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Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF) - Background Information for Promulgated Organic Air Emission Standards for Tanks, Surface Impoundments, and Containers

Office of Air Quality Planning and Standards
Clean Air
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EPA-453/R-94-076b

Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF) - Background Information for Promulgated Organic Air Emission Standards for Tanks, Surface Impoundments, and Containers

Emission Standards Division

U.S. ENVIRONMENTAL PROTECTION AGENCY

Office of Air and Radiation

Office of Air Quality Planning and Standards

Research Triangle Park, North Carolina 27711

November 1994

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF) - Background Information for Promulgated Organic Air Emission Standards for Tanks, Surface Impoundments, and Containers

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11/15/94
(Date)

1. The standards will limit organic air emissions at hazardous waste treatment, storage, and disposal facilities (TSDF) that are subject to regulation under Subtitle C of the Resource Conservation and Recovery Act (RCRA). The rules establish final organic air emission control requirements for tanks, surface impoundments, and certain containers. The final standards are promulgated under the authority of Section 3004(n) of the Hazardous and Solid Waste Amendments to RCRA.

2. Copies of this document have been sent to the following Federal Departments: Agriculture, Commerce, Defense, Energy, Health and Human Services, Interior, Labor, and Transportation; the Office of Management and Budget; the National Science Foundation; and other interested parties.

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4. Copies of this document may be obtained from:

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1.0 SUMMARY

1.1 SUMMARY OF RULE CHANGES SINCE PROPOSAL

The EPA proposed the rule on July 22, 1991 (refer to 56 FR 33491). Based on public comments received by the EPA at proposal as well as the EPA's evaluation of additional information obtained after proposal, certain requirements of the rule have been changed from those proposed. The major changes affect provisions establishing the rule applicability, the procedures for determining the average volatile organic concentration of a waste, and the air emission control requirements for containers. In addition, the EPA has made many changes to the specific regulatory text to clarify the EPA's intent in the application and implementation of the rule requirements. The substantive changes to the rule since proposal are summarized below.

1.1.1 TSDF Tanks, Surface Impoundments, and Containers

A new subpart CC is promulgated in both 40 CFR parts 264 and 265. Subpart CC under 40 CFR part 264 applies to owners and operators of permitted TSDF while subpart CC under 40 CFR part 265 applies to owners and operators of interim-status TSDF. All changes since proposal to subpart CC in 40 CFR part 264 and to subpart CC in 40 CFR part 265 are identical with the exception of changes to the rule reporting requirements. There are no reporting requirements under 40 CFR 265 subpart CC for owners and operators of interim-status TSDF. Hereafter for convenience in this background information document (BID), the term "subpart CC standards" is used collectively to refer to both subpart CC in 40 CFR part 264 and subpart CC in 40 CFR part 265.

The compliance time for the subpart CC standards has been revised since proposal to allow up to an additional 30 months after [insert date 180 days after date of publication in the Federal Register] to install and begin operation of air emission control equipment required by the rule provided that the owner or operator develops and places in the facility operating records by this date an implementation schedule for installation of the equipment. Compliance dates and implementation requirements for the subpart CC standards are explained further in chapter 9 of this BID.

1.1.1.1 Applicability. The applicability of the subpart CC standards has been revised since proposal to specifically exempt from the rule certain tanks, surface impoundments, and containers in which the owner or operator has stopped adding hazardous waste. The subpart CC standards do not apply to a tank, surface impoundment, or container that meets either of the following conditions: (1) no hazardous waste is added to the waste management unit on or after [insert date 180 days after date of publication in the Federal Register] (see generally 55 FR 39409, September 27, 1990); or (2) addition of hazardous waste to the waste management unit is stopped and the owner or operator has begun implementing or completed closure pursuant to an approved closure plan.

In addition, the applicability of the subpart CC standards has been changed such that the rule is not applicable to any container having a design capacity less than 0.1 m^3 (approximately 26 gallons) regardless of the organic content of the hazardous waste handled in the container. In response to comments on the proposed rule, the EPA reviewed the types of small containers commonly used to accumulate and transfer hazardous waste. Considering the small quantity of hazardous waste handled in a sample collection vial, safety can, disposal can, and other types of small containers and the short periods of time that the waste normally remains in one of these containers, the EPA concluded that existing rules for containers having a design capacity less than 0.1 m^3 are sufficient to protect human health and the environment. (Refer to chapter 6 of this BID).

Finally, the EPA has decided to temporarily defer application of the subpart CC standards to tanks, surface impoundments, and containers managing hazardous wastes under certain special circumstances. For now, the EPA is deferring application of the subpart CC standards to waste management units that are used solely to treat or store hazardous wastes generated on-site from remedial activities required under RCRA corrective action or CERCLA response authorities (or similar State remediation authorities). Also, the EPA is deferring application of the subpart CC standards to waste management units that are used solely to manage radioactive mixed wastes. The EPA's rationale for these deferrals is explained in section 6.1.3 of chapter 6 of this BID.

1.1.1.2 General Standards. For each tank, surface impoundment, or container to which the subpart CC standards apply (referred to here as an "affected unit"), the owner or operator is required to use the air emission controls specified in the rule except when the hazardous waste placed in an affected unit meets certain conditions. As explained in the following paragraphs, the conditions under which an affected unit is exempted from the air emission control requirements of the subpart CC standards have been revised since proposal.

1.1.1.2.1 Waste volatile organic concentration exemption. Under the final subpart CC standards, an affected unit is exempt from the air emission control requirements of the rule if all hazardous waste placed in the unit is determined to have an average volatile organic concentration less than 100 parts per million by weight (ppmw) based on the organic composition of the hazardous waste at the point of waste origination. This waste volatile organic concentration limit incorporates several revisions that have been made by the EPA since proposal.

First, the format for the limit has been changed to be the average volatile organic concentration of the hazardous waste on a mass-weighted basis during normal operating conditions for the source or process generating the waste (in contrast to the proposed format of the maximum volatile organic concentration for the hazardous waste never to be exceeded). Averaging periods up to 1 year in duration are allowed for each individual waste stream under the final rule. The procedures for determining the average volatile organic concentration of a waste are explained further in section 6.3 of chapter 6 of this BID.

Second, determination of the volatile organic concentration of the waste under the final rule is based on the organic composition of the waste at the "point of waste origination" (instead of the "point of waste generation" as proposed). The "point of waste origination" is defined in the final rule with respect to the point where the TSDF owner or operator first has possession of a hazardous waste. When the TSDF owner or operator is the generator of the hazardous waste, the "point of waste origination" means the point where a solid waste produced by a system, process, or waste management unit is determined to be a hazardous waste as defined in 40 CFR part 261. In this case, this term is being used in a similar manner to the use of the term "point of generation" in waste operations air standards established under authority of the Clean Air Act in 40 CFR parts 60, 61, and 63 of this chapter. When neither the TSDF owner nor operator is the generator of the hazardous waste, the "point of waste origination" means the point where the owner or operator accepts delivery or takes possession of the hazardous waste.

Finally, the EPA revised the impact analysis used for this rulemaking after proposal to incorporate additional TSDF industry data. An opportunity for public comment on this analysis was provided by the EPA (refer to chapter 4 of this BID). Based on the revised analysis results, the EPA selected a new value for the volatile organic concentration limit. Section V.C of the preamble to the final subpart CC standards presents the rationale for the selection of the control option used as the basis for the final rule.

1.1.1.2.1 Treated hazardous waste exemption. Under the subpart CC standards, each affected tank, surface impoundment, and container that manages hazardous waste having an average volatile organic concentration equal to or greater than 100 ppmw, as determined by the procedures specified in the rule, is required use air emission controls in accordance with the rule requirements. The owner or operator must install and operate the specified air emission controls on every affected tank, surface impoundment, and container used in the waste management sequence from the point of waste origination (as applies to the specific hazardous waste stream) through the point where the organics in the waste are removed or destroyed by a process in accordance with the requirements of the rule. If a particular hazardous waste is not treated to meet these requirements, then all affected units at the TSDF used in the waste management sequence for this hazardous waste are required to use the air emission controls specified by the subpart CC standards.

If the hazardous waste is treated to remove or destroy the organics in the waste by a process that meets or exceeds a minimum level of performance as specified in the rule, then affected units at the TSDF operated downstream of the treatment process in the waste management sequence for this hazardous waste are not required to use the air emission controls specified by the subpart CC standards. It is important to emphasize that tanks, surface impoundments, and containers (subject to the rule) in which the treatment process is conducted are required to use the applicable air emission controls specified by the subpart CC standards with the exception of certain tanks and surface impoundments used for active biological treatment of hazardous waste and achieving the performance requirements specified in the rule.

The conditions under which a treated hazardous waste no longer is required to be managed in affected units using air emission controls under the subpart CC standards have been revised and expanded since proposal to include many alternatives from which an owner or operator can choose one with which to comply. The final subpart CC standards allow an owner or operator to use any type of treatment process that can continuously achieve one of the specified sets of performance conditions. These conditions have been changed to include: (1) the average volatile organic concentration of the hazardous waste exiting the process is less than 100 ppmw (except for certain site-specific situations where multiple hazardous waste streams are treated by a single process in which case a volatile organic concentration limit for the waste exiting the process is established by the rule procedures at a value lower than 100 ppmw); (2) the organic reduction efficiency for a process treating multiple hazardous waste streams is equal to or greater than 95 percent, and the average volatile organic concentration of the hazardous waste exiting the treatment process is less than 50 ppmw; or (3) the actual organic mass removal rate for the process is greater than the required mass removal rate established for the process. The alternative treatment process performance requirements specified in the final subpart CC standards are discussed further in section 6.2.2 of chapter 6 of this BID.

The proposed explicit exemption for hazardous wastes complying with the land disposal restriction (LDR) treatment standards is not included in the final subpart CC standards. The EPA concluded that the expanded number of alternatives for treated hazardous waste and other provisions added to the final rule provide a reasonable regulatory mechanism by which a TSDF owner or operator can determine whether a hazardous waste complying with the LDR treatment standards is exempted from being managed in accordance with the air emission control requirements of the subpart CC standards.

1.1.1.3 Waste Determination Procedures. As already noted, the procedures that a TSDF owner or operator may use to determine the volatile organic concentration of a hazardous waste have been revised for the final subpart CC standards. For a case when direct measurement is chosen for determining the volatile organic concentration of a hazardous waste, the proposed statistical calculation procedure using Method 25D results is not included in the final subpart CC standards. Instead, procedures are specified in the final rule to compute the mass-weighted average volatile organic concentration of a hazardous waste using Method 25D results for waste generated as part of a continuous process and for waste generated as part of a batch process. Under circumstances when the same batch process is performed repeatedly but not necessarily continuously, the final rule allows the owner or operator to determine the average volatile organic concentration of the waste from this process by averaging results for one or more representative waste batches generated by the process. In all cases, a sufficient number of waste samples for analysis (with a minimum of four samples) must be collected to be representative of the normal range of the operating conditions for the source or process generating the hazardous waste. Normal operating conditions for the source or process generating the waste include cyclic process operations such as startup and shutdown. Process malfunctions, maintenance activities, or equipment cleaning are not considered to be normal operating conditions for the purpose of determining the average volatile organic concentration of a waste. These waste determination procedures are discussed further in section 6.3 of chapter 6 of this BID.

The proposed explicit requirements for determining the volatile organic concentration of a hazardous waste using information in a waste certification notice prepared by the waste generator are not included in the final rule. Instead, for hazardous waste that is not generated by the TSDF owner or operator (i.e., waste shipped to the TSDF from off-site sources under different ownership), the final rule allows the TSDF owner or operator to determine the waste volatile organic concentration by either testing the waste when he or she accepts delivery of the hazardous waste or using appropriate information about the waste composition that is prepared by the generator of the waste. The generator prepared information can be included in manifests, shipping papers, or waste certification notices accompanying the waste shipment, as agreed upon between the waste generator and the TSDF owner or operator.

1.1.1.4 Tank Standards. Several changes to the tank standards have been made since proposal. An exemption from the tank standards has been added for those affected tanks used for biological treatment of a hazardous waste in accordance with requirements specified in the rule. Changes have been made to clarify the regulatory text regarding the tank cover design and operating requirements. Also, the conditions have been clarified that must be met for a particular tank to use a fixed-roof type cover without any additional controls in accordance with the subpart CC standards. Finally, provisions have been added to the rule to address those special situations in which emergency venting of the tank or the air emission controls installed on the tank is necessary for safety.

1.1.1.5 Surface Impoundment Standards. Changes to the surface impoundments standards have been made to be consistent with the changes to the tank standards as applicable.

1.1.1.6 Container Standards. Several changes have been made to the container standards since proposal in addition to limiting the applicability of the subpart CC standards to containers having a design capacity equal to or greater than 0.1 m^3. The air emission control requirements for affected containers have been revised to provide several air emission control alternatives from which an owner or operator may choose one with which to comply. For containers having a design capacity less than or equal to 0.46 m^3 (approximately 119 gallons), an owner or operator may place the hazardous waste in drums that meet U.S. Department of Transportation (DOT) specifications under 49 CFR part 178 without any additional testing, inspection, or monitoring requirements. An owner or operator is also allowed under the final rule to place the hazardous waste in tank trucks and tank railcars that are annually demonstrated to be vapor tight using Method 27 in 40 CFR 60 appendix A without any additional testing, inspection, or monitoring requirements.

The requirements for waste transfer operations for containers have been revised under the final subpart CC standards. Submerged-fill of hazardous waste that is loaded into containers by pumping is required only when transferring the waste into containers having a design capacity greater than 0.46 m^3. Submerged fill of the waste is not required when filling smaller size containers such as 55-gallon drums.

The air emission control requirements for owners and operators treating hazardous waste in open containers have been revised. Whenever it is necessary for the container to be open during the treatment process, the container is required to be located in an enclosure connected to a closed-vent system with an operating organic emission control device. The final subpart CC standards include specific enclosure design and operation requirements which allow the enclosure to have permanent openings for worker access.

Finally, the container standards have been revised to be consistent with the safety venting provisions added to the tank and surface impoundment standards.

1.1.1.7 Closed-Vent System and Control Device Standards. The design and operating requirements for closed-vent systems and control devices have been changed to be consistent with those requirements already applicable to TSDF owners and operators under subpart AA in 40 CFR parts 264 and 265. The subpart AA standards have been in effect since 1990 and establish RCRA air standards to control organic emissions from process vents on certain types of hazardous waste treatment units.

1.1.1.8 Inspection and Monitoring Requirements. The inspection and monitoring requirements under the subpart CC standards have been revised since proposal. The requirements for inspection and monitoring of closed-vent systems and control devices have been changed to be identical to the inspection and monitoring requirements under subpart AA in 40 CFR parts 264 and 265. The required interval for the visual inspection of covers installed on tanks, surface impoundments, and certain containers has been changed to once every 6 months. After the initial cover inspection and monitoring for detectable organic emissions is completed, the owner or operator is only required to inspect and monitor those cover openings that have been opened (i.e., have not continuously remained in a closed, sealed position) since the last visual inspection and monitoring. Special inspection and monitoring provisions have been added for cover fittings that are unsafe or difficult, as defined in the rule, for facility personnel to inspect and monitor.

The subpart CC standards have been changed to allow leak repair on tank and surface impoundment covers to be delayed beyond 15 calendar days if both of the following conditions occur: (1) repair of the leak requires first emptying the contents of the tank or surface impoundment; and (2) temporary removal of the tank or surface impoundment from service will result in the unscheduled cessation of production from the process unit, or operation of the waste management unit, that is generating the hazardous waste managed in the tank or surface impoundment. Repair of a leak must be performed at the next time the process, system, or waste management unit that is generating the hazardous waste managed in the tank or surface impoundment stops operation for any reason.

1.1.1.9 <u>Recordkeeping Requirements</u>. The subpart CC standards have been changed to require cover design documentation only for floating-roof type tank covers, surface impoundment covers, and enclosures used for control of air emissions from containers. Also, the recordkeeping requirements have been revised as appropriate to address the changes to the final rule described previously in this chapter of the BID.

1.1.1.10 <u>Reporting Requirements</u>. The reporting requirements in the subpart CC standards are the same as proposed with one exception. The time interval within which TSDF owners and operators subject to the subpart CC standards under 40 CFR part 264 must report to the Regional Administrator all circumstances resulting in noncompliance with the applicable conditions has been change to within 15 calendar days of the time that an owner or operator becomes aware of the circumstances.

1.1.2 <u>TSDF Miscellaneous Units</u>

The final rules amend 40 CFR 264.601 by adding to the permit terms and provisions required for RCRA permitting of a miscellaneous unit the appropriate air emission control requirements in 40 CFR 264 subparts AA, BB, and CC. This amendment is the same as proposed.

1.1.3 Generator 90-Day Tanks and Containers

The conditions with which a hazardous waste generator must comply, pursuant to 40 CFR 262.34(a), to exempt tanks and containers accumulating hazardous waste on-site for no more than 90 days from the RCRA subtitle C permitting requirements are amended by the final rules to include compliance with the air emission control requirements of 40 CFR 265 subparts AA, BB, and CC. This amendment is the same as proposed.

1.1.4 Other RCRA Regulatory Actions

The EPA proposed several amendments to existing RCRA air standards. One amendment proposed adding requirements for the management of spent carbon removed from a carbon adsorption system to the closed-vent system and control device standards under 40 CFR 264 subparts AA and BB, and 40 CFR 265 subparts AA and BB. The final amendment has been revised to allow the owner or operator the additional option of burning the spent carbon in a boiler or industrial furnace that is permitted under subpart H of 40 CFR part 266. A second amendment promulgated in the final rules updates the leak detection monitoring provisions under 40 CFR 264 subparts AA and BB, and 40 CFR 265 subparts AA and BB for closed-vent systems to be consistent with other air standards recently promulgated by the EPA. Under this amendment, annual leak detection monitoring is not required for those closed-vent system components which continuously operate in vacuum service or those closed-vent system joints, seams, or other connections that are permanently or semi-permanently sealed (e.g., a welded joint between two sections of metal pipe, a bolted and gasketed pipe flange).

1.1.5 Test Methods

As part of the subpart CC rulemaking, the EPA proposed two new reference test methods (Method 25D and Method 25E) to be added to 40 CFR part 60 Appendix A. Method 25D is a test method for the determination of the volatile organic concentration of waste materials. Since proposal, the EPA decided it is also appropriate to use Method 25D to implement other EPA air standards being developed under authority of the Clean Air Act. The promulgation of some of these other air standards prior to the promulgation of subpart CC required the EPA to promulgate Method 25D in a separate rulemaking (refer to 59 FR 19402, April 22, 1994).

Method 25E is being promulgated as a part of the subpart CC rulemaking. Method 25E is the test method for determining the organic vapor pressure of wastes. The sampling requirements for Method 25E have been revised since proposal to provide for sampling of the waste in a tank.

1.2 SUMMARY OF FINAL RULE IMPACTS

The EPA estimates that implementation of the subpart CC standards will reduce nationwide organic emissions from TSDF tanks, surface impoundments, and containers by approximately 970,000 Mg/yr. In addition, the EPA estimates that nationwide organic emissions from 90-day tanks and containers will be reduced by approximately 73,000 Mg/yr.

Control of organic air emissions addresses many air quality problems including ambient ozone formation, adverse human health effects from inhalation of air toxics, and, to a lesser extent, depletion of stratospheric ozone. Ambient ozone concentrations exceed the National Ambient Air Quality Standards (NAAQS) in many metropolitan areas throughout the United States. Thus, the rule promulgated today will contribute to progress in attaining the NAAQS for ozone in nonattainment areas and also in preventing significant deterioration of the air quality in those areas of the United States currently in attainment with the NAAQS for ozone.

The final rule will also significantly reduce the risk to the public of contracting cancer posed by exposure to toxic constituents contained in the organic emissions from hazardous waste management activities. The cancer risk to the entire exposed population nationwide (i.e., annual cancer incidence) from exposure to organic emissions from TSDF is estimated by the

EPA to be reduced from approximately 48 cases per year to a level of 2 cases per year. Annual cancer incidence as a result of exposure to organic emissions from 90-day tanks and containers is estimated by the EPA to be reduced from approximately four cases per year to less than one case per year.

Maximum individual risk (MIR) is a measure of the added probability of a person contracting cancer if exposed continuously over a 70-year period to the highest annual average ambient concentration of the air toxics emitted from a TSDF site. There are approximately 2,300 TSDF locations in the United States. The MIR for all but approximately 20 of these facilities is estimated by the EPA to be reduced by implementation of the subpart CC standards to a level that is less than 1×10^{-4}. The target MIR levels historically used by the EPA for other promulgated RCRA standards range from 1×10^{-4} to 1×10^{-6}. Because the MIR values for a few TSDF are estimated to remain higher than the historical RCRA target, the EPA is continuing to evaluate the waste management practices and the individual chemical compounds composing the organic emissions at these TSDF. Following this evaluation, the EPA will determine what other actions are necessary to attain the health-based goals of RCRA section 3004(n). The omnibus permitting authority in section 3005(c)(3) can be invoked to supplement or add to the requirements in the subpart CC standards, should the rule requirements be determined to be insufficient to assure protection of human health and the environment at a particular facility.

The total nationwide capital investment cost to TSDF owners and operators to implement the subpart CC standards is estimated by the EPA to be approximately $290 million. The total nationwide annual cost for these standards is estimated to be approximately $110 million per year. The total nationwide capital costs to hazardous waste generators of installing the required air emission controls on 90-day tanks and containers is estimated by the EPA to be approximately $23 million. Total nationwide annual cost for the 90-day tank and container controls is estimated to be approximately $7 million.

The EPA concludes that the promulgation of the final subpart CC standards will not have a significant economic impact on hazardous waste generators or TSDF owners and operators. Prices for commercial hazardous waste management services are estimated by the EPA to increase by less than 1 percent on a nationwide annualized basis. The quantity of hazardous waste handled by commercial hazardous waste management companies is projected to be reduced by less than 1 percent on a nationwide annualized basis. Few, if any, facility closures are anticipated. Job losses in the hazardous waste industry are estimated to be less than 1.5 percent. Furthermore, this impact on employment does not reflect positive employment effects on industries producing the air emission control equipment that will be used to comply with the rule. No significant impacts are expected on small businesses.

2.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) proposed standards on July 22, 1991 under the authority of Section 3004(n) of the Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA) that would control organic air emissions from tanks, surface impoundments, and containers operated at hazardous waste treatment, storage, and disposal facilities (TSDF) (refer to 56 FR 33491). The preamble to the proposed rule discussed the availability of a background information document (BID) (EPA-450/3-89-023) that presents information used in the development of the proposed rule.

Comments from the public on the rulemaking were solicited at the time of proposal, and copies of the Federal Register notice and the BID for the proposed rule were distributed to interested parties. A 90-day comment period from July 22, 1991 to October 21, 1991 was provided to accept written comments from the public on the proposed rule and BID. The opportunity for a public hearing was provided to allow interested persons to present oral comments on the rulemaking. However, the EPA did not receive a request for a public hearing so a public hearing was not held.

Following the EPA's review of public comments received on the proposed rule, the EPA revised the impact analysis used for its final determination regarding the rulemaking. The EPA provided an opportunity for public comment on the additional data used for these impact analysis revisions. A listing of the additional data was published in a Federal Register Notice of Data Availability on September 18, 1992 (refer to 57 FR 43171), and the data were made available for public inspection at the EPA RCRA Docket Office. A 30-day comment period from September 18, 1992 to October 19, 1992 was provided to accept comments from the public on the additional data.

A total of 84 letters commenting on the proposed rule and the BID for the proposed rule were received by the EPA. In addition, the EPA received one comment letter on the additional data listed in the Federal Register Notice of Data Availability. Copies of the comment letters are available for public inspection in the docket for the rulemaking at the EPA RCRA Docket Office (OS-305) in room 2427 of the U.S. Environmental Protection Agency, 401 M Street SW, Washington, DC 20460 (additional information regarding access to the docket is available by calling (202) 475-9327). A list of the commenters, their affiliations, and the EPA docket number assigned to their correspondence is presented in table 2-1.

The purpose of this document is to present the EPA's responses to the comments on the proposed rulemaking. Many of the comment letters contain multiple comments regarding various aspects of the rulemaking. For the purpose of orderly presentation, the comments are categorized by the following topics:

- Chapter 3.0 Implementation of RCRA Section 3004(n)
- Chapter 4.0 Impact Analysis Methodology
- Chapter 5.0 Control Option Development
- Chapter 6.0 Rule Requirements
- Chapter 7.0 Generator 90-Day Accumulation Tanks and Containers
- Chapter 8.0 Test Methods
- Chapter 9.0 Rule Implementation
- Chapter 10.0 Other Comments.

The RCRA air emission standards for TSDF tanks, surface impoundments, and containers are promulgated under this rulemaking as a new subpart CC in both 40 CFR parts 264 and 265.

Requirements under 40 CFR par 264 apply to permitted TSDF and requirements under 40 CFR part 265 apply to interim-status TSDF. The regulatory requirements in subpart CC under 40 CFR part 264 and subpart CC under 40 CFR part 265 are identical with the exception that subpart CC under 40 CFR part 264 also includes reporting requirements. For the convenience of presentation, when the term "subpart CC standards" is used in this BID, it collectively refers to the identical requirements in both 40 CFR 264 subpart CC and 40 CFR 265 subpart CC.

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED AIR EMISSION STANDARDS FOR HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

Docket item number	Commenter name and address	Docket item number	Commenter name and address
F-91-CESP-00001[a]	Eldon Rucker Deputy Director Health and Environmental Affairs Dept. American Petroleum Institute 1220 L Street, NW Washington, DC 20005	F-91-CESP-00006	Cindy Wentzel Compliance Manager Edwards Oil Service, Inc. 530 South Rouge Detroit, MI 48217
F-91-CESP-00002[a]	Raymond F. Pelletier Director Office of Environmental Guidance Department of Energy Washington, DC 20585	F-91-CESP-00007	R. Darryl Banks Deputy Commissioner New York State Dept. of Environmental Conservation 50 Wolf Road Albany, NY 12233
F-91-CESP-00003[a]	David F. Zoll Vice President-General Counsel Chemical Manufacturers Association 2501 M Street, NW Washington, DC 20037	F-91-CESP-00008	John T. Wellspring, CHMM Senior Environmental Specialist Resource Consultants P.O. Box 1848 Brentwood, TN 37024-1848
F-91-CESP-00004	Joel Jerome Manager, Site Remediation Bridgewater Plant American Cyanamid Company Bound Brook, NJ 08805	F-91-CESP-00009	David A. Crosbie, P.E. Senior Environmental Coordinator Hercules Incorporated State Highway 837 West Elizabeth, PA 15088-0567
F-91-CESP-00005	Pat Sellars President A3M Vacuum Service Inc. P.O. Box 727 LaPlace, LA 70068	F-91-CESP-00010	Anita R. Junker Environmental Manager American Cyanamid Company Fortier Plant 10800 River Road Westwago, LA 70094

Notes at end of table

(continued)

TABLE 2-1 (continued)

Docket item number	Commenter name and address	Docket item number	Commenter name and address
F-91-CESP-00011	Gene I. Matsumoto Consulting Engineer U.S. Safety and Environmental Affairs S. C. Johnson & Son, Inc. 1525 Howe Street Racine, WI 53403-5011	F-91-CESP-00016	Alex R. Gholson National Council of the Paper Industry for Air and Stream Improvement, Inc. P.O. Box 458 Corvallis, OR 97339
F-91-CESP-00012	Judith M. Mullins, Manager Industrial Waste Activity General Motors Corporation General Motors Technical Center 30400 Mound Road Box 9015 Warren, MI 48090-9015	F-91-CESP-00017	Jonathan Greenberg Director of Environmental Policy Browning-Ferris Industries 1150 Connecticut Avenue, NW Suite 500 Washington, DC 20036
F-91-CESP-00013	Kenneth W. Holt, M.S.E.H. Department of Health and Human Services Public Health Service Centers for Disease Control Atlanta, GA 30333	F-91-CESP-00018	Ted Karl Kolacz, Environmental Scientist Jim Craig, Manager Environmental Department Ross Incineration Services, Inc. 394 Giles Road Grafton, OH 44044
F-91-CESP-00014	William W. Bailey, Acting Chief Environmental Management Office National Aeronautics and Space Administration John F. Kennedy Space Center Kennedy Space Center, FL 32899	F-91-CESP-00019	R. Stan Jorgensen Director of Regulatory Affairs ENSCO, Inc. 333 Executive Court Little Rock, AR 72205
F-91-CESP-00015	Jerome S. Amber, Manager Industrial Waste and Toxic/Hazardous Substances Environmental Quality Office Ford Motor Company 15201 Century Drive, Suite 608 Dearborn, MI 48120	F-91-CESP-00020	Nicholas A. Di Pasquale Director, Hazardous Waste Program State of Missouri Department of Natural Resources Division of Environmental Quality P.O. Box 176 Jefferson City, MO 65102

(continued)

TABLE 2-1 (continued)

Docket item number	Commenter name and address	Docket item number	Commenter name and address
F-91-CESP-00021	Donald E. Park Director Corporate Environmental Affairs Ethyl Corporation Health and Environment Department 451 Florida Street Baton Rouge, LA 70801	F-91-CESP-00026	Robert W. Niemi, Jr. Environmental Engineer Michigan Disposal, Inc. 1349 Whittaker Road Ypsilanti, MI 48197
F-91-CESP-00022	I. Sam Higuchi, Jr. Environmental Compliance and Safety Officer National Oceanic and Atmospheric Administration 1325 East West Highway Room 4434 Silver Spring, MD 20910	F-91-CESP-00027	Barbara A. Hilliard Chevron Corporation P.O. Box 7924 San Francisco, CA 94120-7924
F-91-CESP-00023	Mike Babos Project Engineer Merck & Co., Inc. P.O. Box 2000 Rahway, NJ 07065-0900	F-91-CESP-00028	Basil G. Constantelos, Director Environmental Affairs Safety-Kleen Corp. 777 Big Timber Road Elgin, IL 80123
F-91-CESP-00024	R. T. Richards, General Manager Environment and Product Safety Dept. Texaco Inc. P.O. Box 509 Beacon, NY 12508	F-91-CESP-00029	Gary Allen, Environmental Engineer Karen Carter, Environmental Engineer Ashland Chemical, Inc. P.O. Box 2219 Columbus, OH 43216
F-91-CESP-00025	C. Susi Jackson Environmental Protection Department Lawrence Livermore National Laboratory P.O. Box 808 Livermore, CA 94550	F-91-CESP-00030	D. B. Redington Director, Regulatory Management Monsanto Company 800 N. Lindbergh Boulevard St. Louis, MO 63167

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TABLE 2-1 (continued)

Docket item number	Commenter name and address	Docket item number	Commenter name and address
F-91-CESP-00031	D. L. Hanley Vice President Health, Environment & Safety Unocal Corporation 1201 West 6th Street, P.O. Box 7600 Los Angeles, CA 90051	F-91-CESP-00036	Linda A. Guinn, Esq. Idaho National Engineering Laboratory P.O. Box 1625 Idaho Falls, ID 83415
F-91-CESP-00032	Joseph H. Marxer, Esq. Eli Lilly and Company Lilly Corporate Center Indianapolis, IN 46285	F-91-CESP-00037	James P. Rathvon, Esq. Douglas H. Green, Esq. Counsel for the Utility Solid Waste Activities Group Piper & Marbury 1200 Nineteenth Street, NW Washington, DC 20036-2430
F-91-CESP-00033	Ric Olson Manager, Regulatory Issues/RCRA Scott Luoma Attorney/RCRA The Dow Chemical Company Midland, MI 48674	F-91-CESP-00038	David W. Timmons Consulting Engineer E. I. du Pont de Nemours and Company P.O. Box 6090 Newark, DE 19714-6090
F-91-CESP-00034	G. E. Palchak, Manager Environmental Engineering and Control Coatings and Resin Group PPG Industries, Inc. P.O. Box 2009 Allison Park, PA 15101	F-91-CESP-00039	Joseph A. Hrabik, Esq. Counsel for Beazer East, Inc. Babst, Calland, Clements and Zomnir Two Gateway Center, Eighth Floor Pittsburgh, PA 15222
F-91-CESP-00035	James W. Pollack Manager Corporate Environmental Control Dow Corning Corporation Midland, MI 48686-0994	F-91-CESP-00040	Matthew L. Kuryla, Esq. Counsel for The Lubrizol Corporation Jones, Day, Reavis & Pogue North Point 901 Lakeside Avenue Cleveland, OH 44114

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TABLE 2-1 (continued)

Docket item number	Commenter name and address	Docket item number	Commenter name and address
F-91-CESP-00041	C. L. Pettit Senior Analyst Institute of Chemical Waste Management 1730 Rhode Island Avenue, NW Suite 1000 Washington, DC 20036	F-91-CESP-00046	Raymond F. Pelletier Director Office of Environmental Guidance Department of Energy Washington, DC 20585
F-91-CESP-00042	Bruce A. Steiner Vice President Environment and Energy American Iron and Steel Institute 1133 15th Street, NW Washington, DC 20005-2701	F-91-CESP-00047	C. A. Douthitt President National Association of Chemical Recyclers 1333 New Hampshire Avenue, NW Suite 1100 Washington, DC 20036
F-91-CESP-00043	Peter J. Pantuso Legislative Director Rubber Manufacturers Association 1400 K Street, NW Washington, DC 20005	F-91-CESP-00048	Robert M. Scarberry Regulatory Affairs Manager Waste Management, Inc. 1155 Connecticut Avenue, NW Suite 800 Washington, DC 20036
F-91-CESP-00044	Donn Hirschmann Manager, Pollution Control Allied-Signal Inc. Engineered Materials Sector P.O. Box 1139R Morristown, NJ 07962-1139	F-91-CESP-00049	Amy E. Schaffer Director, Industrial Waste Programs American Paper Institute/National Forest Products Association 1250 Connecticut Avenue, NW Washington, DC 20036
F-91-CESP-00045	Victor L. Saufley Manager, Environmental Compliance Southdown, Inc. Citicorp Center, 1200 Smith Street Suite 2400 Houston, TX 77002-4486	F-91-CESP-00050	Linda E. Greer, Ph.D. Joseph Guth, Ph.D. Douglas W. Wolf, Esq. The Natural Resources Defense Council 1350 New York Avenue, NW, Suite 300 Washington, DC 20005

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TABLE 2-1 (continued)

Docket item number	Commenter name and address	Docket item number	Commenter name and address
F-91-CESP-00051	W. L. Meekins, P.E. Director Environmental Engineering Division Department of the Navy Naval Facilities Engineering Command 200 Stovall Street Alexandria, VA 22332-2300	F-91-CESP-00056	Mitcheal Wilson Vice-President of Environmental Affairs Gibraltar Chemical Resources, Inc. P.O. Box 1640 Kilgore, TX 75663
F-91-CESP-00052	David C. Ailor Director of Regulatory Affairs American Coke and Coal Chemicals Institute 1255 Twenty-Third Street, NW Washington, DC 20037	F-91-CESP-00057	Kathy J. Metcalf Managing Consultant, Policy Analysis Sun Refining and Marketing Company Ten Penn Center 1801 Market Street Philadelphia, PA 19103-1699
F-91-CESP-00053	Frank W. McAbee Senior Vice President Environmental and Business Practices United Technologies United Technologies Building Hartford, CT 06101	F-91-CESP-00058	William M. Robertson, P.E. Operations Manager Corporate Environmental Services Abbott Laboratories 1401 Sheridan Road North Chicago, IL 60064-4000
F-91-CESP-00054	Kirk J. Thomson Director, Environmental Affairs The Boeing Company P.O. Box 3707 Seattle, WA 98124-2207	F-91-CESP-00059	Sandra M. Smith Information & Communication Coordinator Advanced Environmental Technology Corporation Gold Mine Road Flanders, NJ 07836
F-91-CESP-00055	Irene J. Dinning Manager of Environmental Affairs Mine Safety Appliances Company P.O. Box 426 Pittsburgh, PA 15230	F-91-CESP-00060	Richard C. Fortuna Executive Director Hazardous Waste Treatment Council 1440 New York Avenue, NW, Suite 310 Washington, DC 20005

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TABLE 2-1 (continued)

Docket item number	Commenter name and address	Docket item number	Commenter name and address
F-91-CESP-00061	R. T. Jackson, Director Environmental Affairs Union Carbide Chemicals and Plastics Company Inc. 39 Old Ridgebury Road Danbury, CT 06817-0001	F-91-CESP-00066	Terry F. Yosie Vice President American Petroleum Institute 1220 L Street, NW Washington, DC 20005
F-91-CESP-00062	J. S. Roberts, Manager Environmental Protection Department Westinghouse Savannah River Company P.O. Box 616 Aiken, SC 29802	F-91-CESP-00067	Donna L. Singletary Executive Director Cement Kiln Recycling Coalition 1101 30th Street, NW, 5th Floor Washington, DC 20007
F-91-CESP-00063	E. W. Cunningham Sr. Environmental Consultant BP Oil Company 200 Public Square Cleveland, OH 44114-2375	F-91-CESP-00068	John N. Scott Vice President Quality, Environmental & Safety Phillips Petroleum Company Bartlesville, OK 74004
F-91-CESP-00064	Thomas A. Robinson, Ph.D. Manager, Regulatory Affairs Vulcan Chemicals P.O. Box 530390 Birmingham, AL 35253-0390	F-91-CESP-00069	M. L. Mullins Vice President-Regulatory Affairs Chemical Manufacturers Association 2501 M Street, NW Washington, DC 20037
F-91-CESP-00065	Sherry L. Edwards Manager, Government Relations Synthetic Organic Chemical Manufacturers Association, Inc. 1330 Connecticut Ave, NW, Suite 300 Washington, DC 20036-1702	F-91-CESP-00070	Lewis E. Stewart Captain, U.S. Army Acting Commander Holston Army Ammunition Plant Kingsport, TN 37660-9982

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TABLE 2-1 (continued)

Docket item number	Commenter name and address	Docket item number	Commenter name and address
F-91-CESP-00071	J. W. Barbee Manager Environmental Affairs and Risk Control Mobil Oil Corporation 3225 Gallows Road Fairfax, VA 22037-0001	F-91-CESP-00076	J. R. Schaich Environmental Affairs Tennessee Eastman Company Kingsport, TN 37662
F-91-CESP-00072	Joseph P. Vadovic Manager Division Safety & Environmental Services Lederle Laboratories Pearl River, NY 10965	F-91-CESP-00077	Stanley A. Walczynski Manager, Environmental Affairs Process Facilities Safety-Kleen Corp. 777 Big Timber Road Elgin, IL 60123
F-91-CESP-00073	Scott Kuhn Corporate Compliance Manager Laidlaw Environmental Services, Inc. P.O. Box 210799 Columbia, SC 29221	F-91-CESP-00078	W. Randall Miller Director, Regulatory Affairs USPCI, Inc. 515 West Greens Road, Suite 500 Houston, TX 77067
F-91-CESP-00074	Benito Garcia, Bureau Chief Hazardous and Radioactive Materials Bureau State of New Mexico Environment Department 1190 St. Francis Drive P.O. Box 26110 Santa Fe, NM 87502	F-91-CESP-00079	Walter Roy Quanstrom Vice President Amoco Corporation 200 East Randolph Drive P.O. Box 87703 Chicago, IL 60680-0703
F-91-CESP-00075	Dale A. Duhon Corporate Environmental Engineer Great Lakes Chemical Corporation P.O. Box 1958 El Dorado, AR 71731	F-91-CESP-00080[b]	William M. Robertson, P.E. Operations Manager Corporate Environmental Services Abbott Laboratories 1401 Sheridan Road North Chicago, IL 60064-4000

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TABLE 2-1 (continued)

Docket item number	Commenter name and address	Docket item number	Commenter name and address
F-91-CESP-00081	David Shanks Sr. Technical Specialist Environmental and Hazardous Materials Services McDonnell Aircraft Company P.O. Box 516 St. Louis, MO 63166-0516	F-91-CESP-L0001[c]	Peter D. Venturini, Chief Stationary Source Division State of California Air Resources Board 1102 Q Street, P.O. Box 2815 Sacramento, CA 95812
F-91-CESP-00082	S. A. Green, Manager GOCO ES&H Programs Environmental Affairs Westinghouse Electric Corporation Gateway Center Pittsburgh, PA 15222	F-91-CESP-L0002[d]	David W. Timmons Consulting Engineer E. I. du Pont de Nemours and Company P.O. Box 6090 Newark, NJ 19714-6090
		F-91-CESP-L0003[d]	Anil Bob Kothari Regulatory Affairs Coordinator Waste Management Inc. 1155 Connecticut Avenue, NW Suite 800 Washington, DC 20036
		F-92-CESA-00001[e]	Paul Bailey Director Health and Environmental Affairs Dept. American Petroleum Institute 1220 L Street, NW Washington, DC 20005

[a] Request for comment period extension.

