thickness of the falling water film.

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