[b] Duplicate of F-91-CESP-00058.

[c] Late submission.

[d] Submission of additional information.

[e] Comments on additional data used for impact analysis revisions as listed in Notice of Data Availability (57 FR 43171, Sept. 18, 1992).

3.0 IMPLEMENTATION OF RCRA SECTION 3004(n)

Comment: A total of 21 comments were received concerning the extent to which standards developed under the Clean Air Act authority should be used to implement the congressional directive of RCRA section 3004(n). Twenty commenters (F-91-CESP-00010, 00012, 00015, 00023, 00027, 00029, 00031, 00033, 00038, 00043, 00046, 00057, 00063, 00065, 00066, 00068, 00069, 00076, 00079, 00082) believe that protection of human health and the environment from TSDF air emissions is most appropriately, effectively, and efficiently addressed by developing standards under the Clean Air Act authority. Therefore, the EPA should make the determination that the requirements of RCRA section 3004(n) are best fulfilled by deferring to rules established under Clean Air Act authority. In contrast to these commenters, one commenter (F-91-CESP-00050) states that RCRA section 3004(n) provides no indication that development of the rules necessary to protect human health and the environment from TSDF air emissions can be deferred to other statutory authorities.

Commenters note that the proposed rule requires control of TSDF air toxics and ozone precursor emissions. The commenters advocating the use of Clean Air Act authority to implement RCRA section 3004(n) present several reasons for their position.

1. Existing Clean Air Act programs and new programs now being implemented in response to the 1990 Clean Air Act Amendments adequately address the control of air toxics and ozone precursor emissions (F-91-CESP-00010, 00012, 00023, 00027, 00033, 00043, 00063, 00065, 00066, 00069, 00076, 00082).

2. The proposed rule duplicates or contradicts existing or planned Clean Air Act rules to control TSDF air toxics [e.g., benzene waste operations National Emission Standards for Hazardous Air Pollutants (NESHAP), hazardous organics chemicals (HON) NESHAP, maximum available control technology (MACT) standards] (F-91-CESP-00010, 00012, 00033, 00038, 00057, 00063, 00066, 00069, 00076).

3. The proposed rule is inconsistent with Clean Air Act rules, which are based on a regional approach to setting control levels for ozone precursors depending on whether an area is in attainment with national ambient air quality standards (e.g., proposed rule requires all TSDF to meet the same control requirements regardless of the ozone attainment status of the region in which the TSDF is located) (F-91-CESP-00043, 00046, 00065, 00069, 00076).

4. The proposed rule does not comply with RCRA section 1006(b), which requires the EPA to coordinate its regulations under RCRA rules and to avoid duplication, to the maximum extent practicable, of appropriate provisions of the Clean Air Act (F-91-CESP-00065, 00066, 00069).

5. The proposed rule is inconsistent with the EPA's pollution prevention policy (F-91-CESP-00010, 00079).

6. The proposed rule is contrary to the EPA's "cluster concept" of examining and coordinating regulations addressing the same emission source to minimize duplicative or contradictory requirements (F-91-CESP-00057, 00063).

7. Control of air emissions under RCRA creates difficulties in administration and enforcement of rules because, traditionally, one State regulatory agency administers air rules and another administers hazardous waste rules (F-91-CESP-00069).

<u>Response</u>: The Hazardous and Solid Waste Amendments to RCRA added section 3004(n), which directs the EPA to "... promulgate regulations for the monitoring and control of air emissions from hazardous waste treatment, storage, and disposal facilities, including but not limited to open tanks, surface impoundments, and landfills, as may be necessary to protect human health and

the environment." The EPA considers the most appropriate, effective, and efficient way to fulfill this congressional mandate is to develop air standards for TSDF that are implemented under the existing RCRA subtitle C permitting program already in place for these facilities. However, the EPA disagrees with one commenter's assertion that, in establishing these RCRA air standards, the EPA cannot consider the impact of air standards promulgated or currently being developed under other statutory authorities such as the CAA. On the contrary, RCRA section 1006(b) requires the EPA to coordinate its regulations under RCRA statutes and to avoid duplication, to the maximum extent practicable, with appropriate provisions of the CAA.

The EPA disagrees that the requirements of RCRA section 3004(n) are best fulfilled by deferring to air standards established under CAA authority. There is no indication that Congress intended for air standards to be issued only within the authority granted to the EPA by the CAA. If this was the case, then Congress would not have amended RCRA section 3004(n) under HSWA after Congress had already authorized the EPA to control air emissions under the CAA. Refer to S. Rep. No. 284, 98th Cong. 1st sess. 63. Thus, both RCRA and the CAA authorize the EPA to control air emissions from TSDF.

Although historically many standards promulgated by the EPA under authority of RCRA have addressed the prevention of soil and water contamination from improper management of hazardous waste, the EPA is not limited by RCRA to promulgating standards only for certain media (e.g., surface waters, groundwater, and soils). Indeed, RCRA section 3004(n) specifically directs the EPA to issue regulations controlling air emissions from TSDF as necessary to protect human health and the environment.

The selection of TSDF air emission sources for control by establishing air standards under RCRA section 3004(n) is based on controlling those TSDF air emission sources determined by the EPA to have significant toxic and ozone precursor emission potential but for which emission control is not adequately addressed by other standards promulgated by the EPA such as NESHAP and NSPS established under the CAA. At proposal, the EPA concluded that additional air emission control requirements for TSDF tanks, surface impoundments, and containers are needed. This decision was based on the EPA's determination that existing and future Federal standards under the CAA and State air standards do not adequately address the control of TSDF organic air emissions.

Clean Air Act section 112 as been amended by Congress since RCRA section 3004(n) was enacted. Section 112 of the CAA as amended requires the EPA to identify major sources and area sources of HAP emissions and to develop NESHAP for these sources. To date for this air standards development program, the EPA has either promulgated or proposed several NESHAP that may apply to some hazardous waste management activities at TSDF. However, in general, these NESHAP added requirements to address HAP emissions from certain waste and material recovery operations that are not subject to or exempted from regulation under the RCRA air standards in 40 CFR parts 264 and 265. Thus, the NESHAP and other air standards being developed under the CAA are not intended to duplicate the RCRA air standards, but instead to integrate with the RCRA air standards to create a comprehensive air program for addressing organic air emissions from all waste and related material recovery operations.

For example, on-site wastewater treatment operations at synthetic organic chemicals manufacturing industry (SOCMI) facilities are regulated under the hazardous organic NESHAP ("the HON") promulgated on April 22, 1994 (see 59 FR 19402). At many of these facilities, the hazardous wastewaters generated by process units and resulting wastewater treatment sludges are managed in tank systems that are exempted from RCRA permitting requirements under provisions in 40 CFR 264.1(g)(6) or 40 CFR 265.1(c)(10). Thus, the air emission control requirements under the HON, in most cases, affect wastewater treatment tanks not subject to the RCRA air standards.

A second example is the recently proposed NESHAP for off-site waste and recovery operations (59 FR 51913, October 13, 1994). This NESHAP would apply to owners and operators of facilities, with certain exceptions, that manage wastes or recoverable materials which have been generated off-site at another facility and contain specific organic HAP. The rule would apply to operations managing solid wastes as defined under RCRA (hazardous and nonhazardous wastes) as well as operations handling recovered materials excluded from the RCRA definition of solid waste (e.g., recycled materials containing organic HAP, used oil reprocessed for sale as a fuel). As a result, certain off-site waste and recovery operations with organic HAP emissions, but exempted from regulation under the RCRA air standards, would be required to use air emission controls under this NESHAP.

In contrast to the NESHAP now being developed under CAA section 112, the EPA has already achieved progress toward full implementation of RCRA section 3004(n), which requires a "cradle to grave" approach to hazardous waste management that addresses protection of air, water, and groundwater. Air standards have been promulgated for TSDF treatment process vents (subpart AA in 40 CFR parts 264 and 265) and for TSDF process equipment leaks (subpart BB in 40 CFR parts 264 and 265) in addition to the development of these air standards for TSDF tanks, surface impoundments, and containers. There is no benefit to delaying implementation of air standards for TSDF tanks, containers, and surface impoundments to a future rulemaking under amended CAA section 112 when the EPA can proceed now with the promulgation of effective air standards under RCRA section 3004(n) for these air emission sources.

The subpart CC air rules do comply with section 1006(b) of RCRA. This section requires that the air standards be consistent with and not duplicative of CAA standards. Although RCRA section 1006(b) requires some accommodation with existing regulatory standards, it "does not permit the substantive standards of RCRA to be compromised." Chemical Waste Management v. EPA, 976 F.2d at 23 (D.C. Cir. 1992). It is obviously reasonable for the EPA to view the RCRA section 3004(n) mandate as a standard which cannot (or at least need not) be compromised. Similarly, the CAA

Amendments of 1990 require that air standards developed under the CAA be consistent with RCRA rules. To conform with the dual RCRA and CAA requirements that standards be consistent, the air standards developed under RCRA section 3004(n) do not duplicate or contradict existing NESHAP or NSPS.

The EPA is fully aware that at many facilities where hazardous wastes are managed, the RCRA air standards under 40 CFR part 264 and 265 as well as NESHAP and NSPS for specific source categories may be applicable to a particular TSDF. Certain testing, monitoring, inspection, recordkeeping, and other requirements under the RCRA air standards may be similar to or duplicative of requirements under the applicable NESHAP or NSPS. In many cases at a TSDF, individual waste operations will be subject to either the air emission control requirements under the RCRA air standards or the air emission control requirements under the applicable NESHAP or NSPS. Thus, it is necessary to include testing, monitoring, inspection, recordkeeping, and other implementation requirements in each rule to assure compliance with and enforcement of the rule. However, in certain situations, some individual waste operations at a TSDF could be subject to air emission control requirements under both the RCRA air standards as well as a NESHAP or NSPS. In such cases, the EPA believes it is unnecessary for owners and operators of these waste management units to conduct duplicative waste testing, keep duplicate sets of records, or perform other duplicative actions to demonstrate compliance with both sets of rules. Therefore, consistent with RCRA section 1006(b) to the maximum extent practicable, the EPA is coordinating the testing, recordkeeping, reporting, and other implementation activities required under the RCRA air standards and related rules developed under the CAA. The EPA has requested public comment in a related proposed NESHAP rulemaking (the off-site waste and recovery operations NESHAP, see 59 FR 51919, October 13, 1994) on how the applicable requirements included in the RCRA air standards should be incorporated into CAA rules being developed by the EPA for waste and recovery operations that will allow owners and operators subject to both sets of rules to demonstrate compliance with all applicable rules without having to repeat the duplicative requirements.

Nevertheless, RCRA section 1006(b) cannot be used to ignore key elements of RCRA; see Chemical Waste Management v. EPA, 976 F.2d at 23. In this case, Congress has indicated that TSDF air emissions need to be controlled on the RCRA timetable, not that of the CAA. Deferring totally to the CAA would vitiate this key RCRA requirement. [See also RCRA section 3004(q) and CAA section 112(n)(7) in which Congress indicated that pendency of CAA air standards for RCRA units does not vitiate RCRA requirements.]

The EPA's approach to developing air standards for TSDF under RCRA is consistent with CAA programs to achieve attainment and to maintain national ambient air quality standards (NAAQS). The NAAQS specify limits to pollutant concentrations in the ambient air to protect public health and welfare. A NAAQS has been established for ozone. Ambient ozone concentrations in many metropolitan regions of the United States exceed the NAAQS. Organic emissions from TSDF as well as other sources react photochemically with other chemical compounds in the atmosphere to form ozone. The CAA requires that States develop and the EPA approve air emission control plans called "State implementation plans" (SIP's). For those regions within a State that are in nonattainment with the NAAQS for ozone, the SIP specifies the standards and other control measures to be implemented by the State to attain the NAAQS. However, the CAA requires the EPA not only to implement programs to attain the NAAQS in nonattainment areas but also to maintain, and prevent significant deterioration of, the air quality in those areas of the Nation currently in attainment with the NAAQS. Consequently, in addition to the CAA control programs to address specific regional NAAQS attainment problems, the EPA also develops under the CAA authority minimum national emission standards applicable to stationary sources independent of whether the source is located in a NAAQS attainment or nonattainment area. The EPA considers the subpart CC standards to be reasonable national standards needed to control emissions of air toxics as well as to attain and maintain NAAQS for ozone.

The subpart CC standards are consistent with the EPA's pollution prevention policy. Pollution prevention involves reducing the quantity of pollution produced for a given quantity of product prior to recycling, treatment, or control of emissions. Activities defined as source reduction measures in the Pollution Prevention Act include technology modifications, process and procedure modifications, reformulation or redesign of products, and substitution of raw materials. A decrease in production alone does not qualify as pollution prevention. Under the subpart CC standards, a TSDF owner or operator is not required to manage a hazardous waste in a tank, surface impoundment, or container using the specified air emission controls in cases when the owner or operator determines that the organic content of all hazardous waste placed in the unit meets certain conditions specified in the rule. Thus, the subpart CC standards encourage pollution prevention by providing an incentive to generators to initiate source reduction measures that will reduce the concentration of organics in a hazardous waste.

The development of TSDF air standards under RCRA is not contrary to the EPA's "cluster" approach of examining and coordinating regulations addressing the same emission source to minimize duplicative or contradictory requirements. The different EPA Offices responsible for implementing RCRA and CAA requirements are coordinating the development of this rulemaking to ensure that subpart CC standards are compatible with other rules and programs applicable to TSDF owners and operators.

The air emission control requirements for tanks under the subpart CC standards incorporate provisions of NSPS that were promulgated under the authority of the CAA and apply to storage tanks constructed or modified after July 23, 1984, that contain volatile organic liquids (40 CFR 60 subpart Kb). Therefore, air emission controls already in use on a TSDF tank in compliance with 40 CFR 60 subpart Kb will comply with air emission control requirements of the subpart CC standards. Also, the subpart CC standards for closed-vent systems and control devices cross reference the requirements for closed-vent systems and control devices promulgated under subpart AA in 40 CFR parts 264 and 265. The subpart AA requirements are consistent with the requirements for closed-vent systems and control devices under several CAA air standards.

The implementation of air standards under RCRA does not create difficulties in administration and enforcement of the rules by State regulatory agencies. Although many existing RCRA standards focus on preventing the contamination of soil and water, other existing RCRA regulations regulate air emissions from some TSDF sources (e.g., combustion of hazardous waste is regulated under 40 CFR 264 subpart O for hazardous waste incinerators and under 40 CFR part 266 subpart H for boilers and industrial furnaces). Air emissions are also sometimes addressed through the EPA's omnibus permitting authority under RCRA section 3005(c)(3). States authorized by the EPA administer and enforce the requirements of RCRA rules in lieu of the EPA administering the rules in that State. The EPA is aware that, in many States, one State agency administers air standards while another State agency administers rules regulating the management of hazardous waste in the State. Similarly, it is common for yet another State agency to administer water quality rules. The experience of authorized States administrating existing RCRA rules shows that responsibility for administrating these rules can be delegated to a separate State agency without impeding the administration and enforcement of non-RCRA air and water rules by other State agencies.

Comment: One commenter (F-91-CESP-00050) states that the EPA is implementing RCRA section 3004(n) using a "cost-conscious" approach and that it is illegal for the EPA to consider costs under RCRA in the promulgation of rules. The commenter presents the following arguments: (1) the language of RCRA sections 3004(n) and 3004(m), the legislative history of RCRA, and relevant case law prohibit this cost-conscious approach; (2) the EPA is developing rules in phases over a period of years to "ease the impact of passing high cost regulations" to all TSDF where it might not be essential for emissions to be reduced in certain specific cases; and (3) the EPA applied cost considerations to select the control alternative used as the basis for the proposed rule.

Response: The EPA's implementation of RCRA section 3004(n) is consistent with its historical application of cost to RCRA rulemakings. Furthermore, the EPA's decision to develop standards under RCRA section 3004(n) in phases was not based on cost considerations. Rather, as discussed later in this section of the BID, the phased approach for developing standards is intended to achieve substantial progress toward the implementation of RCRA section 3004(n) while the EPA continues to compile data and assess the complex issues involved in regulating air emissions from a source category as diverse as hazardous waste TSDF.

The EPA disagrees with the commenter's assertion that the legislative history of RCRA prohibits consideration of cost in the development of standards for any reason. As a general matter, RCRA does not explicitly address the role of costs. The statute and its legislative history are best interpreted as requiring the EPA to promulgate rules that are protective of human health and the environment without regard to cost. However, there is a limited role for the consideration of costs in the development of standards under RCRA.

Specifically, cost considerations can be a basis for choosing among alternatives either: (1) when they all achieve protection of human health and the environment or (2) for alternatives that are estimated to provide substantial reductions in human health and environmental risks but do not achieve the historically acceptable levels of protection under RCRA, when they are equally protective. Nothing in the statute, legislative history, or the relevant case law, including the cases cited by the commenter, suggests that this limited consideration of costs is inappropriate. See NRDC v. EPA, 824 F.2d 1146 (en banc) (D.C. Cir. 1987), Union Electric Co. v. EPA, 427 U.S. 246 (1976); Lead Industries Ass'n v. EPA, 647 F. 2d 1130 (D.C. Cir.), cert. denied, 449 U.S. 1042 (1980).

The Senate Report cited by the commenter, which states only that "[l]evels of control [under 3004(n)] may be based on such factors as volatility and toxicity of wastes and the type of process that is regulated," does not purport to enumerate all the factors that the EPA may consider and certainly does not address the specific issue of whether the EPA, acting under its authority to implement the requirements of RCRA, can consider costs when choosing among fully or equally protective options. Indeed, it would be illogical and irresponsible for the EPA not to consider cost in these circumstances; and nothing in RCRA or its legislative history would compel the EPA to act in this manner.

Comment: Two commenters (F-91-CESP-00007, 00046) disagree with the EPA's phased approach to implementing RCRA section 3004(n) because it establishes standards to control total organic emissions from TSDF without considering the variability of the toxicity of the individual chemical compounds in the organic emissions from individual TSDF. One commenter (F-91-CESP-00046) states that the EPA's approach subjects those TSDF that manage wastes containing volatile organic constituents of low toxicity to unnecessary regulation while providing limited benefit relative to human health and the environment. The other commenter (F-91-CESP-00007) states that control requirements for TSDF should be established taking into account the differences in the toxicity of individual constituents in the wastes managed at a TSDF to determine the need for and appropriateness of the control requirements.

Response: The EPA concluded that the best approach to implementing RCRA section 3004(n) is to use a phased approach so that standards for the majority of TSDF emissions could be implemented as quickly as possible (refer to 56 FR 33495, July 22, 1991). This approach involves first developing nationwide standards to control total organic emissions from TSDF followed by other actions as necessary to meet the health-based goals of RCRA section 3004(n). The EPA disagrees that by first establishing standards to control total organic emissions that are applicable to TSDF nationwide the EPA is imposing unnecessary or burdensome requirements on some TSDF owners and operators.

Hazardous wastes from many different sources are managed at TSDF. As a result, the organic air emissions from TSDF potentially can contain a large variety of organic compounds. Many of these organic compounds, referred to here as "constituents," are ozone precursors. Also, the toxicity of the individual constituents in the organic emissions from a particular TSDF varies widely. Some of these constituents are known or suspected to be toxic or carcinogenic to humans at certain levels of exposure (or, for carcinogens, at any concentration level). Thus, organic emissions from TSDF managing hazardous wastes contribute to ambient ozone formation (regardless of constituent toxicity) and increase cancer and other health risks.

The first and second phases of the RCRA section 3004(n) regulatory program generically address the control of emissions of both organic constituents that are air toxics and organic constituents that are ozone precursors by controlling the emissions of organics as a class (i.e., standards controlling total organic emissions) rather than controlling emissions of the specific constituents. The control of total organic emissions has the advantage of being straightforward because it can be accomplished with the minimum number of standards, whereas the control of individual constituents requires multiple standards. Regulating total organic emissions also reduces the number of constituents for which separate standards ultimately may be required. Therefore, the applicability of the subpart CC standards is not based on waste constituents, and control of organic emissions is achieved for all TSDF.

Substantial progress toward full implementation of RCRA 3004(n) has been achieved through first promulgating rules for controlling total organic emissions from TSDF treatment process vents (subpart AA in 40 CFR parts 264 and 265) and from TSDF process equipment leaks (subpart BB in 40 CFR parts 264 and 265) followed by rules for controlling total organic emissions from TSDF tanks, surface impoundments, and containers (subpart CC in 40 CFR parts 264 and 265). The implementation of these nationwide standards for total organic emissions is estimated to reduce the MIR for most but not all TSDF to levels that achieve the target MIR levels that historically have been used for other promulgated RCRA standards. The EPA is further evaluating the waste management practices and the specific constituents that comprise organic emissions from each individual TSDF with estimated MIR values greater than the historical RCRA target MIR levels to determine what other actions are necessary to meet the health-based goals of RCRA section 3004(n).

Comment: One commenter disagrees with the EPA's using a risk-based approach to implement RCRA section 3004(n). The commenter claims that health risks from exposure to TSDF air emissions cannot be quantified adequately because of the complexity of TSDF and the EPA's lack of adequate data. Therefore, the commenter believes that the EPA should abandon its risk-based approach and instead develop standards using a technology-based approach.

Response: The commenter's point certainly has merit in some circumstances. For example, the EPA's inability to reliably quantify risks from land disposal of hazardous waste led the Agency to promulgate technology-based treatment standards to implement the land disposal restrictions. Here, however, the EPA does not consider the technology-based approach suggested by the commenter to be the best way to implement section 3004(n) because the EPA believes that health risks from exposure to TSDF air emissions can be quantified adequately for the purpose of regulatory decisionmaking.

Section 3004(n) of RCRA directs the EPA to promulgate regulations for the monitoring and control of air emission from

TSDF "as necessary, to protect human health and the environment." This is the general approach applied by Congress to RCRA legislation. The EPA has consistently interpreted such statutory directives as imposing a requirement on the EPA to perform a risk assessment to quantify, to the extent practicable, the risks posed by sources to the general public and, based on that assessment, to identify the controls or measures required to reduce this risk to a quantifiable acceptable level. Since the EPA believes that this risk assessment can be performed reliably with respect to TSDF air emissions, the EPA is following this regulatory approach in developing standards under RCRA section 3004(n).

To compare different regulatory strategies for controlling TSDF organic air emissions, the EPA used computer models to estimate total organic air emissions from TSDF and the risk of contracting cancer posed by exposure to toxic constituents contained in these organic emissions. Because of the complexity of the hazardous waste management industry and the lack of detailed information about every TSDF location, it was necessary for the EPA to make certain assumptions regarding TSDF operating practices and the composition of wastes managed at these TSDF to characterize the industry on a nationwide basis. The EPA recognizes that assumptions and procedures used for the impact analysis introduce uncertainty and affect the quantitative risk estimates. It is for these and other reasons that the EPA does not view the risk estimates as precise indicators of health risk. However, the EPA considers these risk estimates to be reasonable approximations of the magnitude of the health risk levels associated with TSDF air emissions and, therefore, suitable for evaluating the relative effectiveness of different control alternatives, as applied to this industry, to protect human health.

It is true that, where evaluation of risks is particularly uncertain, the EPA has used technology-based standards as the best means of controlling the risk. This is the approach adopted (and upheld by the D.C. Circuit) for the land ban treatment standards, and it may prove necessary for evaluating risks from emissions from certain types of hazardous waste combustion activities [yielding products of incomplete combustion (PIC's), for example, where the identity or toxicity of many PIC's are not known, see 56 FR at 7149-50 (Feb. 21, 1991)]. The EPA does not believe that this degree of uncertainty exists for evaluating TSDF air emissions, particularly given the approach of controlling total organic emissions.

Comment: Four commenters responded to the EPA's request in the proposal preamble for comments on the integration of its omnibus permitting authority under RCRA section 3005(c)(3) into standards setting under section 3004(n) (56 FR 33514). All of the commenters support the position that omnibus permitting be reserved for special circumstances and not be used to apply nationwide standards. One commenter (F-91-CESP-00012) states that case-by-case permitting is time consuming and costly for both regulatory agencies and industry, while having a consistent set of nationwide standards allows regulated industries to develop a planned approach to environmental compliance. A second commenter (F-91-CESP-00014) states that regulations imposed through permitting will not be uniform and will be much more costly to industry and regulatory agencies to implement. The third commenter (F-91-CESP-00050) states that relevant case law supports the development of uniform nationwide standards and rejects the use of omnibus permitting authority to meet the congressional directive of RCRA section 3004(n). The fourth commenter (F-91-CESP-00069) states that the legislative history for the omnibus permitting provision shows that this authority is intended to address special cases and circumstances and not to be used to apply baseline standards.

Response: The "omnibus" permitting authority of RCRA section 3005(c) provides that "[e]ach permit . . . shall have such terms and conditions as the Administrator (or the State) determines necessary to protect human health and the environment." The EPA maintains the position, supported by commenters, that this authority is intended to address special circumstances and is not to be used as the mechanism to apply nationwide standards. Specifically, the EPA agrees that the omnibus authority was not intended to operate in lieu of regulations, as a vehicle for imposing baseline standards to protect human health and the environment, and that the attempt to use omnibus in this fashion would be time-consuming and costly for both the regulated community and the EPA and would result in the application of non-uniform standards to facilities within an industry. However, the EPA notes that, although the legislative history cited by one commenter providing examples of appropriate uses for omnibus is instructive in interpreting RCRA section 3005(c), the EPA does not consider itself to be bound by these examples and is free to interpret the application and extent of the omnibus authority in a case-by-case fashion based on the language of RCRA section 3005(c) and the purposes underlying the provision. The EPA does, however, agree with the commenter that the authority should be used with restraint.

The EPA believes that its use of omnibus permitting authority under RCRA section 3005(c)(3) while nationwide standards are being developed in phases is consistent with the intended use of the authority. The EPA notes further that the omnibus authority can be used either to fill gaps (situations unaddressed by national rules) or to make existing standards more stringent. In either case, a finding (and record support) for the omnibus condition being necessary to protect human health and the environment is necessary. We repeat that the fact that the EPA has issued a national rule controlling a particular situation does not prevent a permit writer from imposing a more stringent site-specific standard.

During the interim while nationwide standards are being developed, the EPA is encouraging permit writers to use omnibus permitting authority for those permitting situations where additional protection of human health and the environment is needed after implementing existing rules. The use of omnibus permitting authority to achieve protection of human health and the environment until regulations accomplishing that result are promulgated is also fully consistent with the language and intent of the provision and is specifically sanctioned in its legislative history [S. Rep. No. 284, 98th Cong. 1st Sess. 31 (1983)].

4.0 IMPACT ANALYSIS METHODOLOGY

4.1 NATIONAL IMPACTS MODEL

4.1.1 TSDF Waste Data Base

Comment: Twelve commenters (F-91-CESP-00007, 00010, 00027, 00029, 00033, 00046, 00047, 00048, 00060, 00065, 00066, 00069) state that the EPA used outdated and inadequate TSDF waste data for the national impacts analysis supporting the proposed rule. The commenters note that major EPA rules regulating hazardous waste management have been promulgated since the information in the TSDF waste data base was collected, and claim that industry compliance with these rules has resulted in significant changes in the quantities and characteristics of wastes now managed at TSDF as well as the waste management practices used to manage these wastes.

Response: Since proposal the EPA has updated the waste data base used for the national impacts analysis. The EPA revised the waste data base used for the national impacts analysis to include new data regarding waste quantities, waste characteristics, and waste management unit operations for approximately 2,300 TSDF locations throughout the United States. The major sources of these new data are the results compiled from comprehensive nationwide surveys of hazardous waste generators and TSDF owners and operators that the EPA conducted in 1987. The data obtained by these surveys are the most recent nationwide TSDF data consistently available.

In support of the regulatory development required by the legislative directives of the Hazardous and Solid Waste

Amendments (HSWA) of 1984, the EPA conducted two nationwide surveys in 1987: the National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities (referred to hereafter as the "TSDR Survey"); and the National Survey of Hazardous Waste Generators (referred to hereafter as the "GENSUR"). For these surveys, questionnaires regarding hazardous waste management activities were sent to facilities throughout the United States that generate, treat, store, dispose of, or recycle waste considered hazardous under RCRA. The questionnaires requested detailed information concerning the hazardous wastes managed, the units used to manage hazardous waste, and the waste and management processes conducted in those units during 1986.

The TSDR Survey questionnaire was sent to all facilities that treat, dispose of, or recycle RCRA hazardous waste in units that are required to be permitted under RCRA. In addition, the survey included sending questionnaires to a statistical sample of facilities that conducted only storage operations of RCRA hazardous waste for more than 90 days. The TSDR Survey questionnaire was sent to a total of 2,626 facilities. The EPA received responses from 2,501 of these facilities.

By incorporating the results of the TSDR Survey, the waste data base now used for the national impacts model contains waste management data at four levels of detail for each individual TSDF location listed: facility, activity, process, and unit. The facility level includes the entire set of units, processes, and operations at one geographical location operated under one EPA identification number and used to manage hazardous waste. The activity level includes the general hazardous waste management technologies used at the TSDF such as wastewater treatment, incineration, fuel blending, and land disposal. An activity may consist of one or more processes. The process level consists of a specific waste management operation defined as a single, technical process such as waste fixation or waste neutralization. A waste management process may use one or more units. A unit is a single device used to manage hazardous waste such as a tank, surface impoundment, hazardous waste incinerator, or landfill.

Data from the TSDR Survey allowed the EPA to update and expand the waste management process sequences specified for each TSDF to more accurately reflect current industry-wide waste management practices. Several treatment configurations were added that include waste fixation as a separate treatment process. Also, the waste quantities were proportioned differently among the waste management units managing aqueous wastes versus those managing organic wastes.

The GENSUR questionnaire was sent to a stratified sample of facilities that generated hazardous waste in 1986. These facilities included RCRA-permitted and interim-status TSDF, which manage waste generated on site, as well as RCRA permit-exempt facilities that generate hazardous waste and accumulate it onsite for 90 days or less before shipping it to an offsite TSDF for disposal. Information collected in the GENSUR included the following subjects: wastewater generation and management, hazardous waste generation and management, waste minimization, solid waste management units, closure of surface impoundments, closure of wastepiles, accumulation in containers, accumulation areas, satellite accumulation areas, and onsite hazardous waste management activities. Also, where applicable, information was collected on hazardous waste characterization, fuel blending, reuse as fuel, metals recovery for reuse, solvent and liquid organic recovery for reuse, other recovery processes, and tank systems.

In addition to using the TSDR Survey and the GENSUR, several other data sources were used to improve the waste composition and form information in the TSDF waste data base. An updated Industry Studies Data Base (ISDB) was used to include new data for TSDF associated with petroleum refineries and also to include previously unavailable waste data for several Standard Industrial Classification (SIC) categories. New data from the GENSUR and the ISDB were used to revise default waste form distributions, waste compositions, and the hierarchy (i.e., preferential order of use when duplicate compositions exist for the same SIC, RCRA code, and form) of waste composition data. Another improvement was the use of information contained in the Confidential Business Information (CBI) versions of the ISDB rather than the non-CBI version used previously. Analyses of the CBI version provided data from additional SIC categories and more chemical constituent data than previously available.

Comment: Commenters state that, by not including the toxicity characteristic (TC) wastes in the waste data base, the EPA has grossly underestimated the impacts of the rule. One commenter (F-91-CESP-00069) states that at least 15 substances on the TC list are organic compounds, and cites the EPA's estimate that 730 million Mg/yr of wastewater and 0.85 million to 1.7 million Mg/yr of nonwastewaters would be identified as hazardous wastes under the revised toxicity characteristic rule.

Response: On March 29, 1990, the EPA promulgated a revised TC rule that results in the regulation of additional wastes under RCRA subtitle C (55 FR 11798). These wastes are not included in the TSDF waste data base used by the national impacts model to calculate the nationwide impacts of the rulemaking. However, the EPA believes that the nationwide impacts estimates are not significantly understated by not including the TC wastes in the waste data base. Most of the TC wastes are wastewaters managed in RCRA permit-exempt tanks and, thus, the requirements of the subpart CC standards do not apply. Although there are some benefits and costs associated with applying the subpart CC standards to the nonwastewater TC waste, the quantity of these wastes is relatively small. Thus, the magnitudes of the benefits and costs associated with controlling organic-containing, nonwastewater TC wastes do not appreciably increase the total nationwide total organic emissions, health, and cost impacts calculated by the national impacts model.

The revised TC rule became effective in September 1991; consequently the TC wastes were not included in the TSDR Survey and the GENSUR. In the preamble to the proposed subpart CC standards, the EPA acknowledged that the TC wastes were not included in the national impacts estimates used as the basis for selecting the proposed rule and requested information to better assess the impacts associated with TC wastes (56 FR 33496, July 22, 1991). No TC waste data were submitted by commenters.

In addition to requesting information from the public, the EPA representatives visited selected TSDF during the comment period to obtain information directly from TSDF operators regarding current TSDF waste management practices. Four TSDF were selected from the 100 largest TSDF in the United States (based on the annual hazardous waste quantity managed at the facility). The quantity of hazardous wastes did not increase at two of the TSDF as a result of the revised TC rule because the new waste codes applied to wastes that were already identified as hazardous wastes. At the third TSDF, the quantity of hazardous waste did not increase but the TSDF operator reported additional analytical costs for waste testing. At the fourth TSDF, one high-volume wastewater stream has potentially been added as a new hazardous waste as a result of the revised TC rule.

A commenter cites the EPA's waste estimates presented in the promulgation preamble for the TC rule (55 FR 11798) as waste quantities that should be addressed in the subpart CC standards impact analysis. The EPA estimates that the additional wastes identified as hazardous as a result of the TC rule are approximately 730 million Mg/yr of wastewater and 0.85 million to 1.8 million Mg/yr of nonwastewaters (i.e., sludges and solids). Furthermore, the EPA stated in the preamble for the TC rule that TC wastewaters are assumed to be exempt from the RCRA subtitle C regulations because the EPA expects these wastes to be managed in RCRA permit-exempt tanks. The EPA did not find nor receive any new information that justifies changing these TC waste quantity estimates or suggesting that the EPA's assumption regarding management of TC wastewaters is no longer reasonable. The EPA also has received verbal information (documented in the waste specific prohibitions-third third wastes docket, Docket No. F-90-L13A-FFFFF) that a number of large industry categories (chemical, paper, petroleum) that operate hazardous waste impoundments do not have any impoundments that receive exclusively TC wastes, confirming that no revised estimates are needed for numbers of impoundments that will be covered by this rule.

Comment: One commenter (F-91-CESP-00046) states that the waste data base used for the national impacts analysis contains little if any data on specific types of waste handled, amount of material treated by each treatment method, or the amount of each waste treated. The commenter requests that the rulemaking be delayed until data from the new survey discussed by the EPA in the proposal preamble are included in the waste data base.

Response: The EPA disagrees that the TSDF waste data base used for the national impacts analysis contains no or very limited data on specific types of waste handled, amount of material treated by each treatment method, or amount of each waste treated. The TSDF waste data base used for the impact analysis has always contained waste management data for each individual TSDF as reported in nationwide surveys. As described in a previous response, the data from the surveys mentioned by the EPA in the proposal preamble (i.e., TSDR Survey and the GENSUR) have been added to the TSDF waste data base to expand and update the detailed waste management data for each individual TSDF location.

Comment: One commenter (F-91-CESP-00065) suggests that the EPA include in its waste data base readily available data on waste management practices such as data from biennial generator reports and required TSDF reports.

Response: The EPA considered, but decided not to incorporate, information from biennial generator reports into the TSDF waste data base because the report data format is not consistent on a nationwide basis. In States that are authorized to implement RCRA programs, the reporting requirements of the biennial reports are determined by the individual State. These reporting requirements vary from State to State. Consequently, the same types of data are not reported by all waste generators.

This is in contrast to the GENSUR, which was conducted by the EPA at a national level and involved sending a uniform set of questions to waste generators nationwide. The GENSUR also was subjected to stringent quality control and validation procedures to maximize the completeness of the data reported for each generator while minimizing errors and discrepancies in the data. As part of this procedure, the EPA did compare information from the biennial reports for selected generators to the data reported in the GENSUR by these generators to help identify discrepancies in the GENSUR data base.

Comment: One commenter (F-91-CESP-00049) claims that the TSDF waste data base is dated and inappropriate for estimating impacts at waste generator sites. The commenter states that there is no assurance that the waste management practices used by generators for accumulating waste are similar enough to those used by TSDF owners and operators to extrapolate the analysis from one to the other. The commenter claims that the EPA incorrectly assumed 70 percent of the wastes in 90-day accumulation tanks and containers is sent to other onsite waste management units. Instead, the commenter states that 100 percent of the wastes from waste generator accumulation units is sent to offsite TSDF for treatment and disposal.

Response: The EPA believes that use of the TSDF waste data base and national impacts analysis results is appropriate for estimating impacts from 90-day tanks and containers. The commenter is incorrect in stating that 100 percent of the waste from 90-day accumulation tanks and containers is sent to offsite TSDF for treatment and disposal. A 90-day tank or container is a waste management unit at a large waste generator site that is exempted from RCRA permitting if the unit is used to accumulate waste for 90 days or less and meets certain other conditions specified in 40 CFR 262.34. This waste can later be managed in onsite permitted units. Thus, waste accumulation in 90-day tanks and containers occurs at TSDF as well as waste generator sites where the only waste management activity is accumulating waste for shipment to a TSDF.

The EPA did not assume that 70 percent of the wastes in 90-day accumulation tanks and containers is sent to other onsite waste management units. For the proposed rule, the EPA performed an analysis to estimate the impacts of controlling 90-day tanks and containers. The nationwide waste quantity accumulated in 90-day tanks and containers was estimated based on data from the TSDR Survey and the National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated under RCRA conducted in 1981. The more recent TSDR Survey provided information regarding waste quantities stored in 90-day tanks and containers located at TSDF in 1986. These data do not include the 90-day tanks and containers at the RCRA permit-exempt waste generator accumulation sites. Consequently, the 1981 data were used to estimate waste quantities stored in the 90-day tanks and containers at these sites. The EPA would prefer to have more up-to-date information for these waste accumulation-only sites but no other data are readily available on a consistent, nationwide basis.

Using the survey data, the EPA estimated that approximately 13 million Mg/yr of waste are accumulated in 90-day tanks and containers at TSDF and an additional approximate 5 million Mg/yr of waste is accumulated in 90-day tanks and containers at waste generator sites exempted from RCRA permitting. Using these estimated values, the percentage of the wastes in 90-day accumulation tanks and containers managed at TSDF is calculated to be approximately 70 percent. The waste quantity estimate calculations are presented in appendix L in the proposal BID and the survey data used for the calculations are available in the proposal docket (Docket No. F-90-CESP-S00399).

Based on the best available nationwide survey waste quantity data, over two-thirds of the wastes in 90-day accumulation tanks and containers is estimated to be managed at TSDF. Thus, the EPA believes it is reasonable to use impact estimation factors for 90-day accumulation tanks and containers based on results from the national impact model analysis of RCRA-permitted tank and container units.

4.1.2 General Emission Estimate Methodology

Comment: One commenter (F-91-CESP-00054) states that the EPA should conduct actual testing of emission sources in addition to computer modeling of emissions to ensure the greatest degree of protection to human health and the environment.

Response: In support of the rulemaking, the EPA used the results from many field tests of actual TSDF emission sources. The results from these tests were used by the EPA to assess the air emission levels from different types of TSDF waste management units, evaluate the effectiveness of emission controls, evaluate measurement techniques for determining air emissions, and evaluate the emission models used for the impact analysis. The TSDF emission sources tested include surface impoundments, wastewater treatment systems, sludge dewatering units, waste fixation units, active and inactive landfills, land treatment units, and waste transfer, storage, and handling operations. A summary of the results from many of the source tests is presented in appendix F of the proposal BID. The complete test reports are available in the rule proposal docket (Docket No. F-91-CESP-FFFFF).

Comment: One commenter (F-91-CESP-00066) recommends that the EPA reevaluate the use of the CHEMDAT7 emission models in the national impacts analysis. The commenter claims that the flux chamber measurements used by the EPA to validate the models overestimate actual emissions. Specifically, the commenter cites a study ("Measurement of BTEX Emission Fluxes from Refinery Wastewater Impoundments Using Atmospheric Tracer Techniques", API publication 4518, December 1990) in which flux chambers were purposely not used to avoid any artificial disturbance of the air-water interface. According to the commenter, the study results show that the emissions modeled by CHEMDAT7 exceed measured emissions by an order of magnitude.

Response: The EPA disagrees that the CHEMDAT7 model, when used as designed, overstates emissions from surface impoundments by an order of magnitude. The EPA reviewed the report cited by the commenter. This review showed that the study investigators used the CHEMDAT7 model improperly to estimate the emissions from the surface impoundment tested. The CHEMDAT7 model is designed to predict long-term average air emissions from a surface impoundment for which the waste that is added to the impoundment has been adequately characterized. All of the input parameters needed to use the CHEMDAT7 model as designed were not adequately measured during the field testing (these parameters included inlet waste concentrations, Henry's law constants, biodegradation rates, and the time-averaged wind speed before the tracer sampling time). Because of these modeling limitations as well as other concerns regarding interpretation of the tracer measurement results, the EPA does not consider the comparison of the CHEMDAT7 model predictions with the field tracer measurements presented in the study to be valid. The EPA believes that the version of the CHEMDAT7 model used for the national impacts analysis represents a reasonable procedure for estimating emissions from TSDF surface impoundments.

Comment: One commenter (F-91-CESP-00007) states that additional data are needed to support the assumptions and calculations used for the national impacts analysis because the analysis performed at proposal shows no change in individual cancer risk as a result of increasing control performance from 95 to 98 percent.

Response: The fact that the estimates for maximum individual cancer risk did not change as a result of increasing the control performance from 95 to 98 percent is not indicative of a problem with the national impacts model. At proposal, an analysis separate from the national impacts models was used to estimate individual cancer risk for a specific TSDF selected to represent a "reasonable worst case facility." Risk at an individual TSDF may or may not be affected by changes in action level or control efficiency, depending on factors such as waste organic content, the type and configuration of the waste management units contributing to the facility risk, and the contribution to the risk from sources that are not controlled by the subpart CC standards. Furthermore, MIR is calculated to only one significant figure so that small changes are lost in the rounding to one figure. The approach for estimating maximum individual cancer risk at proposal is no longer used for the impact analysis (a more detailed discussion of this point is presented later in this section).

Comment: Two commenters (F-91-CESP-00027, 00066) disagree with the characterization of the emission estimates as "nationwide average emission rates" because they consider many of the modeling assumptions to be worst case or maximum estimates. Both commenters claim that the EPA has underestimated the effects of the land disposal restrictions on organic emission rates and on the quantity of waste managed in surface impoundments.

Response: The EPA believes it is reasonable to characterize the emission factors used for the national impacts model as representative of nationwide average conditions. The assumptions made to develop the emission factors regarding waste characteristics and management practices are not "worst-case" assumptions. These assumptions were selected based on the distribution of nationwide TSDF waste management practices identified from the TSDF waste data base. Regarding the effects of the LDR on emission rates and the quantity of waste managed in surface impoundments, the national impacts analysis has been revised since proposal, based on information received from site visits and telephone contacts with several TSDF, to take these factors into account; this is described in other sections of this BID chapter. Because the actual conditions at a particular TSDF location may vary significantly from national average conditions, the EPA does not consider the national average model estimates to necessarily represent any specific individual TSDF.

Comment: Two comments were received regarding the presentation of the impact analysis in the documentation supporting the rule proposal. One commenter (F-91-CESP-00013) states that the proposal BID sections on industry description and air emissions, control technologies, control options, costs, and economics are well written and technically defensible. A second commenter (F-91-CESP-00046) states that there is no information in the proposal preamble or the BID with which to evaluate the many assumptions used for the impact analysis.

Response: The compilation of the EPA documents, test reports, survey data, reference books, computer printouts, and other information used to develop this rulemaking is extensive and voluminous. It is not possible to present all this information in a single preamble or the BID. However, the three-volume BID supporting the proposed rule does contain a significant amount of technical information regarding the impact analysis. Appendices C through L in the proposal BID describe in detail the impact analysis methodology and present many of the calculations performed and assumptions made to obtain the emission and cost input factors used for the national impacts model. These appendices also list all of the references from which the EPA obtained information to perform the impact analysis.

All of the information used by the EPA for this rulemaking is available for public review with the exception of a small amount of data that has been declared by the companies submitting the information to be CBI. Copies of the non-CBI information are available for public inspection in the docket for the rulemaking (docket nos. F-91-CESP-FFFFF, F-92-CESA-FFFFF, F-94-CESF-FFFFF) at the EPA RCRA Docket Office (OS-305) in room 2427 of the U.S. Environmental Protection Agency, 401 M Street SW, Washington, DC 20460 (additional information regarding access to the docket is available by calling (202) 475-9327).

4.1.3 Model Unit Emission Calculations

Comment: Two commenters (F-91-CESP-00066, 00069) state that organic emissions from biologically active treatment tanks and surface impoundments are overestimated by the national impacts model. Both commenters cite three reasons for the overestimate: (1) the assumption that the volatile organic concentration of all dilute aqueous wastes is 1,000 ppmw favors air emissions over biodegradation; (2) the aeration/mixing power levels specified for tanks and surface impoundments are 2 to 3 times greater than those typically used in biological treatment units; and (3) the model used to compute emission factors (CHEMDAT6) uses incorrect biological kinetics. In addition, one commenter (F-91-CESP-00069) adds that the EPA's impact analysis overstates emissions from systems heavily dependent on aggregation for subsequent waste treatment such as wastewater systems. This commenter also states that the EPA acknowledged that "compositions commonly found in the WCDB (waste characterization data base) were not representative of the waste code in a dilute aqueous form and could cause an overestimation of emissions." This led the EPA to limit, for estimating purposes, the high end organic concentrations for waste codes/constituents managed in wastewater systems, but the EPA continued to overestimate emissions from dilute systems.

Response: The EPA reviewed the assumptions and methodology used to estimate organic emissions from biologically active sources. As a result of this review, several revisions to the emission models were made. The waste organic concentrations of the waste assumed to be managed in biologically active model units was reduced from 1,000 ppmw to 100 ppmw. The aeration parameters for the biologically active tank and surface impoundment model units were increased based on information obtained from site visits to TSDF that operate RCRA-permitted biological treatment units. (It is important to note that the data base used for the national impacts model does not include TSDF tanks exempted from RCRA subtitle C requirements, and not subject to regulation under this rule.) The procedure for calculating percent turbulence was changed to be based on the turbulent area associated with the aerator's horsepower, yielding a reduction in estimated turbulent area. The net effect of these modeling changes was a decrease in the estimated fractions emitted.

The CHEMDAT6 model used at proposal to compute emission factors for the impact analysis has been replaced by the CHEMDAT7 model. The emission models in CHEMDAT7 reflect improvements and revisions that the EPA has made in response to extensive industry review of the models. The mathematical model used to predict the rate of biodegradation in biological treatment units was revised for CHEMDAT7 to use the Monod biological kinetics model. The Monod model is preferred over the biological kinetics model previously used in CHEMDAT6 because the Monod model provides a better technical basis as supported by analysis of biodegradation data.

Comment: Two commenters (F-91-CESP-00066, 00069) state that emissions for nonquiescent tanks and surface impoundments are overestimated by the national impacts model because many of these units are mixed with diffused air or slow-speed mixers rather than the surface aerators as assumed by the EPA.

Response: The EPA believes that the nonquiescent tank and surface impoundment emissions estimated by the national impacts model analysis are reasonable for the purpose of estimating nationwide impacts to develop this rulemaking. Nonquiescent tanks and surface impoundments refer to treatment units in which the waste is intentionally mixed to blend treatment additives and supply additional oxygen, among other reasons. The EPA reviewed the mixing parameters used for nonquiescent tank and surface impoundment model units. The EPA did not find or receive any new information from commenters that suggests that the EPA's assumptions are not representative of mixing conditions in RCRA-permitted treatment tanks and surface impoundments.

Comment: One commenter (F-91-CESP-00060) states that quiescent tank emissions are underestimated by the national impacts model because of the assumptions used by the EPA to estimate working losses. The commenter recommends that the EPA calculate working losses from quiescent tanks based on complete unloading and reloading of waste every 90 days.

Response: The EPA believes that the quiescent tank emissions estimates by the national impacts model analysis are reasonable for the purpose of estimating nationwide impacts to develop this rulemaking. Quiescent tank emissions resulting from working losses were estimated by the EPA using model storage tanks that span the range of tank sizes and operating conditions representative of typical TSDF waste management practices. These model tank units are described in appendix C of the proposal BID. The model unit parameter that represents the frequency of loading and unloading of a tank is retention time. A different retention time ranging from 200 to 440 hours was used for each of the four model tanks (i.e., it was assumed that a tank would be filled repeatedly and then emptied every 8.3 to 18.3 days depending on the model tank size). Increasing the retention time to 90 days would decrease the emission estimate for quiescent tanks instead of increase the emission estimate as stated by the commenter.

Comment: One commenter (F-91-CESP-00069) claims that the organic control efficiencies for applying covers to tanks and applying internal floating roofs in tanks with covers are overstated by the national impacts model because these efficiencies were calculated for waste compositions with higher organic concentrations than the concentrations used to estimate emission factors for baseline emissions. The commenter states that the emission factors used by the EPA for dilute aqueous wastes in storage and treatment tanks were based on an assumed waste organic concentration of 1,000 ppmw, but the calculated suppression efficiencies for controls were based on application of controls to wastes with higher organic concentrations, an average of 2,020 ppmw for fixed roofs and 4,000 ppmw for internal floating roofs. The commenter contends this results in an overestimate of the effectiveness and therefore cost effectiveness of controls applied to these source types.

Response: The EPA disagrees that the control efficiencies for fixed roofs and internal floating roofs should also be calculated for wastes at 1,000 ppmw. The subpart CC standards require that tanks managing wastes with volatile organic concentrations above a specified level apply organic air emission controls. Therefore, the estimated efficiencies of control devices used on the tanks should be based on a waste's volatile organic concentration levels that may necessitate control. In fact, the efficiencies for a fixed roof applied to tanks managing dilute aqueous wastes were calculated as the average for three different concentration levels; 400, 1,700, and 4,000 ppmw at proposal. The efficiency for internal floating roofs was based on a waste composition with 4,000 ppmw at proposal. Calculations of efficiencies for an internal floating roof applied to a fixed-roof tank show the range to be 74 to 81 percent over the concentration range of 4,000 to 400 ppmw, respectively. Therefore, the assumed efficiency in the national impacts model is probably too low rather than too high, and the cost effectiveness may actually be underestimated rather than overestimated as the commenter contends.

<u>Comment</u>: One commenter (F-91-CESP-00048) disagrees with the emission estimates for waste fixation. The commenter claims that the bench-scale laboratory study used by the EPA as the basis for the emission factors is flawed in methodology and based on wastes no longer relevant to current waste fixation practices. According to the commenter, the sampling approach used for the laboratory study precludes the determination of the degree to which compounds initially chemically tied to the waste actually remained in the waste after fixation. Furthermore, the waste types used by the EPA for the laboratory study are 75 percent water by weight, which the commenter states is not representative of the amount of free liquid in wastes currently treated by waste fixation.

<u>Response</u>: The EPA has conducted additional waste fixation testing since the waste fixation emission rates used for the proposal analysis were developed. The results of this testing indicate that the waste fixation emission rates used at proposal are reasonable. Analyses of organic emissions were performed on a continuous hazardous waste fixation process at a commercial

hazardous waste TSDF. In addition, bench-scale testing was performed in conjunction with the full-scale emission source test. The laboratory study experiment provided data regarding the fraction of organics released to the air when a waste material is actively mixed with a fixative agent and data regarding the fraction of organics released to the air when the fixed waste is subsequently cured and stored in an uncovered unit. The full-scale emission source test report (Docket No. F-92-CESA-S00010 and S-00011) and the bench-scale emission test report (Docket No. F-92-CESA-S00012) are available in the docket.

4.1.4 Baseline Land Disposal Restrictions Assumptions

Comment: Commenters disagree with the EPA's assumption that all dilute aqueous liquids, aqueous sludges/slurries, and high-solids content waste mixtures are treated at each TSDF site using a waste fixation process. One commenter (F-91-CESP-00048) presents a summary of a TSDF industry survey showing that aqueous liquids and aqueous slurries do not generally go to waste fixation but instead are deep-well injected or undergo wastewater treatment. The commenter states that the EPA's assumption that waste fixation is conducted at every TSDF site is incorrect by noting that, of the 22 TSDF sites operated by the commenter, only 8 sites conduct waste fixation. Three commenters (F-91-CESP-00048, 00060, 00066) state that waste fixation is not best demonstrated available technology (BDAT) for most organic waste materials under LDR, nor is waste fixation proper treatment for wastes containing significant amounts of organics. Two of these commenters (F-91-CESP-00048, 00060) also note that, under typical waste management practices, fixation of waste is performed after organics in the waste have been destroyed or removed by technologies such as thermal destruction or solvent extraction.

Response: The EPA assumed for the national impacts analysis used to support the proposal rule that all TSDF owners and operators treat dilute aqueous liquids, aqueous sludges/slurries, and high-solids content waste mixtures by waste fixation (also referred to as waste solidification or stabilization) prior to disposal in either a landfill, wastepile, or disposal impoundment. For the national impacts analysis used for the final rule, the EPA changed this assumption based on information in the TSDR Survey and further investigation of TSDF waste fixation practices. The revised national impacts analysis now reflects the use of tank treatment methods for many dilute aqueous liquids, aqueous sludges/slurries, and high-solids content waste mixtures in response to the LDR in the baseline estimates rather than waste fixation.

The TSDR Survey specifically addresses waste fixation and provides the EPA with significantly more detailed information about TSDF waste fixation practices than was available at proposal. As a result of this new information, the annual nationwide quantity of waste estimated to be fixated was reduced by approximately a factor of 10 from the quantity estimated at proposal. In addition, a review of the BDAT for the First and Second Third LDR (40 CFR 286.33 and 40 CFR 268.34) wastewater indicated that about 50 percent of those technologies are tank treatments (not stabilization) and that another 30 percent involve treatment/incineration. Therefore, the LDR baseline assumptions have been revised for the national impacts analysis to indicate the use of tank treatment for wastewaters as opposed to waste fixation.

Comment: Two commenters (F-91-CESP-00050, 00060) disagree with the EPA's LDR assumptions concerning treatment of organic wastes. The commenters state that certain organic wastes will not be incinerated, as assumed by the EPA, but will instead be disposed in land disposal units without being treated to BDAT levels. One commenter (F-91-CESP-00050) states that numerous wastes that contain organics will continue to be disposed of in land disposal units for four reasons: (1) characteristic ignitable wastes are only required by the LDR to be treated to be nonignitable and may still contain considerable quantities of organics after treatment; (2) toxicity characteristic leaching procedure (TCLP) wastes are currently not required to be treated, and there is no indication when the EPA will issue BDAT treatment standards for these wastes; (3) numerous wastes may receive treatability variances from the LDR based on inadequate treatment capacity; and (4) wastes, contaminated soils, and debris from Superfund and corrective action cleanups will be sent to TSDF, but are not currently required to be incinerated. The second commenter (F-91-CESP-00060) states that the EPA's assumption is undermined by the EPA's failure to promulgate LDR standards for numerous organic toxicity characteristic wastes. The assumption is therefore speculative and may not transform into reality for many years. Both commenters note that the EPA will not be obligated to promulgate LDR treatment standards for numerous wastes that contain organics until the mid or late 1990's, under the terms of the proposed consent decree in **EDF v. EPA**, No. 89-0598 (D.C.D.C., complaint filed March 8, 1989).

Response: This comment is out of date. The EPA recently promulgated standards for ignitible wastes being disposed of in landfills, wastepiles, or land treatment units requiring treatment of all underlying hazardous constituents in the waste [section 268.37, 58 FR at 29885 (May 24, 1993)].

The EPA acknowledges that there currently may be special conditions where it is possible for a particular TSDF owner or operator to continue to dispose of an organic waste in a land disposal unit without having first treated the waste. However, the EPA expects these conditions to be an exception rather than a general practice, and also expects the occurrence of these exceptions to diminish as additional LDR treatment standards are promulgated and new treatment units are built. The EPA currently is developing LDR standards for the additional wastes that have been identified as hazardous wastes as a result of the TC revisions that became effective September 25, 1990. Final prohibitions and treatment standards for organic TC wastes will be promulgated by the end of 1994.

Regarding treatability variances, the EPA allows site-specific variances for situations where treatment capacity is currently inadequate to allow time for treatment capacity to be increased. The issuance of these variances is limited, and the variance typically expires after 2 years. The EPA does not believe it warranted to alter a national standard (which continues to operate after the capacity extension expires) to account for such a relatively short delay. Finally, the requirements of the subpart CC standards will apply to wastes, contaminated soils, and debris from Superfund and corrective action cleanups that are transported to a TSDF.

Comment: One commenter (F-91-CESP-00077) states that the EPA's LDR assumptions do not account for recycling operations. The commenter disagrees with the EPA's assumption that all organic liquids and organic sludges/slurries currently placed in landfills and wastepiles will be incinerated. The commenter states fuel substitution is allowed by the LDR and is appropriate for many organic liquids and organic sludge/slurry wastes. The commenter also disagrees with the assumption that the waste management unit treating a waste to comply with LDR treatment standards is the last unit prior to disposal of the waste. This assumption is inappropriate for recycling operations, where a hazardous waste such as distillation bottoms is generated as a byproduct of the recycling process.

Response: The EPA believes that the baseline LDR assumptions used for the national impacts analysis are reasonable for the purpose of estimating nationwide impacts to develop this rulemaking. The assumptions made by the EPA do not reflect all possible ways that a particular TSDF owner or operator can choose to comply with the LDR. However, the effect on the nationwide impact estimates remains the same, regardless of whether one assumes that organic liquids and organic sludges/slurries are placed in landfills and wastepiles, burned in a hazardous waste incinerator, or burned for energy as a substitute fuel in a boiler or furnace.

The assumption that the waste management unit used to treat a waste to comply with LDR treatment standards is the last unit prior to disposal of the waste in the waste management configuration at a particular TSDF location is no longer used for the national impacts analysis. As discussed earlier in this chapter, the TSDF waste data base has been updated to include the results of the TSDR Survey and the GENSUR. Because treatment configurations used by recyclers are reported in the TSDR Survey, waste recycling operations are now represented in the waste data base used for the national impacts analysis and it is no longer necessary to make this assumption.

4.1.5 Baseline Emission Control Assumptions

Comment: Six commenters (F-91-CESP-00027, 00048, 00057, 00065, 00071, 00078) state that the baseline emission control assumptions do not reflect the organic emission reduction that will be achieved at TSDF because of compliance with existing EPA and State air regulations. One commenter (F-91-CESP-00071) states that wastewater treatment and collection systems are being upgraded at the commenter's TSDF to comply with the RCRA TC rule, the benzene waste operations NESHAP, and the RCRA refinery sludge listing. A second commenter (F-91-CESP-00027) states that in response to the LDR, treatment standards for listed K-wastes are based on closed-system solvent extraction. A third commenter (F-91-CESP-00048) questions the baseline assumption that no storage tanks have organic emission controls, noting that 78 percent of 449 storage tanks containing organic and aqueous liquids at the commenter's 22 TSDF use conservation vents and two-thirds of these are vented to organic control devices. The commenter states that an appreciable number of State and Federal air and RCRA permit writers have been incorporating storage tank organic emission controls into permits. One commenter (F-91-CESP-00078) states that many TSDF currently use organic emissions controls representing BACT or demonstrating 95 percent control from facility point sources.

Response: The baseline emission estimates do account for emission reductions resulting from emission controls used at TSDF to comply with RCRA air rules for non-combustion treatment unit process vents (40 CFR 264 subpart AA), equipment leaks (40 CFR 264 subpart BB), and hazardous waste incinerators (40 CFR 264 subpart O). As previously discussed in section 4.1.1 of this

BID, TC wastes are not included in the baseline emission estimates because most of the TC wastes are wastewaters and the EPA expects these wastes to be managed in RCRA-exempt tanks.

Emission controls on TSDF waste management units to comply with Clean Air Act NSPS or NESHAP rules or individual State air standards are not included in the baseline emission estimates because the EPA has insufficient information regarding the emissions controls in place at individual TSDF sites. The TSDR Survey and the GENSUR contain only limited information on air emission controls in place and planned for tank systems. It is not possible to deduce from this information any general conclusions with regard to the type of air emissions control used or its control efficiency. Review of this information does indicate that the type of organic air emissions controls used at TSDF varies widely and cannot be characterized in terms that can reasonably be incorporated into the national impacts analysis. By not including all existing organic air emissions controls used at TSDF, the national impacts analysis may overstate nationwide baseline emissions. However, the impact of any overestimate of the emissions is balanced by the fact that the costs of controlling these emissions are also overstated. Thus, the EPA believes that the national impacts analysis results are useful for a relative comparison of different control options. Furthermore, commenters who have already installed appropriate controls should not incur significant additional costs of compliance with this rule.

Comment: Two comments were received regarding the conversion of surface impoundments managing hazardous waste to tanks. At one TSDF, 12 surface impoundments are being closed in response to other regulatory requirements and replaced with wastewater treatment units permitted under the Clean Water Act (F-91-CESP-00062). A second commenter (F-91-CESP-00027) states that many refinery surface impoundments will be closed and replaced with tanks as a result of the RCRA TC rule and the RCRA listing of petroleum refinery primary and secondary sludge as a hazardous waste.

Response: The commenters support the EPA's assessment that many TSDF owners and operators are electing to close surface impoundments managing hazardous wastes and replace the units with tanks to comply with the LDR standards and other regulations. In addition to information received from commenters, the EPA investigated the conversion of TSDF surface impoundments to tanks by directly contacting a sampling of TSDF owners and operators through a telephone survey of several large TSDF and visiting four other large TSDF. At most of these facilities, management of hazardous waste pursuant to LDR standards has been discontinued by either: closing the hazardous waste surface impoundments and installing tanks to manage the waste; or no longer accepting the wastes previously placed in surface impoundments.

The EPA revised the national impacts model to reflect the current industry trend of closing existing surface impoundments and replacing the units with tanks. Based on a review of the information obtained from the telephone survey of TSDF owners and operators, from TSDF site visits conducted by the EPA representatives, and provided by commenters, the EPA assumed for the national impacts analysis that 75 percent of wastes that were reported to be managed in surface impoundments in 1986 are now being managed in tanks.

Comment: One commenter (F-91-CESP-00065) concludes that the EPA's impact analysis significantly overestimates nationwide TSDF organic emissions based on the commenter's comparison of the EPA's baseline emission estimates by specific chemical constituents presented in table E-2 of appendix E in the proposal BID with synthetic organic chemical manufacturing industry (SOCMI) chemical production data for 1988 and emission estimates for a SOCMI facility.

Response: The EPA reviewed the data provided by the commenter and concluded that these data are insufficient to support any characterization regarding the accuracy of the EPA's nationwide TSDF organic emission estimates. Table E-2 in appendix E of the proposal BID presents the EPA's calculation of an emissions-weighted, nationwide composite unit risk factor that the EPA used to estimate cancer risk at proposal. (As discussed in section 4.2.3 of this BID, the EPA no longer uses this factor for the impact analysis). Table E-2 lists specific chemical constituent nationwide baseline emission estimates for 71 chemical compounds of known or suspected carcinogens identified by the EPA to be in the wastes managed at TSDF.

The EPA estimated nationwide TSDF organic emissions using a computer model that processes hazardous waste data obtained from nationwide surveys of the entire TSDF industry. These surveys indicated that, based on the SIC codes reported by the survey respondents, hazardous wastes managed at TSDF are generated not only by the SOCMI industry but by more than 150 different industrial categories. Nationwide TSDF emissions of a specific chemical constituent are not directly related to the nationwide production of that chemical by SOCMI plants in the United States in a given year. Furthermore, comparing emissions from a single SOCMI facility to the nationwide total emissions from all TSDF does not indicate whether the nationwide TSDF emissions are over- or underestimated by the impact analysis. Air emissions from a particular TSDF vary significantly depending on many factors including the type of waste management units at the facility, the quantity and type of wastes managed in these units, and the type of air emission controls operated on these units.

4.2 HEALTH IMPACT ANALYSIS

4.2.1 General Health Impact Analysis Methodology

Comment: One commenter (F-91-CESP-00046) states that the cancer incidence estimates are suspect because assumptions had to be made regarding TSDF plant configurations and operating practices, the composition of wastes managed at these TSDF, the cancer potency of the organics contained in these wastes, the emission of these organics to the atmosphere from TSDF sources, and the exposure of people living near TSDF to these air toxic emissions. The commenter notes that in spite of the fact that the EPA acknowledged that emissions cannot be estimated with any accuracy for any individual TSDF, the EPA used the national impacts model to allocate emissions to specific TSDF and used national average data on waste streams to determine the risk factors applicable to specific sites.

Response: For the impacts analysis conducted for the proposed rule, the EPA applied a single weighted-average composite cancer unit risk value to all TSDF locations in the data base. Since that analysis was made, information has become available from the 1986 surveys that improves the basis for the estimated impacts associated with regulating these sources. The EPA has used this information to modify its national impacts model to calculate facility-specific cancer unit risk factors. These risk factors were developed using the estimated carcinogenic emissions resulting from the hazardous wastes reported in the surveys to be managed at each facility. As at proposal, only those carcinogens for which unit risk estimates are available were used in the analysis of cancer risk.

Estimation of air emissions of carcinogens from a particular facility using the revised methodology depends on the composition of wastes managed at the facility. The industry profile used in the national impacts model contains the list of RCRA waste codes managed at each TSDF as reported in the 1986 TSDR Survey. The list of chemical constituents and their concentrations in each of those wastes is estimated from the national impacts model waste characterization data base. The compositions of each RCRA waste code are selected for the SIC listed by the facility in their survey responses. The compositions are based on the typical physical forms of the RCRA waste code reported to be generated by facilities in that SIC.

These changes to the cancer unit risk factor calculation result in a better estimate than was available at proposal of the cancer potency for emissions from each facility. There is still a degree of uncertainty in the estimate of annual cancer incidence because certain assumptions must be made regarding TSDF plant configurations, operating practices, etc. However, the complex interrelationships of these assumptions make it impossible to characterize the annual cancer incidence estimates as being over- or underestimated. Furthermore, the EPA believes that this degree of uncertainty in the annual cancer incidence estimates is acceptable because these estimates are not used as precise indicators of health risk but instead are one of several factors used by the EPA to evaluate the relative effectiveness of different control options in protecting human health.

Comment: Sixteen commenters (F-91-CESP-00012, 00023, 00024, 00027, 00028, 00033, 00039, 00043, 00047, 00048, 00060, 00064, 00066, 00069, 00075, 00078) disagree with the inclusion of dioxin in the composite unit risk factor. Factors cited by commenters for disagreeing with the EPA's assumption are: (1) the vast majority of TSDF do not handle wastes containing dioxin, (2) the EPA's assumption that dioxin is present in its most potent isomer form is not appropriate, (3) dioxin is not a volatile substance, and (4) the controversy in the scientific community over the calculation of the unit risk factor for dioxin.

Response: For the impacts analysis conducted for the proposed rule, the EPA applied a single weighted-average composite cancer unit risk value to all TSDF locations in the data base. The EPA agrees with the commenters that not all TSDF process wastes that contain dioxin or, for that matter, the specific combination of the chemical constituents that were used to calculate the composite unit risk factor. Therefore, to better reflect actual TSDF waste management practices, the EPA modified its national impacts model to calculate a facility-specific cancer unit risk factor based on the estimated carcinogenic emissions resulting from the hazardous wastes reported in the 1986 survey responses to be managed at each facility. Using this revised methodology, cancer risks resulting from exposure to air emissions of dioxin are estimated to occur only near the individual TSDF that reported managing dioxin-containing wastes.

Estimation of air emissions of carcinogens from a particular facility using the revised methodology depends on the composition of wastes managed at the facility. The industry profile used in the national impacts model contains the list of RCRA waste codes managed at each TSDF as reported in the TSDR Survey. The list of chemical constituents and their concentrations in each of those wastes is estimated from the national impacts model waste characterization data base. The compositions of each RCRA waste code are selected for the SIC reported by a facility in their survey responses, based on the typical physical forms of the RCRA waste code when generated by facilities in that SIC.

These changes to the cancer unit risk factor calculation result in a better estimate of the cancer potency for emissions from each facility. At proposal, the national impacts analysis assumed that all dioxin is present as the most potent isomer. This assumption was not made for the new analysis because most of the waste composition data identify the specific dioxin isomers that are present in the waste managed at the TSDF. The commenters correctly observed that dioxin is relatively nonvolatile and that factor has been taken into account in the revised estimation methodology. With respect to the issue of the unit risk factor for the 2,3,7,8-TCDD isomer, the current debate in the scientific community is not over whether or not the dioxin isomer is a carcinogen but rather over the level of carcinogenic potency for the isomer. It is possible the carcinogenic potency estimate may be revised at a future date. However, because no new factor is yet available, the carcinogenic potency value (33 $(\mu g/m^3)^{-1}$) used for the proposal impact analysis was not revised for the current/updated impact analysis.

Comment: One commenter (F-91-CESP-00069) states that the EPA's basic approach to calculating cancer unit risk factors produces an exaggerated estimate of cancer potency for individual organic compounds. This commenter notes that the unit risk factors for virtually all of the compounds included in the composite unit risk factor were calculated on the basis of animal data. The commenter states that the EPA acknowledges there is no sound scientific basis for selecting a particular methodology to extrapolate cancer risks observed in high-dose animal studies to predict human cancer risks at much lower levels of exposure. The commenter cites assumptions and extrapolation methodologies that tend to inflate the increased cancer risk in humans including the emphasis on positive results from the most genetically sensitive test species, use of a linear extrapolation model, use of the upper 95 percent confidence limit instead of the maximum likelihood estimate, and the use of an interspecies scaling factor based on surface area rather than body weight.

Response: The EPA would prefer to use cancer unit risk factors that have been derived from human data, but human data do not exist for the majority of compounds. Animal studies indicate that exposure to a compound may present a potential health risk to humans. The National Research Council has explained that cancer in humans and animals is strikingly similar adding, "virtually every form of human cancer has an experimental counterpart, and every form of multicellular organism is subject to cancer." Therefore extrapolation methods have been devised that consider the many biological differences that exist between animals and humans to predict possible adverse health effects in humans from well-designed animal studies.

It is the EPA's view that the linear low-dose extrapolation is preferred over other extrapolation models, unless low-dose data and/or mechanism of action or metabolism data show that the dose-response curve is nonlinear at the untested low dose levels. The extrapolation models are needed to predict human cancer risks at much lower exposure levels than found in occupational or animal studies. The EPA has elected to use the linear nonthreshold assumption for cancer dose-response assessments because, as a matter of science policy, the EPA prefers to use assumptions that will provide risk estimates that are not likely to be exceeded given the lack of understanding about the mechanisms of carcinogenic action. This choice of models intends to provide an upper bound (i.e., because of the linear assumption) estimate of cancer risk to the exposed population.

The EPA uses an interspecies scaling factor that is based on surface area because certain pharmacological effects, namely metabolism, commonly correlate to surface area. The EPA will use surface area unless there is convincing evidence to the contrary to consistently provide an upper bound for the cancer potency estimate.

Comment: One commenter (F-91-CESP-00015) concludes that the health impact methodology or assumptions are of questionable validity based on the commenter's comparison of the EPA's baseline estimate that nationwide TSDF organic emissions result in a 2×10^{-2} maximum lifetime risk of cancer whereas the nationwide lifetime risk of cancer from all causes is approximately 2.5×10^{-1}. The commenter states that this suggests that 8 percent of the nationwide risk of cancer is attributable to TSDF organic emissions, which is inconsistent with known cancer rates and risk estimates for other causes.

Response: The nationwide lifetime risk of cancer from all causes represents the probability that any individual in the United States has of contracting cancer; i.e., each individual has a lifetime probability of 25 percent (2.5×10^{-1}) of contacting cancer. In contrast, the MIR is a risk measure or indicator that was designed to evaluate the potential of an emitting plant to cause cancer in the hypothetical most exposed individual under the assumptions used in the risk and exposure assessments. The MIR value is used by the EPA for relative comparisons of pollutants, emission sources, and control alternatives. The MIR of 2×10^{-2} applies only to the one individual nearest the one TSDF, among all of the approximately 2,300 TSDF in the United States, that has the potential to cause the highest risk. It is not an actuarially measured risk, nor does it apply to all individuals living in the vicinity of a TSDF in the United States. In calculating MIR values for this rulemaking, the EPA is not attempting to estimate any specific individual's overall potential of developing cancer.

Comment: Two commenters state that the health impact analysis should be expanded to consider other health impacts in addition to cancer risk from air pollutant inhalation. One commenter (F-91-CESP-00007) states that the risk analysis should consider in more detail the short-term exposure that could occur frequently at a TSDF. A second commenter (F-91-CESP-L0001) submits that the risk assessment methodology should consider impacts from all applicable routes of exposure and recommends including at least inhalation, dermal exposure, crop ingestion, and ingestion of mother's milk.

Response: The EPA agrees that it would have been desirable to conduct a more detailed assessment of short-term exposure. However, the data necessary to conduct a more definitive assessment, such as plot plans that locate emissions on plant property, onsite meteorology data, and site-specific emissions data, were not available and would have been extremely resource intensive to collect. The same reasons apply to the second part of the comment (i.e., insufficient site-specific information). One can speculate that the air route of exposure is the dominant exposure route for the organic compounds of interest in this rulemaking although more work remains to be done in this area. However, the EPA expects the other routes of exposure to be important for dioxin emissions. The reason for this is the tendency for dioxin to partition and accumulate in organic substances. The greater the access humans have to contamination through pathways such as plants, fish, and dairy products, the higher the exposures and risks they are subjected to. However, dioxin emissions do not appear to make up a significant portion of total TSDF emissions as discussed in the next comment.

4.2.2 The EPA Human Exposure Model

Comment: Two comments were received regarding the appropriateness of using the EPA Human Exposure Model (HEM) to estimate nationwide cancer incidence. One commenter (F-91-CESP-

00064) states that it is unrealistic to use the HEM for estimating the magnitude of human exposure for persons living up to 50 km from an emission source. This commenter believes that there are so many variables when attempting to determine exposure of persons as far as 30 miles from a source as to make the finding speculative at best and probably quite inaccurate. A second commenter (F-91-CESP-00050) states that the use of the HEM is a source of many uncertainties in the risk assessment. This commenter cites specifically the assumption of "uniform chemical composition" of emissions for the dispersion modeling (i.e., the use of a composite unit risk factor), the assumption that the land surrounding all TSDF is flat, and the nature of meteorological factors such as winds incorporated in the model.

Response: It is the EPA's position that dispersion modeling is adequate out to 50 km provided that the selected meteorology from the nearest airport does not change appreciably over the 50-km study region. Risk estimates are calculated in a series of steps, which involve assumptions as well as estimates of representative data. The EPA recognizes that the assumptions and procedures used introduce some uncertainty and affect the quantitative risk estimates. It is for these and other reasons that risk estimates are not viewed as precise indicators of health risk, but as a tool for relative comparisons of sources and emission controls.

At proposal, the use of a composite unit risk factor and the assumption of flat terrain for dispersion modeling were necessary because of the lack of site-specific information available for each TSDF location. As is discussed in the first response in the next section of this BID, a facility-specific unit risk was calculated for use in the impacts analysis conducted after proposal. The facility-specific unit risk factor better reflects actual TSDF waste management practices and yields an improved estimate of national cancer incidence. However, because of the assumptions that are inherent in an exposure analysis, the EPA views the results only as an indicator of national cancer incidence. For example, the estimated cancer incidence could be changed by the incorporation of terrain features in the estimation of ambient concentrations. Such a change in the input to the exposure analysis could raise or lower the estimated exposures depending on the specific site being addressed.

Regarding the nature of meteorological factors incorporated into the HEM, the EPA enters certain meteorological data recorded at the National Weather Service weather station located nearest each TSDF location modeled. At the time of these modeling inputs, there were such stations located at 314 airports throughout the United States. From these data, HEM used information concerning wind speed and direction and atmospheric stability.

4.2.3 Maximum Individual Risk Analysis

Comment: Three commenters (F-91-CESP-00046, 00050, 00064) disagree with the approach used by the EPA for "reasonable worst case" MIR analysis. One of these commenters (F-91-CESP-00046) requests that the EPA consider dividing the TSDF industry into additional subcategories so that a more "reasonable worst case" risk can be estimated. Another of the commenters (F-91-CESP-00064), while acknowledging that it is not the EPA policy, believes it is more reasonable to use the "most likely estimate" (MLE) of risk combined with the average of possible expected exposures in developing a site-specific model. The third commenter (F-91-CESP-00050) states that the EPA should select the TSDF for analysis that creates the highest exposure to carcinogenic emissions, and claims that this was not done because inappropriate selection criteria were used. The commenter states that the EPA did not select sites with high emissions, the most carcinogenic emissions, the worst meteorological or geographic characteristics, or neighboring dwellings closest to the emission sources. Also, no attempt was made by the EPA to adjust its model inputs to conform to a reasonable worst-case scenario.

Other commenters disagree with assumptions used by the EPA for "reasonable worst case" MIR analysis. Four commenters (F-91-CESP-00014, 00039, 00066, 00069) disagree with the assumption that the "most exposed individual" resides at the fenceline rather than using site-specific information. One commenter (F-91-CESP-00039) notes that a distance of only 25 meters from the organic emission source to the nearest resident would occur only in unusual situations because of zoning constraints and operating practices of industrial facilities. This commenter recommends that the EPA develop a range of exemption thresholds based on the distance to the nearest resident. Three commenters (F-91-CESP-00014, 00066, 00069) disagree with the use of the dioxin-dominated composite unit risk factor to estimate the maximum lifetime risk, even though the designated site does not manage dioxin-containing wastes. Two commenters (F-91-CESP-00066, 00069) disagree with the assumption that anyone could be exposed to the ambient concentration of a pollutant for every hour of a 70-year lifetime.

Response: The EPA agrees with comments that techniques other than the one used for the proposed rule can provide more assurance that a high-risk facility has not been overlooked in selecting a facility for the MIR determination if the required information and data needed to use these techniques are available. Upon obtaining new information from the TSDR Survey, GENSUR, and other sources after proposal, the EPA revised the approach used to identify potentially high-risk facilities for the MIR determination and revised the procedures used to estimate the risk for those facilities that are candidate sites for the MIR determination.

For consistency, it would be ideal if the national impacts model provided a means of screening all facilities and targeting potentially high-risk facilities for a more detailed site-specific investigation of risk potential. At the time the analyses of facility risk were prepared for the proposed rule, it was not possible to use the national impacts model in this way because the methodology (and data) for determining facility-specific unit risk factors were not in place, i.e., a composite unit risk factor was used for all facilities. With the changes to the national impacts model resulting from the improved data base, this shortcoming has been eliminated.

The first step in MIR analysis used for the final rule is a screening step to identify the potentially high-risk TSDF. This screening step is necessary because with over 2,300 TSDF it is not practical to do in-depth facility risk investigations for every TSDF location. The screening step was performed using risk estimates generated by the national impacts model for all facilities. Although improvements have been made to the model that now permit estimation of a unit cancer risk factor for each TSDF location (as opposed to using a single composite unit risk factor for all TSDF locations nationwide), the national impacts model estimates emissions with the use of certain averaging assumptions. Therefore, better estimates of specific TSDF risks are obtained by using the national impacts model output to identify those TSDF with a high cancer risk potential and then performing more detailed analyses on that subset of facilities.

The revised MIR risk analysis approach involved the selection of the top 400 facilities (ordered from the highest to lowest risk) for more detailed analyses. Selection of the top 400 facilities is repeated for baseline emissions and emissions for each of the control options. This reanalysis is done because the facilities in the "high-risk" subset after control will change as the waste concentration action level for controls changes.

The second step in the MIR analysis is to recover facility-specific waste management process and waste composition data for the selected subsets. This is done by accessing information reported in the 1986 National Survey of Hazardous Waste Generators. For each facility, the survey booklets list the waste management processes through which each waste flows and contain a list of the constituents of greatest concern either due to their toxicity or concentration. The survey booklets also indicate a concentration range for each of the reported constituents. The recovered data are used to simulate (model) the onsite waste management operations and the wastes managed at each individual TSDF location.

The third step begins by classifying each of the facility processes into one of the model unit categories used with the national impacts model. For example, alkaline chlorination is classified as an uncovered treatment tank and an aerated lagoon or basin is classified as an aerated treatment impoundment. Using the same emission models (CHEMDAT7) used for the national impacts model, but substituting the facility-specific waste compositions and waste processing sequences, the emissions of carcinogenic constituents are estimated for each process (unit). Emissions of individual constituents are estimated by using emission fractions defined in terms of the set of chemical surrogates used with the national impacts model. Each surrogate is used to represent a range of chemical compound properties for vapor pressure, Henry's law constants, and biodegradability. The model units are described in detail in appendix C to the proposal BID; the emission models in the document entitled "Hazardous Waste Treatment, Storage, and Disposal Facilities: Air Emission Models" (EPA-450/3-87-026); and the updated emission factors and chemical surrogates in Docket item F-92-CESA-S00014. Emissions after control are calculated by applying control efficiency factors to uncontrolled emissions.

The revised risk analysis also attempts to account for changes that have occurred at facilities since 1986 in response to the LDR rules and the minimum technology design and operating requirements. Particularly, many facilities have discontinued managing wastes in surface impoundments by constructing tanks to replace the impoundments, no longer accepting those wastes from offsite, or changing their processes to avoid generating the wastes formerly managed in impoundments. Contacts with facilities suggest that about 75 percent of the facilities formerly managing wastes in impoundments have converted to managing those wastes in tanks. Consequently, risk modeling for those facilities indicating impoundments in 1986 has been revised to assume 75 percent of the waste is now managed in tanks with only the remaining 25 percent still being managed in impoundments. This is an attempt to approximate how TSDF owners and operators are responding to the LDR rules without data about specific facility responses.

The fourth step in the MIR risk analysis converts the emissions estimates into downwind concentrations that are used to generate risk estimates by the EPA's Human Exposure Model. For this HEM effort, all emission points are treated as being collocated in a 10-m^2 source. Latitude and longitude data for each TSDF location are used to obtain local or nearest meteorologic station data for the dispersion model. Combining the emission and meteorologic data in calculations, the HEM estimates annual downwind concentrations of each carcinogen at various distances from the source. The point of maximum exposure is assumed to be 200 m from the source. Using the concentration of each carcinogen at 200 m from the source and the unit cancer risk factor for each, the risks are summed for all carcinogens to produce an estimate of the facility risk for the MIR analysis.

After performing these procedures for the top 400 facilities (indicated by the national impacts model), a new set of risk estimates is generated. The risk estimates produced by this more detailed analysis yield a prioritized listing of facilities from which the worst facility is selected as the basis for the MIR impact for baseline and each control option.

The EPA did not divide TSDF into source subcategories because there was not a compelling reason to do so. There would be a very real lack of site-specific data on emissions no matter how many source categories were created. Furthermore, the emission control devices selected or the regulatory options available would be the same for all source categories if multiple source categories were created, so, there is no advantage.

The computer program of the linearized multistage model can calculate the maximum likelihood estimate of risk. The EPA does not use or encourage the use of maximum likelihood estimates because the maximum likelihood estimate is extremely sensitive to changes in the data while upper bound estimates are significantly more stable.

The term "fenceline" is an unfortunate one in that it is sometimes misinterpreted to mean that the EPA is assuming that people live directly on the plant boundary. The proper interpretation of the term is that the EPA uses the plant boundary or "fenceline" to define where ambient air begins. People do not have to be shown to actually live at the place where ambient air begins. In some cases, the EPA has specifically looked for locations around an emission source where people live and then adjusted the risk estimates accordingly. However, these adjustments can be made when the EPA has good site-specific information regarding plant boundaries, the location of emission sources on plant property, source emissions, and site-specific meteorology. The concept of deriving a range of exemption thresholds is not feasible without detailed site-specific information.

The EPA no longer uses a single composite cancer unit risk factor to estimate MIR from exposure to TSDF emissions. The cancer potency of dioxin is applied only to those individual TSDF locations at which wastes containing dioxin were reported to be managed.

The EPA has consistently taken the position that the model and assumptions used to estimate exposure and risk should be commensurate with the quality and amount of data available. While the EPA agrees that incorporation of human activity data would represent an analytical improvement, the increase in sophistication required to address issues such as determining how long people are in an area, whether they use air conditioning and/or sleep with windows open, the air exchange rate of residences, the residents average and peak breathing rates, etc., is not commensurate with the available data, the nature of the effects evaluated, the underlying uncertainties in estimating cancer risks, and intended use of the risk assessment results. Refer to appendix E of the proposal BID for a description of assumptions, methodologies used, and major uncertainties in the risk assessment and risk characterization for TSDF.

The period of time assumed that a person is exposed to the estimated concentrations remains at 70 years. The exposure period used for risk analyses is an issue currently under review by the EPA.

4.2.4 Noncancer Health Impacts

Comment: One commenter (F-91-CESP-00050) disagrees with the EPA's assessment of noncancer impacts. According to the commenter, basing the assessment on the 179 chemicals for which the EPA could determine "reference doses" assumes that the vast majority of the emissions are harmless. The commenter also submits that nationwide average exposure calculations should have been performed rather than using modeling calculations on the same two TSDF sites used to estimate the maximum lifetime cancer risk. The commenter notes that less than 40 of the 179 chemicals with "reference doses" are identified as being emitted from the two sites. The commenter provides the following additional comments on the assessment of noncancer impacts. The emissions are modeled, not measured. The exposures considered are limited to inhalation exposures, ignoring dermal exposures and other routes of exposure to contaminated water, food, and soil. No attempt was made to account for the cumulative effects of simultaneous multiple exposures. Comparing each chemical individually to its reference dose is a minimization of the hazard. The EPA did not attempt to account for the wide variety of compositions people are exposed to or the variety of interactions among the various chemicals. The analysis fails to adequately explore the risks of adverse effects that could result from short-term exposures to relatively high concentrations of acutely toxic substances.

Response: The analysis conducted to assess short-term effects was designed to use the most detailed information available. The EPA recognized that adequate site-specific information did not exist for TSDF in many areas including magnitude of emissions, compounds emitted, location of emission points, site-specific meteorology data, and acute health effects information for the compounds that could be emitted. All these shortcomings severely detract from an ideal acute effects analysis. Use of nationwide average modeling results are not a substitute for information needed for specific TSDF.

The intent of the noncancer effect analysis was to evaluate alternative emission control strategies for their effectiveness in mitigating potential acute effects. The EPA selected TSDF that had relatively large emissions and sufficient information for proper characterization of the TSDF for refined emission and dispersion modeling. The TSDF selected also contained a variety of emission sources so that the effectiveness of alternative control strategies could be evaluated. Accounting for interactions among chemicals and quantifying multimedia affects could not be meaningfully conducted with the limited site-specific data that were available. The EPA does not believe that an acute health effects problem exists at TSDF but does not have the data to prove whether one does or not. Compounds that are emitted from TSDF are seldom released in large masses such as from the failure of a pressure-relief valve. TSDF emissions are better characterized as more of a gradual steady-state phenomenon without large extremes.

Ambient monitoring data for TSDF are also very limited, very expensive to collect, and cannot be used to evaluate the effectiveness of potential regulatory options. Monitoring networks also may be limited by several major problems. For example, monitoring methods may not exist for the compounds of concern or the techniques may not be sensitive enough to measure the relatively small concentrations that are usually found in ambient air. It is also difficult to find the point of maximum concentration and locate the monitor there. In addition, it may be difficult to differentiate between a TSDF's contribution to the measured value from non-TSDF sources that emit the same pollutants of concern.

4.3 ECONOMIC ANALYSIS

4.3.1 Control Cost Estimates

Comment: One commenter (F-91-CESP-00048) disagrees with the EPA's cost estimate for container covers. The commenter states that dumpster cover costs cannot be extrapolated to rolloff boxes because the respective sizes and the nature of the covers are dissimilar. The commenter states that the capital cost of a lid on a new rolloff box is 15 times higher than the EPA's dumpster lid cost estimate. The cost to retrofit a lid would be substantially higher because of the installation costs. Also, the life expectancy for the fiberglass cover system currently manufactured for a rolloff box is in the range of 3 to 5 years, with 3 years being more likely. In addition, quarterly maintenance is needed. The commenter estimates that the annual cost for one rolloff box is more than 24 times higher than the EPA's annual control cost for a dumpster.

Response: For the impact analysis, the EPA estimated the cost of applying a cover to a bin-type container with a capacity of 3 m^3 (commonly referred to as a "dumpster"). The EPA did not estimate the cost of applying a cover to the larger capacity bin-type containers (commonly referred to as "roll-off boxes"). Standard size capacity roll-off boxes used in the TSDF industry have capacities ranging from 15 to 30 m^3. Based on the commenter's estimates, the capital cost for a roll-off box cover is approximately 15 times greater than that for a dumpster cover, and the annual cost is approximately 24 times greater than the cost for a dumpster. Considering that roll-off boxes can hold 5 to 10 times more waste than a dumpster, the EPA concludes that the higher costs of covers for roll-off boxes still justify controlling emission from these sources.

It should be noted that in certain situations, tarpaulin covers on roll-off boxes will meet the air emission control requirements of the subpart CC standards. Based on information received since proposal, the EPA has concluded that use of a tarpaulin for a roll-off box cover satisfies the basic intent of §§ 264.1086(c) and 265.1087(c) of the rule (i.e., the requirement that container covers be maintained in a closed, sealed position) provided that specific operating conditions are met, as described in section 6.2.2 of this BID. The use of a tarpaulin cover will be considerably less expensive than the use of a fiberglass cover system on a roll-off box.

Comment: One commenter (F-91-CESP-00048) disagrees with the EPA's cost estimate for controlling a waste fixation pit. The commenter states that the cost is underestimated by a factor of 10 to 20 because the EPA's equipment cost estimates are low and do not include costs for necessary extensive containment and additional silos (e.g., for reagents) or costs for permitting. The commenter also states that the nature of the wastes that are treated with waste fixation today no longer resemble the high water content of the waste (common before LDR) that the EPA used as the basis for its control cost estimates.

Response: The EPA reviewed the cost estimates prepared at proposal for applying controls to an open waste fixation pit. The component cost estimates for the mechanical mixer, fabric filter, and carbon adsorber are reasonable considering the size of the model unit upon which the costs are based. The EPA cost estimate does not include costs for the silos needed to store the binder materials (e.g., lime), the ancillary material handling equipment necessary to transfer the binder to the mechanical mixer, or the containment structure to hold the treated waste during curing. By not including costs for this equipment, the EPA agrees that the proposal cost estimate understates the cost of converting an open waste fixation pit to a mechanical mixer system that complies with the subpart CC standards.

The commenter did not provide sufficient information for the EPA to evaluate the commenter's cost estimate to replace an open pit with a mechanical mixing waste fixation system. However, even accepting the commenter's statement that the cost of a mechanical mixing waste fixation system is an order-of-magnitude higher than the EPA's proposal estimate, the EPA believes that this cost is reasonable given TSDF owners and operators are already choosing to incur the cost of installing mechanical mixing waste fixation systems for reasons other than to comply with this rulemaking.

Data from the TSDR Survey and visits of the EPA representatives to TSDF sites where waste fixation is conducted indicate that the trend in the TSDF industry is to conduct waste fixation in units that are much less expensive to control than open pits (i.e., mechanical mixing units, tanks, and containers). The TSDR Survey indicates that approximately 75 percent of the total waste fixated in 1986 was mixed in mechanical mixers, tanks, and containers. This commenter has installed mechanical mixer waste fixation systems at four TSDF sites with plans for similar systems at additional sites.

Comment: One commenter (F-91-CESP-00049) states that the covers proposed for surface impoundments could not be installed feasibly over the forest products industry's surface impoundments if controls are required in the future because the wastes they handle are either listed or exhibit a hazardous waste characteristic and contain volatile organics above the proposed regulatory threshold. The commenter claims that the cost for air-supported structures for large surface impoundments is prohibitively expensive, ranging from \$5 to \$10/ft^2 of ground surface area covered. Such an enclosure would cost between \$21 million and \$43 million for a 100-acre surface impoundment, the average size of a paper industry surface impoundment. In addition, the useful life of an air-supported structure is only 12 to 20 years because of photodegradation of the PVC from which these structures are made.

Response: The cost estimate used by the EPA for the impact analysis for installing an air-supported structure on a surface impoundment corresponds to a cost of approximately \$6/ft^2 of ground surface area covered. This cost value is within the range of cost values stated by the commenter. Also, this cost value is less than the cost of a double lining on a surface impoundment, which is already required by existing RCRA regulations. Furthermore, for determining the annual cost of using an air-supported structure to control surface impoundment emissions, the

EPA assumed a service life of 10 years for the air-supported structure. This period is shorter than the 12- to 20-year service life cited by the commenter. Using a service life of 12 years or more for the cost estimate would result in an annual cost for using an air-supported structure lower than the cost used by the EPA for the impact analysis.

The EPA's control cost estimate for an air-supported structure is based on a surface impoundment size much smaller than 100 acres. In fact, the EPA does not expect that any TSDF owner or operator will use an air-supported structure on a surface impoundment of several acres or larger to comply with the subpart CC standards. Most large surface impoundments that will continue to be used at TSDF for hazardous waste management contain wastewaters. For example, as stated by the commenter, the forest products industry's surface impoundments handle process wastewaters that are not RCRA waste streams and would not be covered by the subpart CC standards. Even if the organic content of a listed or characteristic wastewater stream is sufficiently high to require controls, the EPA expects that the TSDF owner or operator would choose a less expensive approach to complying with the standard, such as pretreating the waste to remove or destroy the organics in the waste in accordance with one of the sets of general requirements specified in the standard.

Comment: Two comments were received regarding costs for installing tank controls. One commenter (F-91-CESP-00065) states that the actual cost for installation of an internal floating roof in a 19-foot diameter tank is twice the EPA's cost estimate. A second commenter (F-91-CESP-00063) states that the costs used for retrofitting individual tanks with cover/controls to comply with the proposed requirements appear to be the right order-of-magnitude.

Response: The EPA reviewed the cost estimates for installing covers on tanks presented in appendix H of the proposal BID. The EPA did not find or receive any new information from commenters that justifies changing the tank control cost factors used for the national impacts analysis.

Comment: One commenter (F-91-CESP-00065) states that the EPA has not addressed the commercial availability or costs of containers that will satisfy the requirements of the proposed regulations. The commenter requests that consideration be given to the compatibility of the requirement for a "gasketed and latched" lid with the use of standard DOT-specification bunged drums.

Response: For the final rule, the EPA is addressing the use of DOT-specification drums to comply with the container control requirements (refer to the discussion presented in section 6.6 of this document). The final rule allows waste to be placed in drums meeting DOT specifications without any additional equipment. Drums meeting DOT specifications are widely available from drum suppliers. Since these drums are already required under existing DOT regulations for the transport of hazardous waste, the EPA expects that in most cases there is no additional cost of using the drums attributable to complying with the subpart CC standards.

4.3.2 Regulatory Impact Analysis (RIA)

Comment: One commenter (F-91-CESP-00065) states that the RIA is flawed for a variety of reasons as summarized below. (1) The requirements of the proposed rules are inconsistent with the control requirements analyzed in the RIA. The RIA provides only cost/benefit support for regulating organic emissions from TSDF units, based on the concentration in the waste entering the units. Costs of implementing the rule as proposed are underestimated since they do not consider the costs of all requirements such as cost of a closed system from the point of generation to the regulated units and cost of handling spent carbon from a carbon adsorption system. (2) The RIA uses outdated data concerning hazardous waste generation and management practices. The commenter suggests that, at a minimum, the data in the model should be checked against easily accessible data bases such as the Toxic Release Inventory (TRI). (3) The scope of the RIA is incomplete. The RIA should address regulatory alternatives that would employ a different testing method, a different source category or a compound-specific approach, and one simply involving regulation of open tanks. (4) The regulation of landfills was not considered, although these units are specifically identified in Section 3004(n). (5) The EPA has not performed a true cost/benefit analysis by defining the cost of the rule as a percentage of the cost of emission reduction. (6) The impacts of the rule requirements on storage-only facilities were excluded from the analysis. However, because tanks and containers would be the units most typically used at storage-only facilities, excluding these facilities from the RIA is a significant oversight.

Response: The control costs discussed for the affected facilities described in chapter 7 of the proposal BID are the same costs that were used in the preparation of the RIA. It is true that the cost information in both documents does not include the costs of a closed system from the point of generation to the regulated units. In response to comments, the EPA reevaluated the closed-system transfer requirement. Liquid wastes are generally piped from the point of generation to the first storage or treatment unit and then piped between waste management units. The piping will satisfy the requirement for closed transfer so that in many cases no additional costs will be incurred. If the cost of closed transfer represents a significant cost in a particular situation, the owner or operator has the option of treating the waste to lower the organic concentration. Therefore, no additional costs have been added to the impacts analysis for closed-waste transfer systems. With respect to the cost of handling spent carbon, the cost of handling spent carbon has been included in the costs of operating and maintaining carbon adsorption systems.

Regarding the use of outdated data concerning hazardous waste generation and management practices, as is described in detail in response to comments in section 4.1.1, the EPA used the best TSDF waste quantity, waste characteristic, and waste management practice data available to the Agency for the analysis of national impacts supporting the final rulemaking. The major sources of data are the results from comprehensive nationwide surveys of hazardous waste generators and TSDF owners and operators that the EPA conducted in 1987. These data are the most recent comprehensive nationwide TSDF waste data consistently available.

The RIA addresses the control options that served as the basis for the proposed standards. As described in the proposal preamble, hundreds of possible control options can be identified for various combinations of hazardous wastes and emission control levels. However, performing an impact analysis for every possible control option regardless of the control option's potential to protect human health and the environment would be very time-consuming and would require extensive expenditure of the EPA resources. Therefore, the EPA first conducted a screening evaluation to narrow the number of control options for the impact analysis. This evaluation is available in the docket. The evaluation results were used to define a subset of appropriate control options from which the basis for the proposed standards could be selected.

With respect to the regulation of landfills under section 3004(n), TSDF emission source selection is discussed in chapter 5 of this BID.

In preparing the regulatory impact analysis, the EPA has complied with the Executive Order 12866 and the Agency guidelines for performing a benefit-cost analysis of the proposed rule, as well as the Regulatory Flexibility Act. The EPA is required to prepare an incremental analysis of the benefits and costs for the proposed rule. The EPA has complied with the Executive Order requirements by identifying the dominant cost-effective control options for health improvements in terms of reduction of volatile organic compound emissions, which are precursors to ozone, and reduction of mortality risk in terms of exposure to potentially toxic chemicals emitted by the source category. For the Regulatory Flexibility Act, the EPA prepared a screening analysis of the costs of the rule as a percent of sales for various industrial categories impacted by the rule. This was done to screen potential adverse impacts for identifying significant adverse impacts on small entities. The commenter is apparently confusing the methodological approach, which was to identify the cost of emission reduction in terms of the cost of waste disposal services, with the benefit-cost analysis of health improvements associated with the proposed rule.

It is true that the data base used in the evaluation of nationwide impacts of the final standards includes only permitted facilities. Accumulation of wastes for a period less than 90 days does not require a permit; thus, a facility that only stores hazardous wastes for less than 90 days would not be included in the RIA if no other waste management activities are performed onsite. However, as is described in response to comments in section 4.1.1, based on the best available nationwide survey waste quantity data, over two-thirds of the wastes in 90-day accumulation tanks and containers is estimated to be managed at TSDF. Therefore, excluding storage-only facilities from the RIA is not a significant oversight. Furthermore, the results of the economic impact model in the RIA indicate that the effects of regulation on small entities are minimal and the impacts are insignificant. These results should apply as well to small storage-only facilities.

<u>Comment</u>: Two commenters (F-91-CESP-00063, 00069) state that the RIA costs for the proposed rule are underestimated because the impacts do not include facilities impacted by the toxicity characteristic waste rules. The commenters believe that this number of facilities is significant because some TC wastes are wastewaters stored in non-NPDES (National Pollutant Discharge Elimination System) tanks and some of these tanks will have to be fitted with covers and controls under the proposed rule.

<u>Response</u>: As previously discussed in this chapter, the EPA

believes that the nationwide impacts estimates are not significantly understated by not including the TC wastes in the waste data base. Most of the TC wastes are wastewaters managed in tanks exempted under RCRA from 40 CFR parts 264 and 265 and, thus, the subpart CC standards do not apply. Although there are some benefits and costs associated with applying the subpart CC standards to the TC wastes in RCRA-permitted units, the quantity of these wastes is relatively small. Thus, the magnitudes of the benefits and costs associated with controlling organic-containing TC wastes do not appreciably increase the total nationwide organic, health, and cost impact values calculated by the national impacts model.

Comment: Four commenters (F-91-CESP-00047, 00053, 00063, 00065) question whether the EPA included costs associated with the rule monitoring, inspection, testing, and recordkeeping requirements in the RIA. One commenter (F-91-CESP-00053) estimates that the nationwide costs to TSDF owners and operators and generators to comply with the proposed monitoring, inspection, and recordkeeping requirements for containers alone are very substantial, and the EPA must consider these costs in its analysis.

Response: The costs associated with the rule monitoring, inspection, testing, and recordkeeping requirements were estimated and submitted to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq., in an information collection request (ICR No. 1593.01). Copies of the ICR document were made available to the public at proposal and the EPA specifically requested comment on the burden estimates presented in the document (56 FR 33541). No comments were received on the ICR document.

The average information collection burden for the first 3 years after promulgation is 64 labor hours and an annual cost of $2,300 per facility. This is insignificant compared to the costs of installing, operating, and maintaining the control equipment required by the standards.

4.4 REVISED IMPACTS ANALYSIS

Comment: Two commenters (F-91-CESP-00033, 00066) request that the EPA provide another opportunity for public comment on the revised national impacts analysis before promulgation of the final rules.

Response: Following proposal of the rule in the Federal Register (56 FR 33491, July 22, 1991), the EPA revised the impact analysis used for its final determination regarding the rulemaking. The EPA provided an opportunity for public comment on the additional TSDF industry data used for the impact modeling revisions and preliminary results using the revised national impact models. This additional information was listed in a Federal Register Notice of Data Availability (NDA) (57 FR 43171, September 18, 1992). Copies of the information were made available for public inspection at the EPA RCRA Docket Office. A 30-day comment period from September 18, 1992 to October 19, 1992 was provided to accept comments from the public on the additional data. The EPA received one comment letter on the revised impact analysis (F-92-CESA-00001).

The commenter on the NDA supports the EPA's use of the updated waste data base (as described in section 4.1.1 of this document) for the national impacts analysis. In addition, the commenter supports the EPA's changes to the emission models for biological treatment processes (as described in section 4.1.3 of this document). Specifically, the commenter states that the following revisions made by the EPA are appropriate and improve the scientific basis of the emission estimates: (1) using the Monod model for biological kinetics in CHEMDAT7 models; (2) reducing the surrogate chemical concentrations in aqueous wastes to more realistic concentrations (100 mg/L); and (3) making changes to the assumed biomass concentration present in aerated treatment units.

The commenter disagreed with several aspects of the revised impact analysis. These comments and the EPA's response are presented below.

Comment: The commenter on the NDA (F-92-CESA-00001) is concerned that the revised national impacts analysis still overestimates organic emissions from TSDF surface impoundments. The commenter agrees with the EPA's general LDR assumption that surface impoundments at many TSDF are being replaced with tanks to comply with the LDR and other regulations. However, the commenter believes that the EPA's assumption that 75 percent of the total waste quantity reported in the waste data base to be managed in TSDF surface impoundments is now managed in tanks is conservative (i.e., too low). The commenter states that continuing to operate a surface impoundment in accordance with RCRA requirements is more costly than replacement with a tank, and therefore a higher percentage of waste converted from surface impoundment to tank management would be more indicative of current TSDF waste management practices. The commenter did not suggest a specific percentage value to be used in place of the 75 percent value used by the EPA.

Response: For the national impacts analysis, the EPA believes that 75 percent is a reasonable assumption for the amount of waste that will be converted from management in a surface impoundment to management in a tank. As discussed in section 4.1.4 of this document, the EPA selected the 75 percent value based on information obtained by the EPA from a telephone survey of owners and operators of large TSDF and from TSDF site visits as well as information provided to the EPA by several TSDF owners and operator in comments on the proposed rule. The EPA did not find nor receive any additional information from the commenter that justifies increasing the percentage of waste converted from management in a surface impoundment to management in a tank.

Comment: The commenter on the NDA (F-92-CESA-00001) agrees with the EPA's revised approach in the impact analysis of using site-specific cancer risk factors to estimate cancer risk due to exposure to TSDF emissions. However, the commenter is concerned that the EPA's estimates of MIR are still unrealistic and should not be used as a basis for selecting standards for this rulemaking. The commenter states that the MIR analysis uses some implausible assumptions (e.g., assuming exposure of the individual for 70 years) and should be conducted in accordance with the EPA's own Exposure Assessment Guidelines. Furthermore, the commenter does not believe that any MIR estimate is necessary to assess the need for and effectiveness of the rules.

Response: The cancer risk impact analysis for this rulemaking was conducted in accordance with the EPA's Exposure Assessment Guidelines. With regard to the assumptions used in the impact analysis, specifically the 70 year lifetime assumption, the EPA believes 70 years to be conservative, but plausible. The EPA did however conduct a second risk assessment assuming a 33 year exposure scenario (95 percentile). Using this assumption reduced risk estimates by one-half, but did not change the decision to control these facilities, nor the choice of control options. Furthermore, the risk assessment conducted here was for the purpose of determining the relative differences in risk estimates between the control options. For this application, the exposure scenario would not matter; the results, i.e., the relative differences in risk estimates, would not change.

The EPA holds that the assumptions used to determine the MIR are, as with the 70 year exposure scenario, conservative, but plausible, and result in a reasonable overall estimate of risk. In addition, while the EPA acknowledges the uncertainties associated with the MIR, such uncertainties cancel out when the risk assessment is used to discern relative risk, as in this case. Thus, the EPA believes that the use of the MIR is an appropriate tool to apply in the impact analysis for this rulemaking to both estimate risk and to discern differences between risk estimates associated with the various control options.

5.0 CONTROL OPTION DEVELOPMENT

5.1 TSDF EMISSION SOURCE SELECTION

5.1.1 Containers

Comment: Commenters (F-91-CESP-00010, 00041, 00043, 00053, 00054, 00066) disagree with the EPA's decision to require air emission controls for containers under the subpart CC rulemaking. One group of comments argues that the organic emission potential from TSDF containers does not warrant the application of additional controls beyond those already required by existing RCRA standards. A second group of comments contends that TSDF containers should not be included in this rulemaking because the EPA analysis does not show organic emissions from TSDF containers to be a significant emission source warranting controls.

Response: The EPA maintains that the management of organic-containing wastes in containers at TSDF is a potentially significant source of organic emissions that is not adequately regulated by existing standards. Control requirements for containers under the subpart CC standards are needed to: (1) ensure that containers used for storage of organic-containing waste use covers effective for organic emission control; (2) control organic emissions from treatment of organic-containing wastes in containers by waste fixation and other processes; and (3) prevent circumvention of the containment and control strategy that serves as a key component of the integrated approach to implementing RCRA section 3004(n).

Containers are defined under RCRA in 40 CFR 260.10 to be any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled. Examples of containers commonly used for managing hazardous waste include drums and dumpsters. Containers typically are used at many TSDF to accumulate and store waste. In addition, waste fixation and other treatment processes at some TSDF are conducted directly in open containers such as drums and bins.

The EPA disagrees with the commenters' conclusion that existing regulations are sufficient to control organic emissions from containers used to manage hazardous waste at TSDF. Existing RCRA regulations under 40 CFR 264.173 do require containers used to store hazardous waste at TSDF to be closed except when necessary to add or remove waste. However, these requirements do not adequately address the EPA's concern regarding the containers as an air emission source. The existing requirement for closed containers during storage does not specify that container covers be vapor-tight. A container cover used to meet the requirement of a closed container may still allow leakage of organic vapors from the container to the atmosphere. Furthermore, no RCRA requirements exist that address organic emissions produced by other container-related waste management operations such as hazardous waste transfer and waste treatment in open containers.

The EPA also disagrees with the commenters' conclusion that managing organic-containing wastes in containers is not a significant source of organic air emissions. The baseline analysis to estimate nationwide TSDF organic emissions by waste management category is not the only factor that the EPA considered in assessing the organic emission potential of containers. As noted by commenters, the container category emission estimate at proposal for the baseline analysis used emission factors based on spillage of wastes from drums, modeling larger bin-type containers as open dumps, and splash loading of containers. Since proposal, the EPA reviewed information available on container emissions but found no new information that justifies revising the container emission factors used for the baseline analysis. The revised nationwide baseline emissions from storage of waste in TSDF containers is estimated to be approximately 5,000 Mg/yr.

The baseline nationwide emission estimate for containers does not include organic emissions from waste treatment in containers. The baseline analysis does estimate total organic emissions from waste fixation operations in all types of waste management units to be approximately 22,000 Mg/yr. In response to the EPA nationwide surveys, TSDF owners and operators reported using containers for waste fixation of over 50 percent of the total 660,000 Mg of waste fixated at TSDF in 1986. Assuming the distribution of organic emissions by waste fixation source are directly proportional to the quantity of waste fixated by source, then approximately 11,000 Mg/yr of the baseline emission estimate can be attributed to result from waste fixation in containers. Information obtained by the EPA representatives during site visits to TSDF conducting waste fixation indicates that use of containers for waste fixation continues to be a common industry practice. Thus, treatment of hazardous waste in containers is a large source of organic emissions that is not regulated by the existing RCRA regulations.

The air emission control requirements for the subpart CC standards are based on applying a containment and control strategy to all TSDF tanks, surface impoundments, and containers containing organic wastes from generation of the waste through treatment of the waste to remove or destroy the organics in the waste. Requiring control of only TSDF tanks and surface impoundments but not containers creates the opportunity to greatly expand an already significant organic emission source if large quantities of hazardous waste currently stored or treated in tanks required to use air emission controls under subpart CC standards are transferred to containers not using air emission controls for the management of wastes. This would allow organics in the hazardous waste managed in uncontrolled containers to escape to the atmosphere prior to treatment and thus reduce the effectiveness of the containment and control approach.

5.1.2 Land Disposal Units

Comment: Comments were received on the proposed rule both supporting and opposing the EPA's decision not to regulate TSDF wastepiles, landfills, and land treatment units under the subpart CC standards. Two of the commenters (F-91-CESP-00060, 00078) support the EPA's decision based on the premise that the EPA will complete promulgation of these LDR treatment standards in a timely manner. Other commenters (F-91-CESP-00019, 00050) disagree with the EPA's decision based on their opinion that the EPA will not complete promulgation of the necessary LDR treatment standards in a timely manner and that the EPA did not consider all hazardous wastes categories in its analysis of the need for air emission controls at land disposal facilities.

<u>Response</u>: The RCRA LDR treatment standards under 40 CFR part 268 require TSDF owners and operators to treat hazardous waste to reduce the toxicity or mobility of specific constituents in the waste before the TSDF owner or operator can place the waste in a land treatment unit, landfill, wastepile, or other land disposal unit. These pretreatment requirements are phased in on a statutorily-prescribed schedule.

To select the TSDF waste management units for control by the proposed standards, the EPA estimated organic emissions for different categories of waste management units. At the time that the proposed rule was being developed, LDR treatment standards for many waste categories had not yet been promulgated. Also, because the LDR treatment standards are generally performance standards, a TSDF owner or operator often can use one of several treatment processes to comply with the standards. Therefore, it was necessary for the EPA to make certain assumptions regarding how TSDF owners and operators would respond to the LDR standards. To estimate the impacts of the LDR on emissions from TSDF land treatment units, landfills, and wastepiles, it was assumed that all organic liquid, sludge, and slurry wastes that had been in land disposal units would be incinerated. Based on this analysis, the EPA concluded that additional requirements to control organic emissions from land disposal units should not be proposed as part of the subpart CC standards. However, the EPA stated in the preamble to the proposed rule that, as additional LDR standards are promulgated and the treatment approaches TSDF owners and operators are using to comply with these standards can be better assessed, the EPA would review its decision and, if necessary, develop additional air emission standards for land disposal units (refer to 56 FR 33505).

The EPA disagrees that promulgation of the necessary LDR treatment standards is not being accomplished in a timely manner. The EPA has promulgated LDR standards for all hazardous waste categories identified or listed under RCRA section 3001 as of November 8, 1984. The EPA currently is developing LDR standards for the additional wastes that have been identified as hazardous as a result of the toxicity characteristic revisions, which became effective September 25, 1990. These final rules will be promulgated by the end of 1994. The EPA estimates approximately 0.8 million to 1 million Mg/yr of these new wastes to be nonliquid wastes such as slurries and sludges that potentially could be land disposed.

The EPA reviewed its decision not to regulate land disposal units as part of the subpart CC standards with respect to the current treatment approaches TSDF owners and operators are adopting to comply with the LDR standards. The EPA expects that many hazardous wastes ultimately placed in land disposal units will be treated to comply with the LDR treatment standards by first treating the wastes using processes such as incineration or steam stripping, which are very effective in removing or destroying organics in the waste. However, some TSDF owners and operators are choosing to treat these types of wastes using solvent extraction processes to comply with the LDR standards.

5.2 EMISSION CONTROL STRATEGY SELECTION

Comment: One commenter (F-91-CESP-00050) disagrees with the EPA's selection of a containment/control approach instead of a pretreatment approach as the basis for selection of emission controls required by subpart CC standards for the following reasons: (1) the EPA's reliance on the LDR and rules developed under other statutes to ensure proper treatment of the TSDF hazardous waste streams cannot be justified as a matter of law;

(2) a containment/control approach is contrary to RCRA paragraphs 1002(b)(6) and (7), which express a preference for waste treatment over disposal; (3) exemptions to LDR may allow certain wastes to be disposed of in waste management units or discharged to treatment systems for which air emission control programs have not been fully developed; and (4) a containment/control approach is contrary to the control strategies of pretreatment and removal recommended by the EPA for control of volatile organic compound emissions from industrial wastewater facilities treating wastes from TSDF (e.g., as described in "Industrial Wastewater Volatile Organic Compound Emissions -- Background Information for BACT/LAER Determinations," EPA-450-004, January 1990).

Response: The EPA concluded that the best approach to controlling organic emissions from TSDF waste management units pursuant to RCRA subtitle C permitting is to base the standards on a containment/control approach that can be used at all TSDF and encourage treatment of the waste near the point where the waste is generated at those TSDF where it is practical and efficient to do so. Adopting this approach for the subpart CC standards is legal under RCRA and is consistent with other EPA air programs.

The EPA disagrees with the commenter's assertion that in establishing these RCRA air standards it is illegal for the EPA to consider the impact of rules promulgated or currently being developed under RCRA or other statutory authorities such as the Clean Air Act. The containment/control approach selected for the subpart CC standards is consistent with both the general and specific legislative directives of RCRA sections 1003(b)(6) and 3004(n). The EPA developed the subpart CC standards as one part of an integrated program to controlling air emissions from TSDF. These standards are intended to control organic air emissions from TSDF sources (and 90-day generator tanks and containers) not already effectively controlled by existing RCRA standards. Certain TSDF organic sources are exempted from RCRA permitting; thus the present regulation does not apply to these sources. To control organic emissions from these sources, the EPA is choosing to develop standards under the authority of the Clean Air Act that complement the RCRA standards, or to do further rulemaking under RCRA section 3004(n). Furthermore, the subpart CC standards do not indicate a preference by the EPA for disposal over waste treatment. The containment/control approach, as applied to the subpart CC standards, involves the application of covers and other emission controls to individual TSDF tanks, surface impoundments, and containers managing hazardous wastes with significant organic emission potential from the point where the waste is generated through the point where the waste is treated to remove or destroy the organics in the waste. The wastes obviously must also still meet LDR standards before they are land disposed.

The EPA disagrees that a containment/control approach is contrary to other EPA air programs for controlling organic emissions. The document referred to by the commenter addresses the control of volatile organic compound emissions from industrial wastewater treatment facilities. Not all hazardous wastes are wastewaters; many wastes handled at TSDF are sludges, slurries, organic liquids, and solids.

The subpart CC standards do not prohibit a TSDF owner or operator from choosing to treat wastes to comply with the rule (for example, steam stripping an aqueous hazardous waste to remove organics). While the rule does not designate specific treatment requirements, the rule does effectively encourage treatment near the beginning of the waste management sequence. Under the subpart CC standards, a TSDF owner or operator may elect to treat a waste stream to reduce the organic concentration of the waste in accordance with the general requirements for treated hazardous waste specified in the standards and thus avoid the requirement and cost of using emission controls on subsequent, downstream waste management units handling that waste stream. Thus, the EPA expects that, as a result of economic considerations, many TSDF owners and operators will use treatment of the waste near the point where the waste is generated as a means to comply with the subpart CC standards. In particular, the Agency expects that operators of impoundments would choose to pretreat (or segregate) rather than install control devices on the impoundment.

Comment: One commenter (F-91-CESP-00004) suggests that the EPA use an emission control strategy based on establishing ambient air quality standards. Under the commenter's approach, if periodic air monitoring performed by the TSDF owner or operator determines that facility emissions result in ambient air concentrations around the facility in excess of the ambient air quality standards, then the TSDF owner or operator would apply the engineering or administrative controls best suited to the site.

Response: Determining the need to apply emission controls to a particular TSDF tank, surface impoundment, or container using ambient standards is not practical. An ambient standards approach would not be enforceable by the EPA and would create uncertainty for TSDF owners and operators as to which TSDF waste management units require controls to comply with the rule. Therefore, the EPA concluded that an ambient standards approach is not appropriate for this rulemaking.

Ambient air monitoring measures the concentration of a particular air pollutant at a specific receptor site that is representative of the cumulative impacts from all neighboring sources emitting that specific air pollutant. Thus, the usefulness of ambient air monitoring data is limited for evaluating air quality impacts from a specific source especially when additional emission sources are present at the facility or at adjacent facilities. If the EPA established ambient standards and the monitoring showed that the standards were exceeded around a particular TSDF, the EPA enforcement personnel could not conclusively prove that the sources of air emissions resulting in the standard being exceeded are the TSDF tanks, surface impoundments, and containers to which the rule applies. The emission source could be RCRA permit-exempt units at the TSDF and, thus, not covered by the requirements of this rule.

Similarly, the emissions may not even be released from the TSDF but instead from other plants or facilities in the vicinity.

Also, when ambient monitoring is used to determine "worst-case" or maximum impact values, it is difficult with limited data to ensure that the values are the most conservative. The reason for this is that ambient concentrations are generally highly variable in space and time. Relying on a sampling of single-point measurements increases the chance that the maximum concentration will be missed altogether. In addition, the commenter is not clear as to what pollutants would be monitored to afford adequate protection of human health and the environment. It would be very expensive and burdensome to monitor several points around a facility for several pollutants. Monitoring the ozone concentration is not feasible because of the time lag between when organic ozone precursor compounds are released and ambient ozone is formed.

5.3 ACTION LEVEL FORMAT SELECTION

5.3.1 Emission Rate Action Level

Comment: Seven commenters (F-91-CESP-00012, 00028, 00036, 00038, 00046, 00069, 00078) request that the rule address the need to use organic emission controls on a particular TSDF tank, surface impoundment, or container by establishing an action level based on emissions rates (i.e., deminimis emission rate). Some commenters request that an emission rate action level replace the proposed waste volatile organic concentration action level. Other commenters suggest an emission rate action level should be used in conjunction with the waste volatile organic concentration action level. The commenters disagree with the EPA's conclusion that this approach would require extensive time and resource commitments on the part of the EPA. Reasons cited by the commenters for using an emission rate action level include: (1) it would allow the use of data that are directly related to the actual release of organic emissions; (2) actual emission rates would not exceed risk assessment health-based limits; (3) it would reduce facility worker exposure during waste sampling; and

(4) it would provide TSDF operators with more options to achieve regulatory compliance.

Response: For the proposed subpart CC standards, the EPA considered but rejected using an emission rate format for the action level. Upon consideration of the comments, the EPA disagrees with the commenters and maintains that an emission rate action level is not appropriate for the subpart CC standards.

An emission rate action level would establish the need to control a particular TSDF tank, surface impoundment, or container based on a quantity of organics emitted from the unit over time (e.g., kilograms of organics per hour, megagrams of organics per year). The EPA acknowledges that an emission rate format may be suitable for those organic emission sources where the pollutant gas stream is emitted from a single point such as the exhaust stack from a boiler or the vent stack from a chemical process unit. An emission rate format was selected by the EPA for the RCRA air standards for TSDF treatment unit process vents under subpart AA in 40 CFR parts 264 and 265 because emission rates from these enclosed point sources can be determined with a relatively high degree of accuracy using direct measurement of emissions in the exhaust gas stream exiting a vent.

The subpart CC standards regulate organic emissions from TSDF tanks, surface impoundments, and containers. Many of these units are open sources. Emissions from open area sources are very difficult to measure accurately because the entire waste surface is open to the atmosphere and the organic emissions occur across large areas. To measure the actual quantity of emissions from the unit, a vapor-tight enclosure would need to be erected temporarily over the entire TSDF unit's exposed waste surface to capture all organic emissions. Thus, actual direct measurement of the organic emissions from an uncovered TSDF unit would be an impractical and expensive means for a TSDF owner or operator to use periodically for determining if a unit's emissions are below a specific action level.

Instead of measuring the actual organic emission rate, a TSDF owner or operator could estimate the emission rate for a

TSDF unit by using theoretical or empirical emission models or by simulating the unit operation (e.g., use an emission flux chamber). However, using an estimation method would not provide as accurate results for a specific TSDF unit as would be achieved by actual direct measurement of the organic emissions from the unit. Furthermore, to use an estimation method for implementing standards for a specific TSDF unit would require extensive and detailed knowledge about the physical and chemical properties of the waste managed in the TSDF unit, the TSDF unit operating practices, and, in some cases, the meteorology at the TSDF site. Also, this approach would require extensive time and resource commitments by the EPA or the designated State authority enforcement personnel to check the estimation calculations for the purpose of verifying compliance with the regulations. In addition, an emission rate format action level established as a health-based limit based on a risk assessment would not necessarily address the emissions of organic ozone precursors and the formation of ambient ozone. Therefore, because of the complexity and burden on the permitting authority of using the estimation methods currently available and, as discussed above, the impracticality and expense of using actual measurements, the EPA believes that specifying an action level based on an emission rate format for nationwide standards applicable to TSDF tanks, surface impoundments, and containers would not be a practical approach.

5.3.2 Multiple TSDF Action Levels

Comment: Two comments were received in response to the EPA's request for comments at proposal regarding the EPA's decision to use the same action level for all units throughout the entire waste management process (56 FR 33516-33517). One commenter (F-91-CESP-00078) supports the EPA's decision. The other commenter (F-91-CESP-00033) states that the EPA should analyze the alternative approach presented in the preamble of using a higher action level for those TSDF waste management units in which waste fixation is conducted.

Response: For the proposed rule, the EPA decided to use the same action level from the point where the waste is generated through the point where the organics in the waste are either removed or destroyed. Upon consideration of the comments received at proposal, the EPA continues to believe that applying the same action level for all waste management units to which the rule applies is the most appropriate approach. As discussed in the proposal preamble (56 FR 33510), using a higher action level for downstream TSDF waste management units than is used for the upstream TSDF waste management units reduces the overall effectiveness of the organic emission containment and control approach.

In the proposal preamble, the EPA discussed plans to analyze the effect of using one action level for waste management units up to the point where the waste is treated by waste fixation and a higher action level for those waste management units in which the waste fixation is conducted (56 FR 33517). The EPA initially planned to perform this analysis because, for the proposed rules, two-thirds of the estimated total nationwide costs for implementing the rule were attributed to TSDF waste fixation processes while only 10 percent of the nationwide emission reduction was achieved. However, the new waste data and the revised LDR assumptions used for the revised impact analysis (refer to chapter 4 of this BID) significantly reduced the estimated quantity of wastes fixated at TSDF so that waste fixation control costs are now estimated to be approximately 1 percent of the total nationwide costs for implementing the rule while the estimated emission reduction is the same order of magnitude (approximately 0.2 percent). Therefore, the EPA concluded that an analysis of different action levels for TSDF waste fixation processes is not needed.

Comment: Four commenters (F-91-CESP-00023, 00044, 00057, 00075) recommend that the EPA use a regulatory approach that would specify separate requirements for different TSDF industry subcategories. Suggestions by the commenters for defining these TSDF industry subcategories include: (1) toxicity of the organic constituents in the waste managed at a TSDF; (2) whether the TSDF is a commercial or noncommercial facility; and (3) regional air quality conditions (e.g., whether the TSDF is located in a rural or urban area, or the TSDF is located in an attainment or nonattainment area for ozone).

Response: Several regulatory approaches for the subpart CC standards were considered by the EPA including the development of separate standards for different TSDF industry subcategories. Upon consideration of the comments received at proposal, the EPA continues to maintain that a single set of standards is the most appropriate approach for regulating TSDF tanks, surface impoundments, and containers under this rulemaking.

The application of the rule is based on the organic content of hazardous wastes and therefore inherently distinguishes between TSDF that manage high organic content wastes versus TSDF that manage nonorganic content or low organic content wastes. However, establishing separate sets of standards based on properties of the organic constituents in the waste managed at different TSDF subcategories would add unnecessary complexity to the subpart CC standards and delay implementation of the rule. In addition to the complexity of evaluating standards for specific toxic constituents, the effect of regulating organic ozone precursors must also be considered. A variety of adverse effects (including cancer and other toxic health effects, ambient ozone formation, and stratospheric ozone depletion) are associated with the organic emissions from TSDF. Because of the knowledge required and the complexity of evaluating a multitude of effects in determining action levels, the EPA decided to develop standards that control total organic emissions rather than constituent-specific emissions from TSDF tanks, surface impoundments, and containers. On balance, considering the number and variety of pollutants, health and environmental effects, and variability of hazardous wastes managed at TSDF, the best approach to developing protective air emission standards is to develop action levels based on the total organic concentration and then address the emissions of those specific constituents that produce any high residual risk at TSDF.

The distinction between commercial and noncommercial TSDF is that noncommercial TSDF manage waste generated on site while commercial TSDF manage waste transported to the facility from offsite waste generators. Both commercial and noncommercial TSDF use the same types of waste management units, follow similar operating practices for managing waste in these units, and can manage similar types of wastes. Therefore, the control requirements of the final subpart CC standards are equally effective at controlling organic emissions at both commercial and noncommercial subcategories.

Establishing separate sets of standards based on regional air quality conditions was not found to be effective for the subpart CC rulemaking. The EPA is directed under RCRA section 3004(n) to establish nationwide standards that are protective of human health and the environment. The EPA has chosen to implement that directive by protecting against risks posed to individuals residing (or who may reside) near the TSDF, surely a reasonable decision. Ensuring that persons close to the TSDF are not exposed to excessive risk, however, largely precludes an approach relying on ambient air quality at the location. Subcategorization of the TSDF industry and correlating the risk of a person contracting cancer from exposure to TSDF air emissions with regional air quality conditions such as whether that person lives in an urban or rural setting or in an attainment or nonattainment area was not found to be an effective regulatory approach for the subpart CC standards.

5.3.3 Other Action Level Formats

Comment: Several commenters (F-91-CESP-00006, 00038, 00067, 00069) recommend that the EPA use site-specific health risk-based criteria to determine which units at a TSDF need to use organic emission controls and, for those units requiring controls, the control efficiency of the controls necessary to protect human health. Using this approach, site-specific health risk analysis would be performed for an individual TSDF. If analysis of air emissions from the facility (e.g., by computer modeling) indicates unacceptable health-based impacts on people living around the facility, then organic emission controls would be required for specific waste management units at the facility.

Response: It is not appropriate to use site-specific health risk-based criteria to determine which units at a TSDF need to comply with the subpart CC standards. A health risk-based criteria approach would require that the EPA implement the subpart CC standards to all 2,300 TSDF in the United States on a case-by-case basis rather than implementing a single set of nationwide standards that must be met by all TSDF owners and operators. As is stated in the previous response, a variety of adverse effects, including cancer, other types of toxic effects, ambient ozone formation, and stratospheric ozone depletion are associated with the organic emissions from TSDF. Evaluating these different effects on a case-by-case basis for each TSDF would be very complex and burdensome for both TSDF owners and operators as well as the EPA, State, or local agency personnel enforcing the rule. Under the health risk-based criteria approach suggested by the commenters, each TSDF owner or operator would need to perform a detailed, site-specific health risk assessment that the EPA would need to review. If it were determined that air emissions from the TSDF pose an unacceptable health or environmental risk, then a plan would need to be developed specifying the organic emission controls to be used on the particular waste management units that contribute to the high risk levels at the facility. Thus, the EPA would essentially be developing individual sets of standards for each TSDF determined to pose unacceptable risks. Where State programs are authorized, authorized States would have to undertake this task, leaving significant questions as to how to evaluate the equivalency of such State programs.

As discussed in chapter 3 of this BID, the EPA concluded that the best approach to implementing the RCRA section 3004(n) is to proceed with the promulgation of standards as expeditiously as possible. This approach involves first developing nationwide standards to control total organic emissions from TSDF followed by additional requirements for those individual TSDF where more organic emission control is appropriate to ensure protection of public health and the environment. Establishing nationwide standards ensures that all TSDF owners and operators comply with a consistent set of minimum control requirements. Nationwide standards facilitate the permitting of TSDF by allowing the owner and operator seeking a permit to know in advance what control requirements, at a minimum, need to be included in the facility design to be issued a permit to operate and eliminating the need for the permit writer to decide, on the basis of necessarily uncertain and inexact risk assessment methodology, on which control requirements to be specified in the permit.

Comment: One commenter (F-91-CESP-00069) suggests that the EPA establish an action level based on the organic vapor pressure of the waste.

Response: The EPA uses waste organic vapor pressure to establish the need for additional controls on covered tanks. The concentration of organics in the vapors contained in a tank headspace (i.e., space between the liquid surface and the cover) stabilizes at an equilibrium concentration that is directly related to the vapor pressure of the organics contained in the waste placed in the tank. However, many existing TSDF tanks, surface impoundments, and containers used for managing organic-containing wastes are open sources (i.e., waste surface is exposed to atmosphere). While an organic vapor pressure action level is a useful indicator of emissions from enclosed sources (e.g., covered tanks), it is not an appropriate action level for sources open directly to the atmosphere or sources that actively generate organic vapors. The emission potential of waste managed in open sources is independent of the organic vapor pressure of the waste. Thus, an organic vapor pressure action level cannot be used for all TSDF waste management units to which the subpart CC standards apply.

5.4 EMISSION CONTROLS SELECTION

<u>Comment</u>: One commenter (F-91-CESP-00050) disagrees with the selection of 95 percent for the control device efficiency to be used for all control options considered by the EPA. The commenter suggests that the EPA consider thermal incineration, which can achieve higher control levels of 98 percent reduction with current, well-proven technology.

<u>Response</u>: The EPA evaluated the benefit of using a control device achieving an efficiency of 98 percent with the control options considered during the revised impact analysis. Based on this evaluation, the EPA concluded that increasing the organic air emission control level above 95 percent would limit the selection of control devices a TSDF owner or operator could use to comply with the subpart CC standards but would not reduce the number of TSDF estimated to have a level of residual risk following implementation of the subpart CC standards that is higher than the range of target risk levels for other promulgated RCRA standards. Thus, the EPA used a control efficiency of 95 percent for the control options evaluated to select the basis for the subpart CC standards. A requirement for a 95 percent control level allows the TSDF owner or operator the alternative of using either organic recovery or organic destruction devices. Furthermore, use of organic destruction devices (combustion) as a means of control to achieve a control efficiency of 98 percent or greater is by no means a panacea.

A variety of organic removal and organic destruction control devices are available that are capable of achieving high organic emission control efficiencies. The type of control device best suited for reducing emissions from a covered or enclosed waste management unit depends on unit size and the characteristics of the organic vapor stream vented from the unit. Based on typical organic vapor stream characteristics, the EPA anticipates that the organic removal control devices most likely to be used for TSDF waste management units are carbon adsorbers and condensers.

Carbon adsorbers or condensers can be used to recover organics from gas streams with either high or low organic content for subsequent direct reuse at the TSDF site or sale as a solvent or fuel. Carbon adsorption is the process by which organic molecules in a gas stream are retained on the surface of carbon particles. The two types of carbon adsorption systems most frequently used for organic emission control are fixed-bed carbon adsorbers and carbon canisters. Fixed-bed carbon adsorbers are used for controlling organic vapor streams with flow rates ranging from 30 to over 3,000 m^3/min. Use of carbon canisters is limited to controlling organic emissions from TSDF waste management units venting vapor streams with intermittent or low continuous flow rates such as storage tanks or treatment tanks with no surface turbulence, heat addition, or exothermic reactions. Condensers convert organic gases or vapors to liquid form by lowering the temperature or increasing the pressure. For TSDF organic emission control applications, surface condensers are most likely to be used.

The design of a carbon adsorption system depends on the inlet gas stream characteristics including organic composition and concentrations, flow rate, and temperature. Good carbon adsorption performance requires that: (1) the adsorber is charged with an adequate quantity of high-quality activated carbon, (2) the gas stream receives appropriate preconditioning (e.g., cooling and filtering), and (3) the carbon beds are regenerated before breakthrough occurs (i.e., before the carbon becomes saturated). Emission test data for full-sized, fixed-bed carbon adsorbers operating in industrial applications have been compiled by the EPA. Analysis of these data indicates that, for well-designed and well-operated carbon adsorbers, continuous organic removal efficiencies of at least 95 percent are achievable over long periods.

The performance of a condenser depends on the gas stream organic composition and concentrations as well as the condenser operating temperature. Condensation can be an effective control technique for gas streams that have high concentrations of organic compounds with high boiling points. However, condensation is not effective for gas streams containing low organic concentrations or composed primarily of low boiling point organics because the organics cannot be readily condensed at normal condenser operating temperatures. For example, data from a condenser field test indicate an organic removal efficiency of over 99 percent for 1,2-dichloroethane (high-boiling-point organic) but an organic removal efficiency of only 6 percent for vinyl chloride (low-boiling-point organic). Therefore, for gas streams with low organic concentrations or composed of low-boiling-point organics, the application of carbon adsorption would result in a higher control efficiency than would condensation.

6.0 RULE REQUIREMENTS

6.1 APPLICABILITY

6.1.1 Affected Hazardous Waste

Comment: Eight commenters request clarification regarding the applicability of the rule to waste management units that no longer receive new hazardous wastes such as a unit undergoing closure that contains waste that has a volatile organic content above the action level. Two commenters (F-91-CESP-00017, 00082) believe that air emission concerns during closure should continue to be addressed through RCRA closure and corrective action rules. Seven commenters (F-91-CESP-00017, 00031, 00038, 00041, 00063, 00071, 00076) request that surface impoundments operating under closure plans be exempted from the subpart CC standards. Reasons cited by the commenters include: (1) use of the required cover air emission controls would inhibit or prevent certain types of closure activities such as dredging, draining, or in situ stabilization, and (2) the cost of installing the required air emission controls on surface impoundments is not justified when the impoundments are to be removed permanently from service in a relatively short period of time.

Response: At proposal, the EPA intended that the subpart CC standards apply to active TSDF tanks, surface impoundments, or containers into which hazardous waste is placed on or after the rule effective date. The EPA did not intend the rule to apply to TSDF tanks, surface impoundments, or containers no longer receiving hazardous waste. The need to use the organic air emission controls required by the subpart CC standards is based on determining the waste volatile organic concentration at the point of waste origination. As was described in chapter 1.0 of this BID, the "point of waste origination" is defined in the final rule with respect to the point where the TSDF owner or operator first has possession of a hazardous waste. When the TSDF owner or operator is the generator of the hazardous waste, the "point of waste origination" means the point where a solid waste produced by a system, process, or waste management unit is determined to be a hazardous waste as defined in 40 CFR part 261. In this case, this term is being used in a similar manner to the use of the term "point of generation" in waste operations air standards established under authority of the Clean Air Act in 40 CFR parts 60, 61, and 63 of this chapter. When neither the TSDF owner nor operator is the generator of the hazardous waste, the "point of waste origination" means the point where the owner or operator accepts delivery or takes possession of the hazardous waste. Determination of the volatile organic concentration at this point cannot be made for a hazardous waste already in a TSDF being managed in a tank, surface impoundment, or container. To clarify the EPA's intention regarding the applicability of the subpart CC standards, the language of the final rule has been revised.

Language has been added to the applicability section of the final rule explicitly stating that the subpart CC standards do not apply to either a TSDF tank or surface impoundment in which an owner or operator has stopped adding hazardous waste (except in a surface impoundment to implement an approved closure plan) and for which an owner or operator has begun implementing or completed closure pursuant to an approved closure plan. Use of the required air emission controls would hinder or prevent closure activities from being performed.

Also, the subpart CC standards do not apply to a tank, surface impoundment, or container that holds hazardous waste placed in the unit before the rule's effective date and in which no hazardous waste is added on or after the rule is effective. However, wastes can be consolidated at closure between surface impoundments that are closing to implement an approved closure plan. In many situations where existing tanks and containers at a TSDF already hold hazardous waste but no longer receive new wastes, a TSDF owner or operator will be unable to perform a waste determination as specified in the rules because waste samples cannot be collected at the required locations and the owner or operator has insufficient knowledge about the waste.

Application of the rule only to units receiving hazardous waste on or after the rule's effective date is consistent with the EPA's interpretation for surface impoundments accepting newly identified hazardous wastes (refer to 55 FR 39409, September 27, 1990). This means that even if a TSDF tank, surface impoundment, or container has hazardous waste with a volatile organic concentration equal to or greater than the action level specified in the rule, the unit is not required to be operated in accordance with the subpart CC standards unless additional hazardous waste is placed in the unit on or after the rule's effective date. For example, in the case where a TSDF owner or operator has placed a drum containing hazardous waste in storage before the rule's effective date, the subpart CC standards are not applicable to this drum unless the owner or operator adds more hazardous waste to the drum on or after the effective date.

Comment: Three commenters (F-91-CESP-00033, 00038, 00082) request that "de minimis cutoff" levels be established for hazardous waste streams to which the rule is applied. The commenters recommend that the EPA establish a de minimis flow rate or emission level below which the subpart CC standards are not applicable to a hazardous waste stream.

Response: The applicability of the final subpart CC standards is not limited by any specific "de minimis cutoff" defined in terms of hazardous waste quantity or flow rate. However, the applicability of the final rule has been revised so that the subpart CC standards do not apply to hazardous waste placed in a container that has a design capacity less than or equal to 0.1 m^3 (approximately 26 gallons). The rationale for this revision is discussed in section 6.6.1 of this document. Also, the subpart CC standards do not apply to any waste excluded from the mixture rule due to de minimis concentrations under 40 CFR 261.3(a)(2)(iv)(D).

6.1.2 Spill Management and Cleanup Activities

Comment: Two commenters (F-91-CESP-00010, 00065) request clarification as to how the standards will apply to emergency or spill management activities. A third commenter (F-91-CESP-00021) states that spare control devices will not be readily available for use in an emergency situation such as a spill.

Response: The subpart CC standards do not apply to tanks, surface impoundments, or containers at either permitted TSDF or interim-status TSDF when these units are used for emergency or spill management activities in accordance with existing RCRA regulations. Under 40 CFR 264.1(g)(8)(i), an owner or operator of a permitted TSDF that engages in treatment or containment activities to provide for immediate response to a discharge or a threat of a discharge of a hazardous waste must comply with 40 CFR 264 subparts C and D but not the other subparts in part 264. Thus, the subpart CC standards do not apply to the tanks, surface impoundments, or containers at permitted TSDF that are used for emergency or spill management activities in accordance with 40 CFR 264.1(g)(8)(i). A similar provision for an owner or operator of an interim-status TSDF is provided in 40 CFR 265.1(c)(11)(i). For a spill that does not take place at a TSDF, none of the requirements of 40 CFR part 264 apply, including subparts C and D.

6.1.3 Radioactive Mixed Waste

Comment: Commenters (F-91-CESP-00036, 00046, 00062, 00082) requested that the EPA consider the unique nature of radioactive mixed waste and the special management practices that must be used to safely handle this waste when determining the applicability of the rule to waste management units handling radioactive mixed waste.

Response: The EPA recognizes that radioactive mixed wastes must be managed in accordance with regulations administered by the Nuclear Regulatory Commission (NRC) under the Atomic Energy Act (AEA) and Nuclear Waste Policy Act of 1982, which address the safe handling and disposal of radioactive waste. In developing the RCRA standards applicable to radioactive mixed wastes, the EPA considers the special management practices required for these wastes to avoid inconsistencies between the EPA's hazardous waste and NRC's radioactive waste management requirements. Furthermore, RCRA section 1006(a) precludes any solid or hazardous waste regulation by the EPA or a State that is "inconsistent" with the requirements of the AEA. Thus, if a case occurs where the regulatory requirements for radioactive mixed waste are conflicting, the AEA requirement takes precedence over the RCRA requirement.

Based on an evaluation of the special practices required to safely manage radioactive mixed wastes, the EPA decided to temporarily defer application of the subpart CC standards to tanks or containers that are being used to manage radioactive mixed wastes. The air emission controls used as the basis for the subpart CC standards are not compatible, in some cases, with the managment practices required for safe handling of radioactive mixed wastes. For example, containers used to store radioactive mixed waste cannot be sealed with vapor leak-tight covers, because of unacceptable pressure buildup of hydrogen gas to levels which can potentially cause rupture of the drum or create a potentially serious explosion hazard. The generation of hydrogen gas is a result of the radiolytic decomposition of organic compounds (i.e., plastics) and/or aqueous solutions within the container. Additionally, radiation induced degradation and biodegradation of organic ion-exchange resin waste, which are also radioactive mixed waste, generated during water treatment at nuclear facilities, can result in pressure buildup and failure of containers. Consequently, containers used for storage of radioactive mixed waste must be vented in accordance with technical guidance published by the Nuclear Regulatory Commission.

The EPA emphasizes that the deferral for waste management units handling radioactive mixed waste is temporary. The EPA is planning to further investigate methods for effective control of organic emissions from waste management units handling radioactive mixed waste that are also consistent with the special management practices that must be used to safely handle this waste.

6.1.4 <u>Wastes to Which the Rule Applies</u>

<u>Comment</u>: One commenter (F-91-CESP-00027) states that the rule should be structured to be applicable only to those tanks, surface impoundments, and containers that handle hazardous waste that exceeds the volatile organic concentration action level. The commenter states that the presumption of the rule that all RCRA hazardous waste fail the criteria unless proven otherwise is overly restrictive and could incorrectly subject generators to extensive testing and recordkeeping requirements.

<u>Response</u>: The subpart CC standards are not overly restrictive because the rule must be structured to apply to all TSDF owners and operators placing hazardous waste in tanks, surface impoundments, and containers on or after the rule's effective date regardless of the waste volatile organic concentration at the point of waste origination to ensure the standards can be effectively enforced by the EPA. Limiting the applicability of the subpart CC standards to only those TSDF owners and operators of waste management units managing wastes with a volatile organic concentration greater than or equal to a certain action level at the point of waste origination would greatly weaken the EPA's ability to verify that all TSDF owners and operators are complying with the rule.

The applicability section of a regulation defines not only which TSDF owners and operators must apply air emission controls to waste management units but also waste determination, recordkeeping, and reporting requirements with which TSDF owners and operators must comply. Structuring the subpart CC standards to apply only to TSDF owners and operators with waste management units that manage hazardous waste with a volatile organic concentration greater than or equal to a certain action level at the point of waste origination prevents the EPA from establishing waste determination, recordkeeping, and reporting requirements under the rule for TSDF owners and operators who claim that all of the units at their facilities manage waste with a volatile organic concentration below the action level at the point of waste origination. These TSDF owners and operators would not be required to perform waste determinations and maintain onsite documentation available for inspection by the EPA enforcement personnel. There would be no "burden of proof" placed on the TSDF owner or operator to demonstrate that the uncontrolled units do actually manage hazardous waste with volatile organic concentration below the action level at the point of waste origination. To ensure that all TSDF owners and operators comply with the rule, the EPA would need to visit each facility and collect and analyze waste samples for TSDF tanks, surface impoundments, and containers not using the required air emission controls.

The EPA considers this rule to be reasonable and believes that the rule does not subject the TSDF industry to extensive testing and recordkeeping requirements. The rule provides a TSDF owner or operator with the alternative of performing a waste determination by either direct testing of the waste or using the owner's or operator's knowledge of the waste. Furthermore, when the hazardous waste is generated or treated as a part of a continuous process or a batch process that is performed repeatedly but not necessrily continuously, the rule requires that the waste determination be repeated only once per year unless there is a change in the process generating or treating the hazardous waste that could potentially cause the volatile organic concentration to increase above the limits specified in the rules or the treatment process performance to decline below the minimum efficiency requirements of the rules. The rule specifies that the documentation for the waste determinations (e.g., test results, basis for knowledge determination) be maintained by the TSDF owner or operator at the facility site for a period of 3 years from the date of the determination. This period of time for maintaining the records is consistent with other existing RCRA regulations and, in the EPA's judgment, is necessary for proper enforcement of the rule.

<u>Comment</u>: One commenter (F-91-CESP-00029) interprets the preamble, proposed rule requirements, and proposed test methods to mean that the EPA intends the subpart CC standards to apply only to liquid, slurry, and sludge hazardous wastes but not solid hazardous wastes. The commenter states that the applicability section of the rule should be revised to incorporate the provision that hazardous waste that does not contain free liquid as determined by the paint filter test is exempt from subpart CC standards.

<u>Response</u>: The applicability of the subpart CC standards is not limited by hazardous waste form (i.e., whether the hazardous waste is a liquid, slurry, sludge, or solid). The rule applies to all types of waste listed or identified as hazardous under 40 CFR part 261 regardless of waste form except for those units specifically not subject to regulation under parts 264.1(g) and 265.1(c). Organic solids can volatilize toxic and ozone-precursor constituents, just as organic liquids can.

<u>Comment</u>: One commenter (F-91-CESP-00014) questions the justification of applying the rule to receptacles managing chlorofluorocarbons since these compounds will be phased out in the near future.

<u>Response</u>: Production of chlorofluorocarbons in the United States is expected to be phased out by the year 2000 with the increased availability of acceptable refrigerants and manufacturing process substitutes. However, the replacement of the existing chlorofluorocarbon refrigerants in air conditioning and refrigeration systems nationwide will generate large quantities of chlorofluorocarbon wastes over the next 5 to 10 years, which must be disposed of in an environmentally responsible manner.

Under existing RCRA regulations, the requirements of parts

264 and 265 do not apply to receptacles managing certain used chlorofluorocarbon refrigerants for the purpose of reclaiming the refrigerants. Used chlorofluorocarbon refrigerants that are removed from totally enclosed heat transfer equipment (e.g., air conditioning and refrigeration systems) and reclaimed for further use are specifically defined by 40 CFR 261.4(b)(12) as a solid waste that is not hazardous under RCRA. Because these chlorofluorocarbon wastes are not hazardous by definition, the tanks and containers used to manage these wastes are not subject to the subpart CC standards.

The subpart CC standards do apply to receptacles used to manage chlorofluorocarbon wastes which are not reclaimed as refrigerants. Since chlorofluorocarbons are gases at ambient conditions, existing industry practices involve managing chlorofluorocarbon wastes in pressurized containers and tanks. The control requirements under the subpart CC standards for TSDF containers and tanks include the use of pressure tanks and vapor-tight containers. The EPA expects that the existing industry chlorofluorocarbon waste management practices at most TSDF already meet these requirements, in which case no additional cost would be incurred by the TSDF owner or operator to install air emission controls for compliance with the subpart CC standards.

<u>Comment</u>: One commenter (F-91-CESP-00014) asks if the rule applies to used oil storage.

<u>Response</u>: The requirements of the subpart CC standards do not apply to storage of used oil that is destined for recycling. Used oils that are recycled are exempt from RCRA subtitle C regulation under 40 CFR 261.6(a)(4). However, other RCRA standards for managing recycled waste oil under 40 CFR part 279 (refer to 57 FR 41566, September 10, 1992) apply to used oil generators, transporters, processors and re-refiners, burners, and marketers.

The requirements of the subpart CC standards may apply to the storage of used oil that is destined for disposal. Used oil exhibiting one or more of the characteristics of hazardous waste identified in 40 CFR 261 subpart C and destined for disposal is regulated as hazardous waste under RCRA subtitle C in accordance with all applicable standards. Therefore, if used oil exhibits a characteristic of hazardous waste and is destined for disposal, facilities that store this oil must manage the oil in accordance with all applicable tank requirements in 40 CFR parts 264 and 265 except in certain cases when the used oil is stored in RCRA subtitle I underground storage tanks (refer to 57 FR 21528-21529, May 20, 1992).

6.1.5 Coke Byproduct Plants

Comment: Two commenters (F-91-CESP-00042, 00052) request that coke byproduct plants be specifically exempted from the rule. The commenters state that proposed subpart CC control requirements are duplicative of the control requirements for coke byproduct tanks, surface impoundments, and containers that already exist under the Benzene Waste Operations NESHAP (40 CFR part 60, subpart FF). Coke byproduct plants should be exempted from the subpart CC standards because the benzene waste operations NESHAP already ensures effective control of organic emissions from tanks, surface impoundments, and containers that are located at these plants. Furthermore, the requirements of the proposed subpart CC rule are contrary to the EPA's findings in developing the benzene waste operations NESHAP. A coke byproduct plant managing less than 10 Mg/yr of benzene waste is not required to install air emission controls on tanks, surface impoundments, and containers under the benzene waste operations NESHAP, but it is quite possible that these same waste management units would be required to install air emission controls under the proposed subpart CC standards.

Response: The subpart CC standards are applicable to coke byproduct plants. It is not appropriate to specifically exempt coke byproduct plants from the subpart CC standards. The requirements of the subpart CC standards do not conflict with the EPA's findings in developing the benzene waste operations NESHAP. The EPA developed the benzene waste operations NESHAP under the legislative directive of Clean Air Act section 112 to specifically protect human health from emissions of benzene. The EPA developed the subpart CC standards under the legislative directive of RCRA section 3004(n) to protect human health and the environment from not only toxic organic compounds (one of which is benzene) but also from organic compounds that are ozone precursors.

Coke byproduct plants process the exhaust gases from ovens used to produce coke from coal. When exhausted from the ovens, the coke oven gases contain many volatile and semivolatile organic compounds. The coke byproduct plants remove and recover tars, light oils, and ammonia from the coke oven gases prior to burning the gases in boilers, furnaces, or flares. Waste streams from the coke byproduct stripping and other process operations contain benzene as well as other volatile organic compounds.

The benzene waste operations NESHAP does not ensure effective control of total organic emissions from tanks, surface impoundments, and containers that are used to manage hazardous waste located at coke byproduct plants. It is possible that waste management units at a coke byproduct plant manage waste streams that have a computed total annual benzene (TAB) quantity less than 10 Mg/yr yet still contain significant quantities of other air toxic and ozone precursor organic compounds. Under the benzene waste operations NESHAP, these waste management units would not be required to use organic air emission controls. Thus, application of air emission controls under the subpart CC standards to waste management units at coke byproduct plants that are not controlled under the benzene waste operations NESHAP is necessary and appropriate for the protection of human health and the environment as mandated by RCRA section 3004(n). It should be noted that the EPA has indicated that certain organic byproducts generated and reused by coke byproduct plants are not solid wastes. See, e.g., 261.4(a)(10). This may lessen the commenter's concern regarding the rule's scope.

6.1.6 <u>Wastewater Treatment Units</u>

<u>Comment</u>: Nine commenters (F-91-CESP-00012, 00023, 00033,

00038, 00043, 00045, 00057, 00063, 00064) expressed concern about the applicability of the subpart CC standards to wastewater treatment units now exempt from RCRA regulation. The commenters believe the rule should clarify that the wastewater treatment unit exemption for units regulated under NPDES still applies. Two other commenters (F-91-CESP-00030, 00069) state that the proposed rule would disrupt the existing wastewater treatment systems TSDF owners and operators have installed to comply with the Effluent Guidelines and Standards under the Clean Water Act.

<u>Response</u>: Under existing RCRA regulations, wastewater treatment tanks that manage hazardous wastewaters or wastewater treatment sludges in accordance with regulations under section 402 or section 307(b) of the Clean Water Act are not presently subject to subtitle C regulation. The final subpart CC standards do not alter that exemption.

Thus, the subpart CC standards do not apply to a TSDF tank that meets the definition of a "wastewater treatment unit" as defined in 40 CFR 260.10. The subpart CC standards do apply to all TSDF surface impoundments used for wastewater treatment and to those TSDF tanks used for wastewater treatment that are not covered by the regulatory exemption.

Not all owners and operators of existing, non-exempt TSDF wastewater treatment systems will be required to install the air emission controls specified in the rule. A TSDF owner or operator is not required to install these air emission controls if the tank or surface impoundment is used to manage hazardous wastewaters having a mass-weighted average volatile organic concentration at the point of waste origination that is less than 100 ppmw. Also, the subpart CC standards do not require air emission controls on a tank or surface impoundment used for biological treatment that meets certain performance requirements. In situations where a tank or surface impoundment is subject to the standards, the TSDF owner or operator can choose to either: (1) install the required air emission controls on the affected surface impoundment or tank; (2) treat the wastewaters to destroy or remove organics (e.g., using steam stripping) prior to placing the wastewater in the surface impoundment or tank; or (3) treat the wastewaters in a surface impoundment or tank in which a biological treatment process is used that destroys or degrades organics in the hazardous waste in accordance with the requirements of §§ 264.1082(c)(iv) or 265.1083(c)(iv). The EPA believes that the final subpart CC standards provide sufficient flexibility to the TSDF owner or operator for choosing an air emission control method best suited to a particular wastewater treatment system configuration and operating requirements.

6.2 EXEMPTIONS FROM AIR EMISSION CONTROL REQUIREMENTS

6.2.1 Exemption Format

Comment: One commenter (F-91-CESP-00062) states that exemption from the subpart CC air emission control requirements should be determined on the basis of the hazardous waste placed in an individual tank or container rather than in all of the units that comprise a "hazardous waste management unit" as proposed in the rule. The commenter notes that the proposed air emission control requirements are for individual tanks, surface impoundments, and containers. Under the RCRA definition of a "hazardous waste management unit," this unit can consist of several tanks interconnected together with their pumps and piping or a group of containers. Thus, for any tank or container in a hazardous waste management unit to be exempted from having to apply air emission controls under the rule, every individual tank or container in the hazardous waste management unit has to be managing hazardous waste that has a volatile organic concentration less than the action level.

Response: A "hazardous waste management unit" is defined by RCRA as a contiguous area of land on or in which hazardous waste is placed (refer to 40 CFR 260.10). Examples of hazardous waste management units include a surface impoundment, a tank and its associated piping and underlying containment system, and a container storage area (i.e., the containers and the land or pad upon which the containers are placed). A container by itself is not a hazardous waste management unit.

The purpose of the subpart CC standards is to control organic air emissions from TSDF tanks, surface impoundments, and containers that manage hazardous waste that has a volatile organic concentration at the point of waste origination greater than or equal to 100 ppmw on a mass-weighted average basis. The EPA recognizes that, according to the RCRA definition of a "hazardous waste management unit," it is possible to have a situation in which a hazardous waste management unit includes both exempt and nonexempt containers. For example, drums containing hazardous waste that was generated by different sources could be stored on the same pad at a TSDF. The drums and pad constitute a hazardous waste management unit. Some of the drums stored in this hazardous waste management unit could contain hazardous waste that has a volatile organic concentration at the point of waste origination less than 100 ppmw. In this case, the EPA does not intend that these drums be required to use air emission controls under the subpart CC standards simply because the drums are physically located in the same hazardous waste management unit with drums containing hazardous waste that has a volatile organic concentration at the point of waste origination greater than or equal to 100 ppmw. Therefore, the EPA clarified the regulatory language of the final subpart CC standards by deleting the term "hazardous waste management unit" from the rule and, instead uses the terms "tank," "surface impoundment," and "container."

Comment: One commenter (F-91-CESP-00053) states that exemptions from the subpart CC standards should be determined using RCRA waste codes because the proposed procedure for determining the waste volatile organic concentration is expensive.

Response: The subpart CC standards effectively apply to a subset of listed and identified hazardous wastes and, to that extent, do use the current RCRA hazardous waste classification scheme. However, it is not appropriate to rely exclusively on the RCRA waste code classifications for identifying which hazardous wastes do not need to be managed in TSDF tanks, surface impoundments, and containers using air emission controls required by the subpart CC standards. The RCRA waste codes are not assigned on the basis of amount of organics that potentially can be emitted to the atmosphere from a particular waste. The RCRA waste codes denote either the presence of a specific chemical constituent of concern in the hazardous waste or the type of source or process that generated the hazardous waste. Various types of hazardous wastes representing a wide range of organic air emission potentials can be included under a specific RCRA waste code. Consequently, only some but not all of the hazardous wastes included under a RCRA waste code may need to be managed in TSDF tanks, surface impoundments, and containers using the air emission controls required by the subpart CC standards.

The EPA disagrees that the requirement for determining the waste volatile organic concentration is expensive. The rule allows a TSDF owner or operator to determine the volatile organic concentration of a hazardous waste using either Method 25D or knowledge of the waste. As discussed further in chapter 8 of this BID, Method 25D provides an analytical method for direct measurement of the volatile organic concentration that is neither unusually expensive nor time-consuming for a laboratory analytical technique. The option of using knowledge of the waste allows TSDF owners and operators to use existing information collected for other purposes to determine the volatile organic concentration.

<u>Comment</u>: Many commenters (F-91-CESP-00029, 00030, 00033, 00034, 00068, 00069, 00071, 00082) state that the volatile organic concentration should be determined on the basis of the hazardous waste composition at the point where the hazardous waste enters each tank, surface impoundment, or container instead of at the point where the waste is generated for all tanks, surface impoundments, and containers that are used to manage a particular hazardous waste.

<u>Response</u>: The subpart CC standards are based on an organic

emission containment and control approach that requires certain hazardous wastes containing organics to be managed in TSDF tanks, surface impoundments, and containers using appropriate air emission controls. To be effective, these controls must be applied from the point of waste origination through the point of waste treatment, where the hazardous waste has been treated to remove or destroy the organics in the hazardous waste. To identify which hazardous wastes do not need to be managed in this manner, the EPA selected volatile organic concentrations determined using Method 25D as a relative measure of the organic emission potential of a hazardous waste. Implementation of this approach requires that the volatile organic concentration of the hazardous waste be determined at the point of waste origination. The principle reasons for this approach, as explained below, are to prevent organics from being released or diluted, as opposed to being effectively contained or treated.

A hazardous waste typically is managed in a sequence of steps requiring the waste to be transferred between a series of tanks, surface impoundments, or containers from the point of waste origination to the point where the waste is disposed. Installing a cover and, where appropriate, an air emission control device on the first tank, surface impoundment, or container in which the hazardous waste is placed will suppress the release of organics from that unit to the atmosphere. However, suppression air emission controls do not remove organics from the waste or destroy the organics in the waste. Consequently, the potential remains that the organics retained in the waste will be released to the atmosphere if the waste in the first unit is transferred to an open unit (i.e., a tank, surface impoundment, or container not using a cover and, where appropriate, a control device).

The volatile organic concentration of a hazardous waste can be lowered so that it is below the concentration action level used for the rule without necessarily treating the waste to remove or destroy the organics in the waste. For example, waste streams that have volatile organic concentrations equal to or greater than the action level can be diluted by mixing the wastes with other materials containing little or no organics. Consequently, determination of the volatile organic concentration of a hazardous waste at the point where the waste enters each individual tank, surface impoundment, or container does not ensure that the waste has been properly treated to remove or destroy the organics in the waste. Allowing the opportunity for hazardous waste to be placed in open tanks, surface impoundments, or containers prior to treatment could greatly diminish the effectiveness of the containment and control approach. Thus, determination of the volatile organic concentration of a hazardous waste at each point in this waste management sequence where the hazardous waste enters a tank, surface impoundment, or container before the waste is treated to destroy or remove the organics is not acceptable for this rule.

6.2.2 Exemptions for Treated Hazardous Waste

Comment: Twelve commenters (F-91-CESP-00010, 00025, 00030, 00033, 00034, 00038, 00043, 00066, 00068, 00069, 00071, 00082) disagree with the proposed definition of "waste dilution" in the rule and application of this definition for the purpose of determining whether dilution is used to reduce the volatile organic concentration of a hazardous waste to less than the action level. In general, the commenters believe that mixing of hazardous wastes to facilitate centralized treatment of the combined waste should not be considered to be dilution. In support of their position, the commenters present the following reasons: (1) the proposed definition is inconsistent with the EPA's definition of dilution used for previous RCRA rulemakings; (2) the approach requires that air emission controls be applied to units managing wastes below the action level with relatively little emission reduction; (3) the approach requires sampling, prior to aggregation, each waste stream that enters a unit that may be required to be operated pursuant to the rule, with potentially many waste streams involved in some wastewater treatment systems; and (4) the approach discourages current TSDF owner and operator practices of combining hazardous waste streams to gather sufficient quantities of waste for treatment or to minimize costs of offsite disposal. Another commenter (F-91-CESP-00007) states that the EPA's proposed approach for determining if dilution of a waste has occurred is based on the average volatile organic concentration of the waste exiting the treatment unit being less than the computed weighted average concentration entering the unit and requests clarification as to what is acceptable treatment under the rule.

Response: Under one of the exception provisions proposed for the subpart CC standards, an owner or operator would be excepted from managing a hazardous waste in a tank, surface impoundment, or a container using the air emission controls required by the rule if the owner or operator determines that a treated hazardous waste before being placed in the waste management unit has a volatile organic concentration less than or equal to the action level. Allowing dilution of a hazardous waste with other materials as a means by which an owner or operator could meet the conditions of this exception (i.e., diluting the volatile organic concentration of the hazardous waste to a level below the action level) is not acceptable, however. A process that simply mixes, blends, combines, or aggregates a hazardous waste with other materials does not destroy the organics in the waste or remove the organics from the waste. Even though the volatile organic concentration of the hazardous waste has been reduced to a level below the action level, the same quantity of organics in the hazardous waste at the point of waste origination would still potentially be available to be emitted to the atmosphere from downstream tanks, surface impoundments, or containers that manage the hazardous waste. (See Chemical Waste Management v. EPA, 976 F.2d 2, 20-25 and n.8 [D.C. Cir. 1992] where the court held such aggregation could be a form of impermissible dilution and stated a particular concern that mass loadings of hazardous constituents to the environment be minimized through treatment that removes or destroys such constituents.)

The proposed rule would have prohibited "waste dilution" of a hazardous waste under all circumstances to meet the treatment conditions required for an owner or operator to be excepted from the subpart CC control requirements. Since proposal, the EPA has reconsidered allowing mixing of hazardous wastes for certain waste treatment processes. The EPA recognizes that at TSDF where multiple hazardous wastes are managed there are performance and cost efficiency benefits from combining compatible hazardous wastes for treatment in a large, centralized unit rather than operating many small treatment units, each unit dedicated to a particular type of hazardous waste. Therefore, the EPA concluded that it is appropriate to revise the conditions for which a TSDF owner or operator is excepted from managing a treated hazardous waste in a tank, surface impoundment, or a container pursuant to the subpart CC control requirements. Also, the proposed subpart CC section entitled "exceptions to the standards" has been renamed "standards: general" because procedures are provided by which the owner or operator may operate a tank, container, or surface impoundment in accordance with the subpart CC standards rather than exempting the unit from the requirements of the standards.

For the final subpart CC standards, the EPA decided not to include a definition of "waste dilution." Inclusion of this definition in the rule is not essential and complicates the interpretation of certain hazardous waste management practices currently allowed by the EPA to comply with other RCRA regulations. In place of defining "waste dilution," the EPA added several alternative general requirement provisions to the final subpart CC standards from which a TSDF owner or operator may choose to comply for situations where individual hazardous wastes are mixed together to facilitate treatment in a centralized unit. The conditions for each alternative general requirement were established so that any reduction in the volatile organic concentration of a hazardous waste due to dilution is not "credited" toward achieving compliance with the requirements of subpart CC.

The final rule specifies general requirement conditions for treated hazardous waste that a TSDF owner or operator must meet when the hazardous waste has been mixed or aggregated with other hazardous wastes or materials prior to the point of waste treatment. An owner or operator is not required to manage a hazardous waste in a tank, surface impoundment, or container meeting the subpart CC control requirements if the hazardous waste is treated by an organic destruction or removal process that meets or exceeds a minimum level of performance as specified in the rules.

One provision requires that mixed hazardous wastes be treated by an organic destruction or removal process that reduces the volatile organic concentration of the hazardous waste to meet a site-specific treatment process exit concentration limit. This limit is determined by the TSDF owner or operator on a case-by-case basis using an equation specified in the rule that accounts for the portion of the reduction in the volatile organic concentration in the resulting treated hazardous waste stream due to dilution. To use this equation, the owner or operator must first determine the volatile organic concentration at the point of waste origination for each individual hazardous waste stream that is mixed together prior to entering the treatment process. As an alternative to calculating the exit concentration limit for a treatment process, the subpart CC standards allow the owner or operator to treat the mixed hazardous wastes to a volatile organic concentration level that is less than or equal to the lowest waste volatile organic concentration at the point of waste origination for all of the individual hazardous waste streams mixed together prior to entering the treatment process.

Another alternative in the subpart CC standards available to owners and operators allows mixed hazardous wastes to be treated using a single process that achieves an organic reduction efficiency of 95 percent or greater on a mass basis, and reduces the average volatile organic concentration of the resulting hazardous waste stream exiting the process to a level less than 50 ppmw. This alternative does not require the owner or operator to perform any volatile organic concentration waste determinations for the hazardous wastes prior to mixing, yet still accommodates the mixing of wastes that have different volatile organic concentrations. For a waste stream having a volatile organic concentration greater than 2,000 ppmw, requiring only a minimum 95 percent reduction of the organic content in the waste stream would not lower the volatile organic concentration of the treated waste stream to the 100 ppmw level of the rule. However, if such a waste stream had been mixed together prior to treatment with other waste streams having lower volatile organic concentrations, then the volatile organic concentration of the treated waste exiting the process could be less than 100 ppmw. The EPA does not consider such situations to be unlikely, and has therefore chosen for this alternative to require an exit concentration for the treated waste lower than 100 ppmw. The EPA considers an exit concentration of 50 ppmw, combined with a 95 percent treatment efficiency, to be an appropriate demonstration that the reduction in volatile organic concentration for a mixture of hazardous waste streams has been achieved through destruction or removal of organic constituents in the waste, rather than by dilution.

The final subpart CC standards also provide another alternative that does not require the owner or operator to perform any volatile organic concentration waste determinations for the hazardous wastes prior to mixing when the waste is treated by a biological process that destroys or degrades the organics contained in the hazardous waste to meet certain performance requirements specified in the rule. These conditions are either of the following: (1) achieve an organic reduction efficiency for the biological treatment process equal to or greater than 95 percent, and achieve an organic biodegradation efficiency for the process equal to or greater than 95 percent; or (2) achieve a total actual organic mass biodegradation rate for all hazardous waste treated by the process equal to or greater than the required organic mass removal rate for the process. Compliance with these parameters is determined using the procedures specified in rule.

Comment: Six commenters (F-91-CESP-00033, 00041, 00046, 00069, 00076, 00082) support the EPA's proposal to allow a TSDF owner or operator to be exempted from managing a hazardous waste in a tank, surface impoundment, or container using air emission controls if the hazardous waste, before being placed in the waste management unit, has been treated to comply with the LDR. Two commenters (F-91-CESP-L00001, 00060) support the concept of this exemption but express concern that the proposed regulation language is not adequate. One of these commenters states that the LDR regulations do not specify a concentration limit for total volatile organic compounds comparable to the volatile organic concentration action level specified in the subpart CC standards. The second commenter expresses the opinion that the proposed regulation language for the exemption is ambiguous and both the regulation and the EPA's intent should be clarified. The commenter supports the LDR exemption for tanks, surface impoundments, and containers that contain only wastes for which LDR treatment standards have been promulgated but does not believe that a tank, surface impoundment, or container that contains some wastes for which there are no LDR treatment standards should be exempt from the control requirements.

Response: The final subpart CC standards do not include the proposed explicit exemption for hazardous wastes complying with the LDR treatment standards. Instead, the EPA concluded that a better approach is to use the general requirements in the final rules for any treated hazardous waste (refer to the preceeding response in this section of this chapter) to address situations in which a TSDF owner or operator is already treating a hazardous waste to comply with the LDR treatment standards using a process that is also effective in removing or destroying organics in the waste (e.g., a hazardous waste incinerator or steam stripping unit).

The Land Disposal Restrictions are codified under 40 CFR part 268. The LDR identify the hazardous wastes that are restricted from land disposal and specify the conditions under which these hazardous wastes may be land disposed after the waste is treated by a specified technology or treated to reduce the concentration of individual constituents in the waste to specified levels. For many hazardous wastes, the LDR treatment standard is expressed as a concentration limit, i.e., performance level (See, e.g., treatment standards for F037, F038, and K048-052). To attain the concentration limit by treating the hazardous waste, the owner or operator may use any nonprohibited technology.

The EPA was developing the specific LDR treatment standards for many hazardous waste categories at the same time that the EPA was developing the proposed subpart CC standards. Since proposal of the subpart CC standards, the EPA has gained a better understanding of the treatment methods TSDF owners and operators are choosing to use to comply with the LDR standards. Although most of the treatment standards would require removal or destruction of organics in the waste to meet or exceed the minimum levels of performance required by these rules, this is not invariably the case, which can result in over 100 ppm volatile organics remaining in the wastes. Upon consideration of current TSDF industry practices, the EPA thus no longer believes that an unconditional exemption for all hazardous wastes meeting the LDR treatment standards from the subpart CC standards is warranted. Furthermore, the subpart CC standards allow persons to use process knowledge to determine that the wastes are not subject to the control requirements of the standards. Thus generators of most wastes treated to meet the LDR requirements can readily determine that the treatment meets or exceeds the minimum level of performance as specified in the rules and, therefore, that the treated wastes do not need to be managed in accordance with the air emission control requirements of the subpart CC standards.

6.2.3 Site-Specific Exemptions

Comment: One commenter (F-91-CESP-00010) requests that the EPA add provisions to the rule allowing for site-specific exemptions or variances from the control requirements for TSDF tanks, surface impoundments, or containers that have unique situations. The commenter cites one example situation. The need to use air emission controls on a waste management unit handling dilute wastewater at a particular site should be determined by considering the organic air emission and risk reduction achieved from applying controls versus the cross-media environmental and energy impacts of installing and operating the controls.

Response: The EPA determined that it is not necessary to provide provisions allowing site-specific exemptions to the air emission control requirements for the subpart CC standards. The purpose of this rule, in conjunction with the subpart AA and BB standards, is to provide a consistent set of standards applicable to TSDF nationwide for control of organic emissions from waste management activities. In developing these nationwide standards, the EPA recognized that the waste management practices used at TSDF can vary from site to site. This site-specific variability is addressed in the rule by including alternative control requirements with which a TSDF owner or operator can choose to comply. The EPA believes that the control requirement alternatives provided in the rule adequately address the site-specific conditions reasonably expected to occur at TSDF. No additional provisions to allow exemptions to the control requirements on a case-by-case basis are warranted.

In developing the subpart CC standards, the EPA estimated the nationwide secondary air emission impacts, the cross-media wastewater and solid waste impacts, and energy impacts associated with implementing the air emission controls required by the rule. The EPA concluded that the benefits of organic air emission and cancer risk reductions provided by implementing the air emission controls required by the subpart CC standards exceed the cross-media and energy impacts associated with operating these controls.

6.3 WASTE DETERMINATION AND COMPLIANCE PROCEDURES

6.3.1 Determination of Volatile Organic Concentration

Comment: Commenters state that the EPA's use of waste volatile organic concentration for an action level is incorrectly applied in the proposed rules as a maximum concentration never to be exceeded. Three commenters (F-91-CESP-00027, 00066, 00069) assert that the waste data the EPA used for the impact analysis that serve as the basis for selecting this action level value represent long-term average concentrations. Accordingly, these commenters request that the EPA adopt a more accurate statistical approach that: (1) uses the same volatile organic compound used in the NPDES and pretreatment programs to analyze samples to test against a maximum daily limit (i.e., action level); and (2) uses normal statistics as is used for the interlaboratory studies for the 600 Series Methods in 40 CFR 136, appendix A. Two other commenters (F-91-CESP-00033, 00063) suggest that the rule incorporate a flow-weighted annual average stream concentration similar to the approach used for the benzene waste operations NESHAP.

Response: The impact analysis performed by the EPA as the basis for selecting the action level value did not explicitly define whether the waste volatile organic concentration used for the rule action level represents a long-term average concentration or a maximum concentration. As discussed in section 4.1 of this BID, the impacts for each control option were calculated using primarily waste data reported in responses by TSDF owners and operators and GENSUR nationwide surveys. Thus, the waste data bases used for the analysis represent compilations of survey response data obtained from many waste generators and TSDF owners and operators. There is no information in the survey responses to determine definitively if the waste data reported by the survey respondents are long-term average data. The waste data bases likely are composed of a mix of waste concentration data ranging from one-time concentration values based on analysis of a single waste sample to long-term average concentration values based on the analyses of multiple waste samples collected over periods of weeks or months. Considering the mix of concentration data in the waste data bases, the EPA believes that it is more appropriate to interpret the volatile organic concentration action level assigned to each of the five control options as the average concentration at the point where the waste is generated. (This view of the data, though justified, is the interpretation most lenient to regulated entities.)

The impact analysis for this rulemaking was revised following proposal (refer to chapter 4 of this BID). Using these revised impact analysis results, the EPA selected a new control option as the basis for the final subpart CC standards. The rationale for the selection of this control option is presented in the Federal Register notice for promulgation of the rule. The EPA interprets the volatile organic concentration modeled for the action level corresponding to the selected control option to represent the mass-weighted average volatile organic concentration of the hazardous waste. This matches the EPA's interpretation of the facility data used to develop the substantive standards, as explained above. As a result, the EPA revised the general requirements for the final rule. The final subpart CC standards thus allow an owner or operator to manage a hazardous waste in tanks, surface impoundments, and containers that are not equipped with subpart CC air emission controls if the owner or operator determines, using the procedures specified in the rule, that the hazardous waste has a volatile organic concentration at the point of waste origination that is less than 100 ppmw on a mass-weighted average basis.

The EPA is not finalizing the statistical calculation procedure for determining the waste volatile organic concentration that was proposed. This procedure is no longer relevant to the rules since the action level used for the final rules is a mass-weighted average volatile organic concentration for the hazardous waste.

Continuous compliance with a long-term average volatile organic concentration limit for hazardous waste generated as a continuous stream requires periodic checking by the owner or operator. Even though the long-term average volatile organic concentration of the hazardous waste stream is less than 100 ppmw, the volatile organic concentration will likely fluctuate. To determine compliance with a long-term average volatile organic concentration, records of waste determinations and quantities of waste managed are required. Accordingly, provisions are included in the final subpart CC standards requiring TSDF owners and operators to periodically update information used to determine the volatile organic concentration of a hazardous waste stream (refer to section 6.2.2 of this chapter). In addition, the final subpart CC standards require the owner or operator to maintain records at the TSDF site of all waste determinations that can be reviewed by regulatory enforcement personnel to check owner and operator compliance with the general requirements of the rule.

As an aid to the EPA's enforcement of the subpart CC standards, the EPA decided it is appropriate to add a provision to the general requirements of the final rules that provides a mechanism by which regulatory enforcement personnel can easily check the current compliance status of tanks, surface impoundments, and containers receiving a continuous hazardous waste stream and not using the air emission controls required by the rule. This provision allows the EPA at any time to perform or request that the TSDF owner or operator perform a waste determination using direct measurement in accordance with the procedure specified in the rules.

Comment: Three commenters (F-91-CESP-00043, 00066, 00069) state that, if the results of the direct measurement indicate that the waste volatile organic concentration is above the action level, the rule should be consistent with other RCRA rules [e.g., 40 CFR 264.98(g)(6) and 40 CFR 265.93(c)(2)] and allow the TSDF owner or operator to retest to confirm the results before having to apply the required air emission controls. Furthermore, the EPA should not require the implementation of air emission controls if a value for a volatile organic concentration above the action level is caused by an unusual circumstance, natural variation in the concentration, sampling error, or analysis error.

Response: A provision allowing retesting of a hazardous waste before the TSDF owner or operator must place the waste in a tank, surface impoundment, or container using the required air emission controls is not needed in the subpart CC standards. The waste determination procedures specified in the rule adequately address situations where the volatile organic concentration of a hazardous waste rises to or above the action level because of an unusual circumstance, natural variation in the concentration, sampling error, or analysis error.

It is the EPA's intention that hazardous waste be managed pursuant to the subpart CC control requirements except for those situations where the TSDF owner or operator is confident that the average volatile organic concentration of a hazardous waste at the point of waste origination is consistently below the action level. If the average volatile organic concentration of the hazardous waste at the point of waste origination is likely to reach or exceed the action level during any time period over which the average is calculated due to natural variation or operational circumstances, then the EPA expects the owner or operator to manage the hazardous waste in tanks, surface impoundments, and containers using the required air emission controls.

In addition, the waste determination protocol specified in the subpart CC standards already addresses normal variations due to waste sampling and analysis error. The subpart CC standards specify that a sufficient number of samples (with a minimum of four) must be collected to represent the complete range of organic compositions and organic quantities that occur in the hazardous waste due to normal variations in the operating conditions for the source, process, or waste management unit generating the waste (e.g., such as cyclic process operations or fluctuations in ambient temperature). The EPA also expects that a TSDF owner or operator would want to collect more than four samples for analysis if a significant probability of sampling error exists for a particular hazardous waste stream. The EPA does not expect analytical error to misrepresent the volatile organic concentration of a hazardous waste. As discussed in chapter 8 of this BID, the EPA has conducted extensive studies to assess the precision and accuracy of Method 25D.

The RCRA provisions under 40 CFR 264.98(g)(6) and 40 CFR 265.93(c)(2) cited by the commenters apply to the monitoring of groundwater for the purpose of detecting the presence of groundwater contamination by hazardous constituents. The resampling provisions for these ground water monitoring rules are not appropriate for regulating organic air emissions under the subpart CC standards.

Comment: Three commenters (F-91-CESP-00048, 00060, 00078) recommend that the EPA adopt some type of screening procedure to quickly eliminate hazardous wastes that do not contain volatile organic constituents or have volatile organic concentrations below the action level. Hazardous wastes failing the screening test would then require a more detailed analysis.

Response: The subpart CC standards do provide a screening procedure to quickly eliminate hazardous wastes that do not contain volatile organic constituents. The owner or operator may choose to use knowledge of the waste and record information showing that the waste is generated by a process for which no organics-containing materials are used. For the owner or operator who chooses to use direct measurement to determine the volatile organic concentration, the EPA considers Method 25D to be a screening method. This method provides a relative measure of the organic air emission potential of a hazardous waste by using a protocol that is neither unusually expensive nor time-consuming for a laboratory analytical technique. There is no need for additional analyses because the action level used to determine which hazardous wastes can qualify for the general requirements under the subpart CC standards is expressed in terms of a volatile organic concentration level as measured by Method 25D.

Comment: Three comments (F-91-CESP-00029, 00050, 00069) were received that support the EPA's proposal to allow TSDF owners or operators to use knowledge for waste determinations. Two other commenters (F-91-CESP-L00001, 00029) request that the EPA clarify specific examples of information that may be used as knowledge of the waste.

Response: The final subpart CC standards allow TSDF owners or operators to use their knowledge of the waste for waste determinations [see Hazardous Waste Treatment Council v. EPA, 886 F.2d 355,370-71 (D.C. Cir. 1989) upholding the use of generator knowledge to determine if treatment standards are met]. Examples of information that could constitute acceptable knowledge have been expanded in the final rule from the examples in the proposed rule and include: (1) organic material balances for the source, process, or waste management unit generating the waste; (2) documentation that lists the raw materials or intermediate products fed to a process showing that no organics are used in the process generating the waste; (3) information that shows the waste is generated by a process that is substantially similar to a process at the same or another facility that generates a waste previously determined by direct measurement to have an average volatile organic content less than the action level; (4) test data that provide speciation analysis results for the waste that are still applicable to the current waste management practices and from which the total concentration of organics in the waste can be computed; or (5) if the TSDF owner or operator receives the waste from an off-site generator, information contained in manifests, shipping papers, or waste certification notices accompanying the waste.

When test data are used as the basis for knowledge of the waste, then the owner or operator must provide documentation describing the testing protocol and the means by which sampling variability and analytical variability are accounted for in the determination of the volatile organic concentration of the hazardous waste. The test data also must be validated in accordance with Method 301 in appendix A of part 63.

Comment: Four commenters (F-91-CESP-00008, 00046, 00048, 00060) suggest test methods that should be specified in the rules as acceptable alternatives to Method 25D for waste determinations. These methods include the EPA methods 5030 and 8240, gas-phase infrared spectroscopy, helium plasma spectroscopy, Varian headspace analyzer, GC/FID as carbon, the sum of POC and POX from analytical equipment by OI instruments, and GC/MS volatile organics with tentative identification of nontarget compounds.

Response: The EPA has traditionally accepted alternative test methods to the specific reference test methods promulgated under 40 CFR part 60, appendix A, on a case-by-case basis. The EPA specifies the procedure to demonstrate equivalency in Method 301 in 40 CFR part 63, appendix A. For the subpart CC standards, the EPA has adopted the approach of allowing TSDF owners or operators to use their knowledge of the waste as an alternative to using Method 25D for waste determinations. A waste determination using knowledge of the waste can use validated test data that provide a speciation analysis for the waste from which the total concentration of organics in the waste can be computed. The owner or operator can choose the type of test method used to perform the analysis, provided the owner or operator documents the testing protocol and the means by which sampling variability and analytical variability are accounted for in the waste determination. Also, the individual organic constituent concentration test data must be validated in accordance with Method 301 in appendix A of 40 CFR part 63.

Comment: One commenter (F-91-CESP-00011) states that it is unclear if the proposed 500-ppmw volatile organic concentration action level applies to wastes that must be heated above 50 °F to remain liquid. According to the commenter, materials that must be heated to 50 °F to flow (e.g., polymer syrups and similar viscous materials) will exceed the proposed 500-ppmw action level in their heated state but may not if permitted to cool to below 50 °F. The commenter suggests that the EPA specify that the waste volatile organic concentration be determined at some given temperature and pressure.

Response: The subpart CC standards include provisions that allow a TSDF owner or operator to use either direct measurement or knowledge of the waste to determine the volatile organic concentration of a hazardous waste. If the TSDF owner or operator chooses to use direct measurement, the waste sample is collected at the operating temperature and pressure for the point of waste origination (i.e., the waste is not allowed to cool first). For direct measurement, the temperature and pressure conditions for performing the analysis are specified in Method 25D. If the TSDF owner or operator chooses to use knowledge of the waste, the owner or operator uses the temperature and pressure conditions representative of the hazardous waste at the point of waste origination.

Comment: Two commenters requested that the test methods be coordinated with other EPA rules requiring similar waste stream determinations to use resources more efficiently and promote consistency. One commenter (F-91-CESP-00063) recommends that a single test method be developed that can be used to determine compliance under the subpart CC standards as well as applicable Clean Air Act rules. A second commenter (F-91-CESP-00046) requests that waste determination requirements under this rule be coordinated with the characterization of individual waste streams required under the Pollution Prevention Act of 1990.

Response: The EPA considered hazardous waste determination procedures required under other EPA rules in developing the waste determination requirements for the subpart CC standards. The EPA has not developed any waste characterization requirements under authority of the Pollution Prevention Act relevant to this rulemaking.

The subpart CC standards include provisions that allow the owners and operators to use their knowledge of the waste as an alternative to using Method 25D for waste determinations (refer to other responses in this subsection for a discussion of information that could constitute acceptable knowledge of the waste). This provision in the subpart CC standards allows the TSDF owner or operator to use appropriate information and test analysis results that already have been collected as part of a facility's normal operating procedures or to specifically comply with other EPA rules.

The test methods specified in the subpart CC standards are Method 25D, "Determination of the Volatile Organic Concentration of Waste Samples" and Method 25E, "Determination of Vapor Phase Organic Concentration in Waste Samples." Though Method 25D was proposed as a part of the subpart CC rulemaking, it was promulgated in a separate rulemaking (59 FR 19402, April 22, 1994) in conjunction with promulgation of the Hazardous Organic NESHAP (HON) for the synthetic organic chemical industry. Promulgating the test methods used for determining compliance under the subpart CC standards in 40 CFR part 60, appendix A, allows the EPA to apply the same test methods, when applicable as in the case of the HON, to organic emission standards being developed under the Clean Air Act.

6.3.2 Waste Determination for Offsite Waste

Comment: One commenter (F-91-CESP-00012) agrees with the EPA's proposal to allow TSDF owners or operators the option of either accepting certification from generators or performing the waste determination once a waste is received. A second commenter (F-91-CESP-00009) states that it should be sufficient for a generator to state that the waste exceeds the action level without extensive documentation.

Response: The proposed explicit requirements for determining the volatile organic concentration of a hazardous waste using information in a waste certification notice prepared by the waste generator are not included in the final rules. Instead, for hazardous waste that is not generated by the TSDF owner or operator (i.e., waste shipped to the TSDF from off-site sources under different ownership), the final rules allow the TSDF owner or operator to determine the waste volatile organic concentration by either testing the waste when he or she accepts delivery of the hazardous waste or using appropriate information about the waste composition that is prepared by the generator of the waste. The waste generator prepared information can be included in manifests, shipping papers, or waste certification notices accompanying the waste shipment, as agreed upon between the waste generator and the TSDF owner or operator.

The subpart CC standards require a waste determination only in situations when a TSDF owner or operator chooses to manage a hazardous waste in a tank, surface impoundment, or container that does not use the required air emission controls. The rule does not require the TSDF owner or operator to maintain any documentation that the volatile organic concentration of a hazardous waste received from a waste generator equals or exceeds the action level.

The EPA expects that any hazardous waste received at a TSDF from off-site, which is neither tested upon receipt nor accompanied by the appropriate waste information from the waste generator, will be handled by the TSDF owner or operator as a waste having a volatile organic concentration equal to or greater than the action level.

6.3.3 Waste Determination for Treated Waste

Comment: One commenter (F-91-CESP-00020) states that the procedure proposed in the rule to determine that no dilution has occurred does not eliminate the potential for mixing waste streams that have different volatile organic concentrations for the sole purpose of decreasing the final concentration of the combined waste stream to a level less than the action level. First, the commenter notes a discrepancy between the text description and the mathematical equation shown in the Federal Register proposal notice. Second, assuming the intention of the equation is to match the text, the equation will always yield a result that is less than or equal to the concentration of the waste entering the treatment. The commenter recommends that one way to eliminate the possibility of dilution is to state that no waste stream having a volatile organic concentration less than the action level can be treated with a waste stream having a volatile organic concentration equal to or greater than the action level for the sole purpose of creating a product that has a concentration less than the action level.

Response: The proposed procedure to determine whether waste dilution has occurred for a treated hazardous waste is not included in the final subpart CC standards. However, the equation addressed by the commenter is incorporated into the procedure specified in the final rules for determining the treatment process exit concentration limit when an owner or operator combines, aggregates, or mixes the hazardous waste with other hazardous wastes or materials between the point of waste origination and the point where the waste is treated. The equation presented in the proposal Federal Register notice was printed incorrectly. The corrected equation is in the final rules.

Comment: One commenter (F-91-CESP-00046) interprets the proposed rule to require that TSDF owners and operators using the waste determination procedure for treated waste must make a volatile organic concentration determination for each stream at the point where the waste is generated prior to any mixing. This would require segregating multiple waste streams with a volatile organic content greater than or equal to the action level that currently are flowing into a common header feeding a treatment unit. The commenter considers such a requirement to be inappropriate and unwarranted as it would require significant modifications to existing waste treatment systems at the commenter's facilities. The commenter states that this would be technically difficult and costly, but would not provide additional protection to human health and the environment.

Response: Two alternative provisions for treated hazardous waste have been added to the final subpart CC standards that do not require an owner or operator to determine the volatile organic concentration of each hazardous waste that is mixed prior to treatment. An owner or operator may choose to treat the hazardous waste using a process that achieves an organic reduction efficiency of 95 percent or greater, provided that the volatile organic concentration of the hazardous waste exiting the process is less than or equal to 50 ppmw as determined on a mass-weighted average basis. The final subpart CC standards also provide another alternative that does not require the owner or operator to perform any volatile organic concentration waste determinations for the hazardous wastes prior to mixing when the waste is treated by a biological process that destroys or degrades the organics contained in the hazardous waste to meet certain performance requirements specified in the rule. These conditions are either of the following: (1) achieve an organic reduction efficiency for the biological treatment process equal to or greater than 95 percent, and achieve an organic biodegradation efficiency for the process equal to or greater than 95 percent; or (2) achieve a total actual organic mass biodegradation rate for all hazardous waste treated by the process equal to or greater than the required organic mass removal rate for the process. Compliance with these parameters is determined using the procedures specified in the rules.

6.3.4 Waste Determination Frequency

Comment: Several comments were received regarding the EPA's proposal to require that waste determinations be repeated at least once per year. One commenter (F-91-CESP-00012) agrees with the proposal. Two commenters (F-91-CESP-00019, 00060) stated that the required waste determination interval should be more frequent than annually because waste streams can and do change all of the time. Four commenters (F-91-CESP-00029, 00033, 00054, 00082) state that periodic waste determinations are unnecessary, burdensome, and an inefficient use of resources and submit that a waste determination be required only when there is a change that could affect the regulatory status of the waste stream.

Response: Variations or changes in the process generating a hazardous waste may cause the volatile organic concentration of the waste to change. The EPA considered different approaches for determining when waste determinations need to be updated following the initial determination. The EPA proposed that a waste determination be performed whenever there is a change in the waste being managed or a change in the operation that generates or treats the waste. The EPA proposed that, if no changes have occurred, the waste determination should be performed at least once per year. Also at proposal, the EPA requested comment on the alternative of requiring monthly waste determinations with a statistical procedure for using less frequent intervals (56 FR 33522); no commenters supported this alternative.

The EPA reviewed its decision to require that the waste determination be performed at least once per year. Based on this review, the EPA decided that the rule needed to be clarified as to when waste determinations are required regarding process changes.

When the hazardous waste is generated as part of a continuous process, the owner or operator is required to perform an initial waste determination of the average volatile organic concentration of the waste stream before the first time any portion of the material in the waste stream is placed in a waste management unit subject to the rule, and thereafter update the information used for the waste determination at least once every 12 months following the date of the initial waste determination. When the hazardous waste is generated as part of a batch process that is performed repeatedly but not necessarily continuously, the owner or operator is required to perform an initial waste determination of the average volatile organic concentration for one or more representative waste batches generated by the process before the first time any portion of the material in the these waste batches is placed in a waste management unit subject to the rule, and thereafter update the information used for the waste determination at least once every 12 months following the date of the initial waste determination. For either case, the owner or operator is required to perform a new waste determination whenever changes to the process generating the hazardous waste are reasonably likely to cause the average volatile organic concentration to increase to a level at or above 100 ppmw. If an average volatile organic concentration is used, an initial waste determination must be performed for each averaging period.

Waste determinations should be performed for any waste that is generated as a part of an unplanned event or is generated as a part of an event that is not included in the normal operating conditions for the source or process generating the hazardous waste. Examples of an unplanned event include malfunctions that affect the operation of the process or that alter the composition of the waste or product. Examples of events that are not normal operating conditions include maintenance activities and equipment cleaning. Normal operating conditions for the source or process generating the waste include cyclic process operations such as start-up and shutdown.

For processes that have variations in normal operating conditions such that the waste volatile organic concentration may exceed 100 ppmw, but for which the average waste volatile organic concentration for the averaging period is below 100 ppmw, documentation must be retained in the facility operating record that specifies the following information: (1) the maximum and minimum waste volatile organic concentration values that will occur for that averaging period; (2) the circumstances under which a waste volatile organic concentration above 100 ppmw would occur, and; (3) the calculations and waste determination procedures used as the basis for the determination of the average volatile organic concentration. For a given averaging period, if there are no deviations from the operating circumstances or from the maximum or minimum waste volatile organic concentrations specified in the operating plan, then no additional waste determinations would be required after the initial waste determination for that averaging period.

The EPA disagrees with the commenters' conclusion that it is adequate to require that waste determinations be performed only when there is a change that could affect the regulatory status of the waste stream. From the EPA's perspective of regulatory enforcement, this approach is not a reasonable choice because it increases the likelihood of inconsistent implementation of the rule by owners and operators. The approach would not provide the

EPA with information to ensure that the average volatile organic concentration at the point of waste origination for a hazardous waste being placed in waste management units not using the specified organic air emission controls has not increased to or above the action level because of unintentional changes in the waste generating process or in the raw materials. The EPA believes these variations could be substantial and would be significant for hazardous wastes that have a mass-weighted average volatile organic concentration near the action level. For such wastes, slight changes in the process generating the hazardous waste could cause the waste volatile organic concentration to increase to or above the action level. Without periodic testing, this change could go unnoticed by the owner or operator, resulting in the release of large quantities of organics to the atmosphere and in a violation of the standard. Any such noncompliance would be inconsistent with the EPA's objective of requiring organic emission controls on units for which the owner or operator does not prove that they consistently accept only hazardous waste with average volatile organic concentration less than the action level at the point of waste generation. For this reason, the alternative suggested by the commenter could be less protective of human health and the environment than requiring periodic checks of the volatile organic concentration.

Monthly or quarterly waste determinations would shorten the period of time during which an increase in the volatile organic concentrations of a hazardous waste stream at the point where the waste is generated would remain undetected. However, requiring that waste determinations be updated monthly or quarterly would be excessive for some hazardous waste streams. For hazardous wastes that have highly variable volatile organic concentrations, the interval between determinations would need to be shorter than for hazardous wastes with less variable volatile organic concentrations if the results are to be informative. The EPA concluded that an annual interval for waste determinations provides a reasonable balance between ensuring organic air emissions are controlled and easing the testing and recordkeeping burdens of the standards.

Comment: Two commenters (F-91-CESP-00011, 00082) remark that the requirement for periodic/updated waste determinations should not apply to waste stream changes that do not increase the organic content of the waste stream. The commenters suggest that only changes that increase (not decrease) the volatile organic concentration of a waste should act as a trigger for performing a new waste determination.

Response: The EPA's intent is to require a waste determination when there is a process change that could change the regulatory status of the tanks, surface impoundments, and containers into which the hazardous waste is placed (e.g., increase the mass-weighted average volatile organic concentration of the hazardous waste at the point of waste origination to a level that is equal to or greater than the action level used for the rule). The language for the final subpart CC standards has been revised to require the owner or operator to perform a new waste determination whenever changes to the process generating or treating the hazardous waste could potentially cause the volatile organic concentration to increase to or above the concentration limit specified in the rule or cause the treatment process performance to decline below the minimum efficiency requirements specified in rule. Examples of changes requiring the owner or operator to perform a new waste determination include a change in the composition or proportions of the raw materials fed to a source or process generating the hazardous waste; a shutdown and subsequent restart of the source, process, or waste management unit generating the hazardous waste; a change in the flow rate or composition of a hazardous waste for situations where multiple hazardous wastes are combined for treatment in a single process; and an interruption in the operation of a process treating a hazardous waste.

Comment: One commenter (F-91-CESP-00046) states that an annual waste determination frequency is not feasible for waste management units containing radioactive mixed wastes because of the level of radiation exposure to sampling and laboratory personnel and insufficient nationwide laboratory capacity for analyzing radioactive samples.

Response: As explained in section 6.1.3 of this chapter, the applicability of the subpart CC standards to waste management units handling radioactive mixed waste is being temporarily deferred for reasons not related to the waste determination procedures required for the subpart CC standards. The EPA acknowledges that sampling and analysis of radioactive mixed wastes requires special handling and procedures. For situations where performing a waste determination using direct measurement is not practical or possible, the subpart CC standards allow the TSDF owner or operator to use knowledge of the waste, which does not require samples of the waste to be collected.

6.4 TANK EMISSION CONTROL REQUIREMENTS

6.4.1 Tank Applicability/Exemptions

Comment: One commenter (F-91-CESP-00022) asks whether the EPA is regulating secondary containment structures for aboveground tanks and surface impoundments under the subpart CC standards. The commenter notes that there currently are no regulations on the secondary containment of unpermitted releases of gases (including organic vapors) and asks whether the EPA will be issuing secondary containment regulations for gases or fluids under RCRA or other EPA statutory authorities.

Response: Under existing RCRA regulations 40 CFR 264.193 and 40 CFR 265.193, a tank managing hazardous waste is required to have a secondary containment and leak detection system that meets certain design specifications. The subpart CC standards apply only to the tank structure itself. The subpart CC standards do not apply to the secondary containment structures that are built external to the tank and are not an integral part of the tank structure (e.g., a concrete pad or synthetic membrane liner placed underneath the tank bottom, a dike or berm placed around the tank, or a concrete vault into which the tank is placed). In the case where a double-walled tank is used to meet the secondary containment requirements, the subpart CC standards apply to the tank.

The purpose of requiring a secondary containment system for tanks is to prevent the waste from contaminating the soil, surface waters, or groundwaters in the event of a tank leak, accidental waste spill, or tank overfill. Furthermore, when a leak or spill does occur, existing RCRA regulations §§ 264.196 and 265.196 require the TSDF owner or operator to remove the tank from service immediately, stop the flow of waste into the secondary containment system, and promptly remove the waste released into the secondary containment system. All of these actions are required to be completed within 24 hours of detecting waste in the secondary containment system unless special site circumstances require additional time. Thus, no waste is in the secondary containment system unless waste is released into the system due to an unexpected tank leak or accidental waste spill and, should a leak or spill occur, the waste is exposed to the atmosphere for only a short time. Therefore, the EPA is not planning to develop standards requiring that standby air emission controls be installed for the tank secondary containment system.

Comment: One commenter (F-91-CESP-00062) requests clarification regarding the application of the tank standards to sumps because under RCRA a sump is any pit or reservoir that meets the definition of a tank. Unless the intent is to cover all sumps and the troughs/trenches associated with them and have the sump meet all requirements for fixed-roof tanks, the commenter states that a specific exemption should be added for sumps.

Response: A sump is used to receive and temporarily store wastewaters or other drainage at the lowest point in a circulating or drain system. Under 40 CFR 260.10 of RCRA, a "sump" is defined to be "any pit or reservoir that meets the definition of a tank and those troughs/trenches connected to it that serves to collect hazardous waste for transport to hazardous waste storage, treatment, or disposal facilities."

The tank control equipment requirements specified under the subpart CC standards (e.g., a covered tank vented to a control device, external floating roof) do apply to sumps. However, the subpart CC standards also require that the owner and operator use enclosed pipes or other closed systems to transfer hazardous waste to or from a tank required to use the subpart CC air emission controls. In the case where the sump is used to transfer wastewater, for example, the EPA considers the individual drain system requirements specified in the benzene waste operations NESHAP under 40 CFR 61.346(a)(1) or 40 CFR 61.346(b)(1) through (b)(3) to define a "closed system" and to provide adequate emission control for a sump.

Comment: Two commenters (F-91-CESP-00066, 00069) request that biological treatment tanks be exempt from the tank control requirements. The commenters believe that the level of organics emissions from biological treatment tanks do not support the requirement that air emission controls be used on these units. The commenters note that biological treatment units are exempt from air emission controls under the benzene waste operations NESHAP, and the commenters believe that such an exemption is also applicable to the subpart CC standards.

Response: Some TSDF use biological activated sludge processes to treat hazardous wastewaters. Large open-top tanks or surface impoundments are used to conduct these processes. While the subpart CC standards will not apply to wastewater treatment facilities at many TSDF (refer to the discussion in section 6.1.6 of this chapter), a few special or unique situations exist in the TSDF industry in which a tank used for biological wastewater treatment will need to comply with these standards. For these few situations, the subpart CC standards, as proposed, would require a biological treatment tank managing wastewater with a volatile organic concentration equal to or greater than the action level to use a cover vented to a control device.

In other air rulemakings for which the EPA has sufficient information regarding biological treatment process operations and emissions from these operations, the EPA has exempted certain biological treatment units from air emission control requirements based on specific biological treatment operating parameters (e.g., benzene waste operations NESHAP under 40 CFR 61 subpart FF). Under certain operating conditions, the microbes used for a biological treatment process can degrade (i.e., destroy) the organic compounds in waste at a rate much faster than these organic compounds would volatilize into the air. In this situation, the fraction of organics emitted to the atmosphere from a biological treatment process is low.

Upon consideration of information concerning the biological treatment of wastewaters at TSDF and consistent with other the EPA rulemakings, the EPA decided it is appropriate for the final subpart CC standards not to require additional emission controls on certain biological treatment tanks. Therefore, a provision has been added to the general requirements of the final subpart CC standards indicating that a biological treatment tank is not required to use subpart CC air emission controls if the biological wastewater treatment process performed in the tank degrades organics in the hazardous waste entering the process so that either the organic biodegradation efficiency or organic removal efficiency of the process meets or exceeds a minimum level of performance as specified in the rule.

6.4.2 Tank Control Requirements

Comment: Commenters expressed concern regarding the EPA's intention in requiring compliance with the specific regulatory language in the proposed rule stating that the tank cover and all cover openings be "designed to operate with no detectable organic emissions." One commenter (F-91-CESP-00011) submits that the EPA appears to use the term "to operate" both to refer to a cover opening in a closed, sealed position and to a cover opening when the opening is being used for its intended function. When this term refers to cover openings such as a tank access hatch, the opening cannot comply with the "no detectable organic emissions" requirement of the proposed rule when the hatch cover is open to provide access to the inside of the tank. The commenter requests that the EPA revise the rule to require that cover openings be designed to operate with no detectable organic emissions only when the cover opening is in a closed, sealed position. A second commenter (F-91-CESP-00010) states that the language of the proposed rule requirement may be interpreted by enforcement personnel to mean that any detection of emissions from a cover opening during an enforcement inspection constitutes noncompliance with the rule. This commenter also notes that during biennial solids cleanout for the internal inspections required under §§ 264.195 and 265.195, or during solids cleanout for repair mandated under §§ 264.196 and 265.196, it is virtually impossible to comply with the requirement as proposed. The commenter requests that the rule be revised so that "no detectable organic emissions" from tank cover openings is a design requirement only. Another commenter (F-91-CESP-00062) believes that it is necessary to expand the conditions under which someone can legitimately open the vent on a tank, e.g., during maintenance. A final commenter (F-91-CESP-00008) states that the proposed requirement precludes the case where a constant volume of air is exhausted through a fixed-roof tank to a control device meeting the requirements of § 264.1086. If negative pressure is maintained on the tank at all times, the commenter submits that control is probably superior to the control required by § 264.1083. According to the commenter, this option would be most desirable in the case of a retrofit, where a particular tank may not have been designed for pressurization.

<u>Response</u>: Under the subpart CC standards, the EPA intends that each opening on the tank cover be closed and sealed (i.e., operated with no detectable organic emissions) by a hatch, cap, plug, or other type of lid at all times except under the following conditions: when work practices require a cover fitting such as a hatch to be opened, when gases and vapors are

vented through a cover opening to a control device in accordance with the requirements of the rule, or when safety considerations require a cover fitting such as a pressure relief valve to automatically open to the atmosphere. Accordingly, the language of the final rule has been revised to explicitly require the cover and all cover openings to be designed to operate with no detectable organic emissions when all cover openings are secured in the closed and sealed position and require that each cover opening be maintained in a closed and sealed position except under the specific conditions set forth in the rule.

The EPA recognizes that access through tank cover openings is required at times to add, remove, inspect, or sample the waste in the tank. Also, TSDF owners and operators can perform some routine tank maintenance or equipment repairs with access through the tank cover openings without removing all of the waste from the tank. During these times, cover fittings such as access hatches and sampling ports must remain open to the atmosphere. Furthermore, for organic vapors to pass from inside the tank to a control device, the vent system between the tank and the control device must remain open.

The tank cover will not be effective in controlling organic emissions if openings in the tank cover allow significant amounts of organics to escape directly to the atmosphere. To maximize the effectiveness of the cover for controlling organic emissions, it is necessary that each cover fitting operate with no detectable organic emissions when in a closed and sealed position. At any given time the EPA expects that only those cover fittings required for workers to perform a particular operation will be open and that, once the operation is completed, those cover fittings will be immediately returned to a closed and sealed position.

The EPA does not agree that the tank standards need to be modified to clarify that the "designed to operate with no detectable organic emissions" is a design requirement only. The records required by §§ 264.1088 and 265.1089 are intended to demonstrate compliance with the control requirements of the standards. The engineering design documentation for each floating-roof type cover and records of the Method 21 leak detection monitoring conducted in accordance with §§ 264.1087 or 265.1088 show that the "no detectable organic emissions" design requirement is being met and that the air emission control equipment is being maintained so that "no detectable organic emissions" exist.

Detection of emissions from a tank cover opening is not an immediate violation of the rule. The rule requires that, upon detection of a leak, the owner or operator initiate repairs within 5 days and complete the repairs within 15 days. Consequently, a leak that is detected during an enforcement inspection does not constitute noncompliance if repair attempts are started within 5 days and the repair is completed within 15 days.

The subpart CC standards do not preclude the use of a fixed-roof tank vented to a control device so that a negative pressure is maintained on the tank at all times. To the contrary, one of the tanks specified in the rule as being adequately controlled for air emissions is a tank equipped with a cover (e.g., a fixed roof) vented to a closed-vent system and control device. The cover and all cover opening must be designed to operate with no detectable organic emissions when all cover openings are closed and sealed.

Comment: Comments were received regarding the use of certain pressure-relief devices on tank covers. Two commenters (F-91-CESP-00010, 00065) note that the proposed standards for a fixed-roof cover vented to a control device seem to preclude the use of pressure-relief devices on the cover. One of the commenters notes that American Society of Mechanical Engineers (ASME) vessel codes mandate the installation of pressure-relief devices on vessels as prevention against catastrophic rupture. Two commenters (F-91-CESP-00069, 00076) recommend that use of a conservation vent be allowed as a pressure-relief device. One commenter (F-91-CESP-00046) offers a suggestion regarding the proposed requirement to add a pressure-relief device to the vent stack of a small tank (less than 20,000 gallons) that is allowed to use only a fixed roof. The commenter submits that the proposed pressure-relief device requirement should be eliminated because it would be difficult to implement and would not actually remove or control air emissions from these tanks.

Response: The EPA expects that TSDF owners and operators will follow the proper safety procedures appropriate for their situations when designing and operating all air emission controls required by the subpart CC standards. To emphasize the need for good engineering and safety practices, a provision has been added to the final subpart CC standards specifically allowing safety devices that vent directly to the atmosphere to be used on the tank, cover, or closed-vent system with control device. Each safety device must meet the following conditions: (1) the safety device is not used for planned or routine venting of organic vapors from the tank or closed-vent system with control device; and (2) the safety device remains in a closed, sealed position at all times with one exception. The safety device may open when an unplanned event requires that the device open for the purpose of preventing physical damage or permanent deformation of the tank, cover, or closed-vent system with control device in accordance with good engineering and safety practices for handling flammable, combustible, explosive, or other hazardous materials. An example of an unplanned event is a sudden power outage.

Conservation vents are a type of pressure-relief valve used on fixed-roof tanks that are designed to operate at pressures near atmospheric pressure. These vents serve to reduce losses of the materials stored in the tank due to volatilization and subsequent release of the organics though openings in the tank roof to the atmosphere. Typically, conservation vents are set to open at pressure levels slightly above atmospheric pressure to prevent the internal tank pressure from exceeding the tank design pressure limits. As discussed above, the final subpart CC standards allow vents on the tank covers provided the vents open only when it is necessary to maintain the internal tank pressure within limits in accordance with good engineering and safety practices for handling flammable, explosive, or other hazardous materials. Thus, the final rule does not prohibit the use of conservation vents on the tank covers.

The EPA disagrees with the comment that adding a pressure-relief device to the vent stack of a small tank using a fixed roof is difficult to implement and does not provide organic air emission control. Allowing open vent stacks on the tanks would result in organics being continuously emitted from the tank directly to the atmosphere. As discussed in chapter 4 of the proposal BID for this rulemaking (F-91-CESP-S00495), the EPA's analysis of the use of pressure-relief valves on a 38-m^3 (10,000-gallon) fixed-roof tank storing high-volatility organic liquids showed that the valves reduce breathing and working organic emissions from the tank by 20 to 45 percent. Thus, adding a pressure-relief device to the vent stack of a small tank does provide substantial organic air emission control.

Comment: One commenter (F-91-CESP-00011) requests clarification on whether the proposed requirement that the cover and cover openings be designed to operate with no detectable organic emissions applies only to the cover itself or to the entire tank structure. Two commenters (F-91-CESP-00023, 00072) request clarification as to how the tank control requirements apply to a horizontal, cylindrical tank. For example, is the top portion of the tank considered to be the "fixed roof."

Response: Existing RCRA standards under subpart J of 40 CFR parts 264 and 265 already specify requirements that the TSDF owner or operator must comply with to ensure the structural integrity and acceptability of a tank and its associated ancillary equipment and containment system for the storage or treatment of hazardous waste. The purpose of the subpart CC standards under RCRA is to control organic emissions to the atmosphere from these TSDF tanks. Thus, the final subpart CC standards require the cover and all cover openings to be designed to operate with no detectable organic emissions when all cover openings are secured in the closed, sealed position.

For a vertical wall tank, the no detectable emission requirement under the subpart CC standards applies to the tank top cover or tank roof, to the junction between the cover and the tank walls, and to openings on that portion of the tank walls that does not directly contact the waste placed in the tank when the tank is filled to maximum capacity. The EPA does not intend this requirement to apply to the seams and welds on the tank walls nor to piping connections through the tank walls or bottom through which waste is transferred to or from the tank. Leakage from these tank structural components is already adequately addressed by the requirements specified under subpart J of 40 CFR parts 264 and 265.

A horizontal, cylindrical tank does not have an open top that can be covered. The entire surface area of the waste in the tank is always enclosed by the upper portion of the tank body. However, a horizontal tank does have openings through which waste is transferred to and from the tank as well as vents or other pressure-relief devices to prevent the internal pressure of the tank from exceeding the tank design pressure. Also, the tank may have separate openings used for other purposes such as sampling the waste or measuring the waste level inside the tank. The EPA intends that the no detectable organic emission requirement under the subpart CC standards apply to all openings on that portion of the horizontal tank body that does not directly contact the waste placed in the tank when the tank is filled to maximum capacity. If the tank is located underground, then the requirement is applied above the point where the connection to an opening on the tank body intersects the ground surface.

<u>Comment</u>: Commenters request clarification regarding the application of tank cover requirements to cover penetrations other than cover openings such as access hatches, gauge wells, and vents. Two commenters (F-91-CESP-00011, 00072) believe that these types of openings should be considered and provided for in

the regulation. Two commenters (F-91-CESP-00008, 00045) specifically request clarification of the requirements for motor shafts that must pass through the cover to turn paddles or blades used for mixing and agitating waste.

Response: For the purpose of implementing the subpart CC standards, the EPA considers any penetration of the cover to be a cover opening. The rule requires that each cover opening be designed to operate with no detectable organic emissions when the cover opening is secured in a closed, sealed position when not being used under certain conditions as specified in the rule.

The motor shaft used to power mixing devices submerged in the waste must be allowed to rotate continuously. Under the equipment leak standards for TSDF (40 CFR 264 subpart BB), the EPA specifies a leak definition for pump seals to be 10,000 ppmv or greater. Pump seals are used where the rotating pump motor shaft, which turns the impeller, penetrates the stationary pump housing. The EPA believes it is reasonable to regulate other motor shaft applications in a like manner. Consequently, the EPA added to the final subpart CC standards a provision defining a leak from the seal on a rotating shaft passing through the cover to be an instrument reading of 10,000 ppmv or greater.

Comment: Comments were received regarding the EPA's proposal to allow TSDF owners and operators the option of using a pressurized tank that is designed to operate at a pressure in excess of 204.9 kPa (29.7 psi) and operates with no detectable organic emissions to comply with the subpart CC control equipment requirements for tanks. One commenter (F-91-CESP-00076) requests clarification if the the EPA proposal means that a pressurized tank must be operated at a pressure in excess of 204.9 kPa at all times (i.e., during storage, filling, and emptying) to comply with the rule if the tank has no detectable organic emissions at pressures below 204.9 kPa. The commenter describes an operation in which tanks designed to operate at pressures above 209.4 kPa are used for rapid transfer of material by maintaining the pressure within a tank above 204.9 kPa during the transfer operation but not during routine storage. Another commenter (F-91-CESP-00046) requests that the EPA clarify what kind of tank conditions would constitute a pressurized tank and whether a tank operating under a nitrogen blanket would qualify as a pressure tank. One commenter (F-91-CESP-00011) states that the provision allowing the use of pressurized tanks should also apply to tanks designed to operate at pressures below 204.9 kPa because there are 90-day tanks designed to operate at these pressures.

Response: The purpose of the subpart CC standards under RCRA is to control organic emissions to the atmosphere from TSDF tanks during normal waste storage, treatment, and transfer operations. Tanks can be designed to operate at internal pressures above atmospheric pressure so that a tank operates as a closed system and does not emit organic air emissions at normal storage conditions or during routine filling and emptying operations. Pressure-relief valves on these tanks operate as safety devices, opening only in the event of improper operation (e.g., overfilling the tank) or an emergency situation (e.g., exposure to excessive heat). In developing the proposed rule, the EPA concluded that pressure tanks can provide effective organic emission control under certain conditions and should be addressed in the subpart CC standards established for TSDF tanks.

Not all tanks that operate at internal pressures above atmospheric pressure necessarily operate as closed systems with no emissions to the atmosphere under normal operating conditions. Fixed-roof tanks can be designed to operate at pressures up to 35 kPa (2.5 psig). However, at these relatively low operating pressures, pressure-relief valves on the roof can still open to the atmosphere during routine tank filling and emptying operations. Thus, for a pressurized tank to provide effective organic emission control, certain conditions must be established for the design and operation of the tank.

The EPA proposed to allow TSDF owners and operators the option of using a pressure tank that is designed to operate at a pressure in excess of 204.9 kPa and operates with no detectable organic emissions to comply with the subpart CC control equipment requirements for tanks. The proposed pressure limit of 204.9 kPa was specified on the basis of consistency with the applicability of NSPS to volatile organic liquid storage vessels under 40 CFR 60 subpart Kb. The subpart Kb standards do not apply to "pressure vessels designed to operate in excess of 204.9 kPa and without emissions to the atmosphere."

The EPA reviewed the proposed subpart CC standards for pressure tanks and decided not to limit the use of pressure tanks under the rule to those designed to operate at pressures above 204.9 kPa. A pressure tank could be designed and operated as a closed system at internal pressures below 204.9 kPa. Accordingly, the language of the final subpart CC standards has been revised to allow a TSDF owner or operator to use a pressure tank that is designed and operated as a closed system so that there are no detectable organic emissions to the atmosphere except under certain safety-related conditions set forth in the rule.

A tank operating with a nitrogen blanket does not qualify as a pressure tank with respect to complying with the tank standards under the rule. A nitrogen blanket is used as a safety measure to minimize the danger of fire or explosion. The nitrogen serves as a layer of inert gas over the surface of flammable liquids contained in the tank to prevent organic vapors emitted from the liquids from mixing with the oxygen in the ambient air. A nitrogen blanket is not intended to be a vapor-tight barrier to prevent the release of organic vapors from the organic-containing tank system.

<u>Comment</u>: One commenter (F-91-CESP-00009) states that the proposed alternative control requirements for tanks under the subpart CC standards (i.e., external floating roof and internal floating roof requirements) essentially duplicate the NSPS for volatile organic liquid storage vessels under 40 CFR 60 subpart Kb. The commenter suggests that considerable paper would be saved and potential confusion could be avoided by cross-referencing in the subpart CC standards the appropriate

requirements of 40 CFR 60 subpart Kb instead of repeating the requirements.

<u>Response</u>: The alternative control requirements for tanks under the subpart CC standards duplicate the external floating roof and internal floating roof requirements for volatile organic liquid storage vessels under 40 CFR 60 subpart Kb. For the convenience of tank owners and operators that manage hazardous wastes in tanks pursuant to the subpart CC standards, the requirements are duplicated in part 265 with minor regulatory language revisions appropriate for implementing the requirements under the RCRA subtitle C permitting process. The alternative control requirements for tanks provisions in part 264 cross reference the specific requirements of part 265.

<u>Comment</u>: Twelve commenters (F-91-CESP-00010, 00011, 00023, 00038, 00040, 00044, 00045, 00046, 00058, 00069, 00070, 00076) request revision of the proposed definition of "quiescent" because, under the proposed definition, essentially no tank could qualify to use a cover only. Commenters interpret the phrase "flow induced turbulence" in the definition of "quiescent" to mean that tank loading or unloading operations would be considered mixing. Also, commenters noted that the contents of storage tanks are mixed or agitated for reasons other than waste treatment such as to obtain a representative sample of waste in the tank, to prevent solids from settling to the bottom of the tank, to prevent cavitation of the bottom of the tank, or to protect the mechanical seals of the pumps. Commenters submit that mixing or agitation below the surface does not increase air emissions.

<u>Response</u>: For TSDF tanks to which the control requirements under the subpart CC standards apply, the EPA proposed that the TSDF owner or operator could use only a cover on tanks that met certain conditions. The use of only a cover does not provide adequate emission control for a tank in which wastes are aerated or agitated as a part of the treatment process creating a turbulent liquid surface. Turbulence on the surface of a waste

managed in a tank increases emission of organics from the waste to the air. Therefore, the EPA proposed, as one of the conditions restricting the use of covers only on a tank, that the waste remain "quiescent" at all times.

The EPA's intent in including a definition for "quiescent" in the proposed rule was to describe those tanks requiring air emission controls under the subpart CC standards in which the waste surface is not turbulent and thus to allow the owner or operator to use a tank cover without a closed-vent system and control device. Upon review of the rule, the EPA concluded that inclusion of a definition for "quiescent" is not essential to achieving the EPA's intention for the rule and complicates the interpretation of the rule. Therefore the EPA deleted the definition of "quiescent" from the final subpart CC standards. In place of defining "quiescent," the EPA revised the regulatory language regarding the conditions under which a TSDF owner or operator may use only a cover on a tank to meet the subpart CC tank standards.

The EPA recognizes that normal tank operations unrelated to waste treatment may temporarily create turbulence on the surface of waste in a tank. A TSDF operator may need to mix the waste contents in a tank to obtain a representative waste sample. When waste is transferred into or out of a tank, the submerged waste stream flow may create turbulence on the surface of the waste. Therefore, requiring no turbulent flow on the waste surface at all times as a condition for being allowed to use only a cover under the subpart CC standards essentially eliminates all tanks from qualifying to use the cover-only control alternative. This exceeds the EPA's intent of excluding those tanks where surface turbulence is generated by treatment operations from the alternative of using only a cover. Therefore, the EPA clarified the regulatory language for the final subpart CC standards to establish, as a condition for using a cover only, that the waste in the tank not be mixed, stirred, agitated, or circulated within the tank by the owner or operator using a process that results in splashing, frothing, or visible turbulent flow on the waste surface during normal process operations.

Comment: Seven commenters (F-91-CESP-00011, 00023, 00040, 00044, 00062, 00069, 00076) do not agree with the proposed restriction that prohibits the addition of heat to the waste in a tank that is allowed to use a cover only. The commenters note several situations requiring addition of heat or involving heat generation that should not subject a tank to using a closed-vent system and control device. These situations include the treatment of wastes that require heat addition to remain in a liquid state and the use of freeze protection systems in colder climates to maintain an adequate viscosity that will allow adequate flow of the waste. Commenters note that it is possible for neutralization processes and biological treatment processes to result in an exothermic reaction with a small temperature increase.

Response: The language for the proposed rule restricted the use of a cover only to tanks in which no heat is added to the waste. The EPA added this restriction because the rate at which organics in a waste are volatilized and emitted from the waste is a function of the temperature of the waste. However, the EPA did not intend that this restriction require an owner or operator to cease a waste management operation during cold weather because the waste becomes frozen or does not have sufficient viscosity to allow adequate flow of the waste. Therefore, the EPA decided that it is reasonable to revise the waste condition restricting the use of covers only on a tank to specify that the waste cannot be heated by the TSDF owner or operator except to heat the waste to the minimum temperature necessary to prevent the waste from freezing or to maintain adequate waste flow during cold weather.

It is not appropriate to revise the restriction on heating of the waste to account for the temperature rise from neutralization of a waste. Some waste neutralization processes, such as adding lime to an acidic waste, produce an exothermic chemical reaction that heats the waste. The EPA believes that only covering a tank used for neutralization of organic-containing wastes does not adequately control organic emissions.

It is not necessary to revise the restriction on heating of the waste to account for any temperature rise from biological treatment of a waste. As discussed in sections 6.1.6 and 6.2.1 of this chapter, the EPA expects that very few, if any, TSDF tanks used for biological wastewater treatment will need to install the air emission controls required by subpart CC standards. Furthermore, in these limited cases, it is unlikely that the tanks used for biological treatment would meet the additional conditions under the subpart CC standards that the waste not be mixed, stirred, agitated, or circulated within the tank by the owner or operator using a process that results in splashing, frothing, or visible turbulent flow on the waste surface during normal process operations.

Comment: Several commenters request that the EPA clarify the definition of "fixation." One commenter (F-91-CESP-00010) states that the proposed definition of "fixation" is too broad because it can be interpreted to apply to tank operations required to comply with permit and operating requirements such as annual or biennial tank cleanout by manual vacuuming or shoveling of sludge/solids from the tank into a container for disposal. The commenter requests that the definition of fixation either clarify fixation as a "continuous process" or specifically exempt fixation on an infrequent or de minimis basis. Another commenter (F-91-CESP-00062) requests clarification of the proposed definition for fixation to indicate that any chemical or physical process where the primary intent is to either reduce mobility of hazardous constituents in a waste or eliminate free liquids is considered to be "fixation."

Response: The definition of a waste fixation process as proposed is appropriate for the rule. This definition specifically states that fixation includes mixing of a hazardous waste with binders or fixative materials followed by curing the resulting waste and binder mixture. Mixing of a hazardous waste with a binder distinguishes a waste fixation process from other types of waste treatment processes. A process that does not involve the mixing of the hazardous waste with a binder and subsequent curing of the resulting mixture is not a waste fixation process under the rule. Examples of operations that are not waste fixation process under the subpart CC standards are cleaning tanks and dewatering sludge where the intent is also to eliminate free liquids from the waste.

<u>Comment</u>: One commenter (F-91-CESP-L0001) states that, although retrofitting air emission controls on open tanks used for mixing may be difficult, a tank used for waste stabilization remains a source of emissions and should also be operated pursuant to the rule. The commenter requests that best demonstrated available technology be applied to waste stabilization techniques.

<u>Response</u>: The final subpart CC standards require that, for waste fixation processes conducted in a tank, the tank be covered and all organic vapors from the tank be vented to a control device. Therefore, if an open tank currently is used at a TSDF for waste fixation and that tank is required to apply air emission controls under the subpart CC standards, then to comply with the rule the tank will need to be covered and all organic vapors from the tank be vented to a control device.

<u>Comment</u>: Four commenters (F-91-CESP-00023, 00029, 00075, 00077) support the EPA's proposal to use tank sizes and vapor pressure categories consistent with the NSPS for volatile organic liquid storage under 40 CFR 60 subpart Kb. In contrast, another commenter (F-91-CESP-00038) states that the proposed tank size categories are too restrictive because the subpart CC standards apply to tanks managing many different types of organic-containing wastes including low-organic content wastewaters while the NSPS standards are intended to apply to tanks containing concentrated organics. A sixth commenter (F-91-CESP-00019) states that the proposed tank size and waste vapor pressure

categories are too lenient because certain tanks not required to use control devices under these categories are significant sources of organic air emissions.

Response: The final subpart CC standards use tank sizes and vapor pressure categories that are consistent with the NSPS for volatile organic liquid storage under 40 CFR 60 subpart Kb. Adopting these tank sizes and vapor pressure categories ensures that TSDF owners and operators of tanks that also may be regulated under 40 CFR 60 subpart Kb are not placed in the position of being required to comply with conflicting control requirements. The EPA disagrees that the tank sizes and vapor pressure categories are too restrictive because they apply to tanks containing less concentrated organics than the NSPS. As was stated in the preamble for the proposed rule, the EPA considers the air emission controls required by the NSPS for volatile organic liquids as the minimum control for any large tank containing organic hazardous waste, regardless of the date of construction of the tank (56 FR 33524). The EPA also does not consider the tank sizes and vapor pressure categories to be too lenient, since they were developed for a rule that applies to tanks containing concentrated organics.

Comment: Two commenters (F-91-CESP-00007, 00062) request the EPA to clarify how to determine the "tank capacity" for purposes of complying with the subpart CC tank standards. The commenters state that it is not clear if the tank capacity refers to the capacity of one individual tank, one tank system (the tank, pumps, piping, etc.), or the entire "hazardous waste management unit," which could be made up of several tanks interconnected together with their pumps and piping.

Response: The control requirements under the subpart CC standards apply to each individual tank. For TSDF tanks that must operate in accordance with these control requirements, the TSDF owner or operator may comply with the rule by using a cover only if the tank and waste contained in the tank meet certain conditions. One of the conditions is the design capacity of the tank. For the purpose of determining compliance with the subpart CC standards, the design capacity of a tank is determined by the maximum volume of waste that can be placed in the individual tank structure not including the waste contained in ancillary equipment connected to the tank such as pumps and pipes.

<u>Comment</u>: One commenter (F-91-CESP-00046) requests that, with respect to the vapor pressure exemption from the tank standards, consideration should be given to providing TSDF owners and operators with the option of: (1) sampling the influent to the tank, (2) periodically monitoring tank pressure or installing continuous recording pressure-sensing devices in the tank roof; or (3) allowing sampling of the tank headspace. According to the commenter, sampling of the tank headspace would provide a more accurate or composite assessment of tank content, especially for tanks receiving wastes of different composition. In addition, the commenter submits that such an approach could reduce the exposure of sampling personnel to radioactive mixed waste as well as reduce lab contamination and analytical costs and the quantity of waste generated.

<u>Response</u>: The maximum organic vapor pressure of the waste in a tank is one of several conditions specified in the final subpart CC standards that must be met if the tank qualifies to use a cover only. The vapor pressure is only a condition for a tank having a design capacity greater than or equal to 75 m^3 (approximately 20,000 gal). The vapor pressure cutoff is based on the maximum organic vapor concentration determined for the waste in the tank. As defined in subpart CC, the "maximum organic vapor pressure" means the equilibrium partial pressure exerted by the hazardous waste contained in a tank determined at a temperature equal to either: (1) the local maximum monthly average temperature as reported by the National Weather Service when the hazardous waste is stored or treated at ambient temperature; or (2) the highest calendar-month average temperature of the hazardous waste when the hazardous waste is

stored at temperatures above the ambient temperature or when a hazardous waste is stored or treated at temperatures below the ambient temperature.

With regard to the exposure of sampling personnel to radioactive mixed waste and subsequent lab contamination, as explained in section 6.1.3 of this chapter, the applicability of the subpart CC standards to waste management units handling radioactive mixed wastes is being temporarily deferred for reasons not related to the waste determination procedures required for the subpart CC standards. The EPA acknowledges that sampling and analysis of radioactive mixed waste requires special handling and procedures. For situations where performing a waste determination using direct measurement is not practical or possible, the rule allows the TSDF owner or operator to use knowledge of the waste, which does not require samples of the waste to be collected. Results from the analysis of the tank headspace samples could constitute acceptable knowledge of the maximum organic vapor pressure if accompanied with adequate documentation.

Comment: Four commenters (F-91-CESP-00026, 00041, 00046, 00073) request that, as an alternative to covering an individual tank, the rule allow a tank to remain open provided that the tank is located within a building equipped with a ventilation system that vents to a control device. The commenters express their opinion that these control systems are at least as effective in reducing air emissions as covering tanks and more effective at reducing air emissions during waste loading and unloading operations.

Response: Placing treatment or storage tanks within a building that is vented to a control device (e.g., locating several open-top tanks in a building for which the entire airspace inside the building is ventilated through a single carbon adsorber) does not comply with the control requirements of the final subpart CC standards. Venting the entire air space within a building results in very large volumes of air in the gas stream exhausted to the control device. These high air volumes effectively dilute the organic emissions from the open tanks inside the building to very low organic concentrations. Control device organic removal or destruction efficiencies decrease significantly for gas streams with very dilute organic concentrations. Thus, the control approach requested by the commenters does not provide an equivalent level of organic emission control to venting the emissions from each tank in a building through a closed-vent system to an air emission control device specified by the subpart CC standards.

<u>Comment</u>: One commenter (F-91-CESP-00038) requests that external floating synthetic roofs be allowed as an alternative tank control because many open-top tanks are not structurally designed to support a fixed-roof top and would require significant wall support. The commenter has installed an external floating membrane cover on three 5-million-gallon wastewater tanks that are vented through carbon adsorbers. The commenter submits that source testing has indicated a control efficiency of over 95 percent (emissions have been reduced from over 6 lb/hr to less than 0.1 lb/hr).

<u>Response</u>: The organic emission control effectiveness of an emission control system using an external floating synthetic roof must include an evaluation of the permeability of the membrane cover. A laboratory study conducted by the EPA indicates that the permeability (a measure of the flux or leak rate) of organic compounds through different types of commercially available membrane materials can vary greatly depending on the type of membrane material and the mixtures of organic constituents present in the liquid waste covered by the membrane (refer to section 6.5 of this chapter for additional information about this study). Thus, the control approach requested by the commenters does not ensure an equivalent level of organic emission control in comparison to using the air emission controls specified by the subpart CC standards.

Comment: Two commenters (F-91-CESP-00060, 00061) cite an oxygen injection technology for wastewater treatment that they state should be allowed under the rule as an alternative emission control technique for tanks and surface impoundments. The commenters claim this technology improves the performance of wastewater treatment systems, reduces the air emissions caused by aeration by up to 99 percent, and eliminates the need to treat or dispose of the absorbed material used in many types of emission control systems.

Response: As discussed in section 6.4.1 of this section, the EPA has added a provision to the general requirements of the final subpart CC standards allowing a biological treatment tank or surface impoundment to which subpart CC is applicable to be operated without the required air emission controls if the biological wastewater treatment process performed in the tank meets certain conditions. The oxygen injection technology cited by the commenters may be used to comply with the rule provided that the TSDF owner or operator demonstrates that the process using oxygen injection destroys and degrades organics in the hazardous waste and is designed and operated in accordance with the requirements specified in the rule.

6.5 SURFACE IMPOUNDMENT EMISSION CONTROL REQUIREMENTS

Comment: One commenter (F-91-CESP-00004) requests clarification of the definition of a surface impoundment and whether certain surface impoundment activities are exempt from the subpart CC standards. The commenter operates a newly constructed, triple-lined impoundment for a long-term corrective action program that will not contain liquid wastes and fits the definition of a landfill; however, it is RCRA-permitted as a surface impoundment.

Response: The subpart CC standards use the existing RCRA definition of a "surface impoundment" as specified under § 260.10. The requirements of the subpart CC standards apply to owners and operators of TSDF surface impoundments who must obtain a permit under RCRA subtitle C. If hazardous waste having a volatile organic concentration greater than or equal to 100 ppmw at the point of waste origination (as determined according to the procedure specified in the rule) is placed in such a surface impoundment, then the owner or operator must install and operate the required air emission controls on the surface impoundment.

If, as in the commenter's case, a waste management unit does not fit the definition of a surface impoundment but is permitted as a surface impoundment, then the terms of the permit apply. Therefore, the commenter's waste management unit will be regulated as a surface impoundment under the subpart CC standards. However, the commenter could apply for a permit modification to have the unit RCRA-permitted as a landfill.

If the waste being placed in the commenter's surface impoundment is generated from an onsite corrective action and the surface impoundment does not also manage as-generated hazardous waste, application of the subpart CC standards is being temporarily deferred (see section 9.6 of this BID).

Comment: One commenter (F-91-CESP-00066) requests that biologically active impoundments be exempted from the air emission control requirements of the proposed rule. The commenter submits that the EPA's estimates of emissions from biological systems overestimate the environmental and health effects of current emissions from biologically active TSDF and thus overestimate the benefits of the proposed rule.

Response: As discussed in section 6.4.1 of this chapter, the EPA decided to allow tanks in which certain biological wastewater treatment processes were conducted to operate without the subpart CC air emission controls. The EPA decided it is appropriate to allow the same general requirements for surface impoundments. Therefore, a provision has been added to the final general requirements of the subpart CC standards allowing a surface impoundment pursuant to the rule to operate without the required air emission controls if the biological wastewater treatment process performed in the surface impoundment destroys and degrades organics in the hazardous waste and is designed and operated in accordance with the requirements specified in the rule.

Comment: One commenter (F-91-CESP-00007) disagrees with the specification of high-density polyethylene (HDPE) to cover surface impoundments based on experience with landfills. The commenter submits that vapor transmission is more complicated than liquid transmission, which occurs in landfills. The commenter believes that, by specifying HDPE instead of membrane performance, vapors (i.e., xylene) could diffuse more rapidly than they would with other materials.

Response: The EPA is aware that transfer of organic vapors through a synthetic membrane covering a liquid waste is more complicated than transfer of liquids through a synthetic membrane used to line a surface impoundment or landfill. Furthermore, the EPA proposed that TSDF owners and operators be allowed to use an alternative material to 2.5-mm (100-mil) HDPE for the floating membrane cover, provided that the alternative material achieves a level of air emission control performance equivalent to 2.5-mm (100-mil) HDPE as defined in terms of a specific organic flux rate value.

There are two mechanisms by which organics can be emitted to the atmosphere from a surface impoundment equipped with a floating membrane cover. The first mechanism is by evaporation from the liquid surface directly open to the atmosphere due to openings, leaks, or tears in the cover. The second mechanism is by permeation of the organics through the membrane material via a three-step transport process that involves: (1) absorption of the organic molecules by the membrane material, (2) diffusion of the organic molecules through the membrane thickness to the outer surface (i.e., ambient air side of the membrane), and (3) evaporation of the organic molecules from the outer membrane surface to the atmosphere.

To investigate the use of synthetic membranes as a potential air emission control, the EPA developed a test procedure and conducted a series of laboratory bench-scale tests to measure the permeability (a measure of the flux or leak rate) of organic compounds through different types of commercially available membrane materials. A complete description of this test procedure and test results was available in the docket for public review and comment at rule proposal (refer to Docket No. F-91-CESP-S00486).

The test procedure developed by the EPA uses a special two-section glass chamber. An organic solution is circulated in the lower chamber while an air stream continuously flows through the upper chamber. A section of membrane material separates liquid in the lower chamber from the air in the upper chamber. An "O" ring seal mechanism prevents leakage of organics between the junction of the two chamber sections. Thus, organics in the liquid can only enter the upper chamber by passing through the membrane material. The purge stream of air flows through the upper chamber continuously during the test run, sweeping the surface of the membrane material. This purge stream is continuously analyzed for the three compounds in the test solution using GC/FID.

The organic compounds selected for the tests consist of an organic solution containing equal parts of toluene, methyl ethyl ketone (MEK), and methylene chloride. Each test run lasted a period of approximately 30 days. Four types of synthetic membrane materials were tested: HDPE, chloro-sulfated polyethylene (Hypalon), a vinyl-coated polyester, and an ethylene interpolymer adhesive.

The results of the laboratory tests showed measurable rates of permeation were detected for each organic compound for all of the membrane materials tested. The permeability of the three organic compounds through 2.5-mm (100-mil) HDPE was significantly lower than for the other types of membrane materials tested. There was no significant difference in the long-term performance (i.e., 20 to 40 days) of 100-mil HDPE produced by two different manufacturers.

The effectiveness of using a synthetic membrane cover to control air emissions from a surface impoundment was estimated based on the organic flux rates measured in the laboratory tests. For the calculation, an aqueous waste containing the same organic compounds as in the test mixture (toluene, MEK, methylene chloride) is assumed to be managed in a TSDF surface impoundment with a depth of 1.8 meters and a waste retention time of 100 days. It is also assumed that the contents of the covered surface impoundment are well mixed (i.e., there is no concentration gradient), and no leakage occurs from the floating membrane cover fittings. Based on this calculation, a floating membrane cover would achieve approximately 99 percent emission control of the organics in the waste managed in the surface impoundment. In actual floating membrane cover applications, overall organic emission control effectiveness could be lower due to factors such as leaks in cover seams and fittings, the wastes managed in the surface impoundment contain very low solubility organic compounds, or the waste remains in the surface impoundment for very long periods (i.e., longer than 100 days).

The EPA proposed that the synthetic membrane material used for the floating membrane cover be either HDPE with a thickness no less than 2.5 mm (100 mil), or a material or a composite of different materials determined to have organic permeability properties that are equivalent to those of 100-mil HDPE. In addition, the EPA placed in the docket for the proposed rule a test protocol that an owner or operator could use to demonstrate that an alternative membrane material has organic permeability properties that are equivalent to 100-mil HDPE (Docket No. F-91-CESP-S00487). This test protocol is based on the test procedure the EPA developed for the laboratory test and defines membrane performance in terms of a total organic flux rate through the material for a specified organic solution.

The total organic flux rate for 100-mil HDPE measured by the laboratory tests on organics is consistently below 5,000 $\mu g/min/m^2$ of membrane material. The EPA considers an alternative material that is determined using the test protocol to have a total organic flux rate equal to or less than

5,000 $\mu g/min/m^2$ to have organic permeability properties equivalent to 100-mil HDPE. Thus, by specifying this total organic flux value, the EPA has indirectly established a performance standard for the floating membrane cover.

Comment: One commenter (F-91-CESP-00046) requests clarification of how rainwater accumulating on the surface of the floating synthetic membrane should be managed.

Response: Floating membrane covers in current commercial service are equipped with rainwater drain systems. At one site visited by the EPA, the 17.3-hectare floating membrane cover was constructed so that rainwater is collected along the centerline of the cover. The rainwater drainage system consists of a 20.3-cm diameter weighted pipe (HDPE pipe filled with crushed stone) that runs lengthwise down a depression in the center of the cover. A series of 15.2-cm diameter pipes are laid at right angles to the central pipe on the cover surface every 19.2 meters. These pipes form channels to collected rainwater and discharge the water into the central pipe. The rainwater collected in the central pipe is pumped to a storm sewer.

Comment: One commenter (F-91-CESP-00024) is concerned that requiring covers on surface impoundments containing waste materials with high organic contents may create explosion and fire hazards due to concentrating hydrocarbon levels in the vapor phase above the waste surface within the flammability limits for some hydrocarbons.

Response: The EPA expects that TSDF owners and operators will follow the proper safety procedures appropriate for their situations when designing and operating all air emission controls required by the subpart CC standards. To emphasize the need for safety procedures, a provision has been added to the final subpart CC standards specifically allowing safety devices that vent directly to the atmosphere to be used on the tank, cover, or closed-vent system with control device, provided each safety device meets the following conditions: (1) the safety device is not used for planned or routine venting of organic vapors from the tank or closed-vent system with control device, and (2) the safety device remains in a closed, sealed position at all times except when an unplanned event requires that the device open for the purpose of preventing physical damage or permanent deformation of the tank, cover, or closed-vent system with control device in accordance with good engineering and safety practices for handling flammable, combustible, explosive, or other hazardous materials. An example of an unplanned event is a sudden power outage. Similar provisions have also been added to the rule for tank and container covers.

Comment: One commenter (F-91-CESP-00049) states that proposed surface impoundment air emission control requirements are not feasible for many surface impoundments used by the paper industry. The commenter notes that, although the principal waste streams at these facilities have not, to date, been listed or identified as hazardous wastes under the EPA's RCRA regulations, these wastes may in the future either be listed or exhibit a hazardous waste characteristic and contain volatile organics greater than or equal to the proposed action level. According to the commenter, many impoundments in the paper industry have surface areas of 20 acres or larger. Floating membrane covers cannot be used because most of the surface impoundments use surface aerators. Air-supported structures cannot be used because of the size of the surface impoundments. The commenter states that the air-supported cover control technology has not been demonstrated to be technically feasible in surface impoundments larger than 15 acres. The commenter urges the EPA, at the very minimum, to retain in the final standards the two proposed alternatives to erecting covers over impoundments: removal of volatile organics before the waste is managed in surface impoundments and application of BDAT to these wastes.

Response: If the commenter's wastes are identified as hazardous wastes in the future, the surface impoundments will need to be lined or replaced. Air emission controls could be included at the same time, though the time allowed for retrofitting a liner is longer than the implementation schedule provided for control equipment in subpart CC. Up to 4 years are allowed for the retrofitting of a surface impoundment with a liner, while control equipment should be installed and in operation no later than 30 months after the effective date of the amendment that renders the surface impoundment subject to subpart K. In this case, the owner or operator could request an implementation schedule extension from the Regional Administrator if the owner or operator can demonstrate that the situation is beyond the owner or operator's control and that reasonable and prudent attempts have been made to meet the subpart CC compliance date.

The owner or operator could choose to convert surface impoundments to a series of surface impoundments small enough to be covered by air-supported structures or to a tank system complying with the control requirements of §§ 264.1084 or 265.1085. Also, as described in section 6.2.2 of this chapter, for the final rules the EPA expanded the general requirement provisions available to a TSDF owner or operator for determining when a treated hazardous waste no longer is required to be managed in tanks, surface impoundments, and containers meeting the air emission control requirements of the rules. Therefore, there are several treatment provisions available as alternatives to erecting covers over impoundments.

6.6 CONTAINER AIR EMISSION CONTROL REQUIREMENTS

6.6.1 Container Applicability/Exemptions

Comment: Nine commenters (F-91-CESP-00033, 00038, 00041, 00059, 00062, 00069, 00076, 00077, 00081) request that the EPA exempt smaller size containers from being required to use air emission controls under the subpart CC standards. Container size cutoffs for this exemption ranging from 7 to 500 gallons were specifically recommended by various commenters. Reasons for providing a container size exemption include: (1) small quantities of waste in the containers do not pose an imminent emission hazard to public health or the environment; (2) consistency with the air emission control requirements proposed for permit-exempt waste generator containers; and (3) proposed container air emission controls are not physically practical for activities such as lab packing and emptying of sample vials into an accumulation container.

<u>Response</u>: The RCRA definition of "container" under 40 CFR 260.10 encompasses a wide range of container sizes from very small containers with capacities less than 0.004 m^3 (approximately 1 gallon) to tank-like units with capacities of 37.9 m^3 (approximately 10,000 gallons) or more. The EPA collected information on the types of small containers that are used to manage hazardous waste at a TSDF or to transport hazardous waste to a TSDF.

Drums are used extensively by all types of generators to accumulate hazardous waste and for transport of hazardous waste to a TSDF. Although drums are commercially available in sizes as small as 0.12 m^3 (approximately 30 gallons), the most common drum capacity used for hazardous waste management is 0.21 m^3 (approximately 55 gallons). It is not uncommon for an individual TSDF to have thousands of drums containing hazardous wastes on site. At some TSDF, hazardous wastes are treated directly in the drums. Because of the potential for significant organic emissions to the atmosphere from the very large number of drums used to handle hazardous waste as an integral part of the hazardous waste management operations at TSDF nationwide, the EPA concluded that it is appropriate to regulate air emissions from drums under the subpart CC standards.

Containers smaller than drums such as safety cans, lab cans, and disposal cans are commonly used where very small quantities of flammable liquids, corrosive wastes, spent organic solvents, and other hazardous wastes are generated such as in a laboratory, an equipment repair area, or a small manufacturing operation. Lab packs are drum-like containers into which small containers are packed with absorbent material for transport to a TSDF. Lab packs used for combination packagings as specified in 49 CFR 173.12(b) are exempt from the requirements of subpart CC.

The EPA's review of container sizes commercially available from vendors indicates that the capacities of safety cans, lab cans, disposal cans, and lab packs range from less than 0.004 m^3 (approximately 1 gallon) to 0.08 m^3 (approximately 21 gallons). These types of small containers are used to collect small quantities of hazardous waste in laboratories and other ancillary operations at a TSDF but are not directly used in the hazardous waste management operations at a TSDF. It was not the EPA's intent at proposal to apply the air emission control requirements of the subpart CC standards to these very small containers. Furthermore, considering the small quantities of hazardous waste handled in sample collection vials, safety cans, and other types of very small containers used at TSDF and the short period of time that the waste normally remains in these containers, the EPA concluded that existing rules for these containers are sufficient to protect human health and the environment. Therefore, the EPA decided it is appropriate to exempt very small containers from the subpart CC standards.

Based on the EPA's decision to apply the subpart CC standards to drums but not very small containers, the EPA added a container size limitation to the applicability of the final subpart CC standards. The EPA concluded that a container size cutoff of 0.1 m^3 (approximately 26 gal) establishes a definitive boundary between drums currently commercially available (containers with capacities greater than 0.12 m^3) and the safety cans, lab cans, disposal cans, and other very small containers offered by commercial vendors (containers with capacities less than 0.08 m^3). Therefore, the applicability of the subpart CC standards to containers was revised to be applicable only to containers with a design capacity greater than or equal to 0.1 m^3. This means that containers that have design capacities less than 0.1 m^3 are exempt from the requirements of the

C standards regardless of the volatile organic ation of the hazardous waste placed in the container.

omment: One commenter (F-91-CESP-00038) recommends that ners that manage solid waste and sludge from wastewater ment plants destined for landfill be exempted regardless of ainer size because the LDR "already impose strict limits" on volatile organic contents of these wastes (F-91-CESP-00038).

Response: As discussed in section 6.1.6 of this chapter, he wastewater treatment facilities at many TSDF will be exempt from the requirements of the subpart CC standards. Also, as discussed in section 6.2.2 of this chapter, an explicit exemption for hazardous wastes complying with the LDR treatment standards is not included in the final subpart CC standards. However, data from the EPA Office of Solid Waste studies indicate that organics present in the wastewater, when treated in certain biological treatment processes, are not preferentially concentrated in the sludge produced by the process but instead are effectively degraded (i.e., destroyed) by the process. Therefore, it is likely that hazardous waste sludges generated by a wastewater treatment process that must comply with the subpart CC standards will have a volatile organic concentration less than 100 ppmw and, consequently, can be placed in units not using the air emission controls required by the rule. The owner or operator will be required under the rule to perform waste determinations to determine the volatile organic concentration of the sludge if the sludge is to be placed in units without air emission controls.

Comment: Two commenters (F-91-CESP-00028, 00029) request an exemption from the air emission control requirements for trucks and railcars because, in most cases, the TSDF owner or operator is not responsible for these containers. One commenter (F-91-CESP-00028) suggests that the exemption be limited to 10 days from the date a manifest is signed as received or transported. The other commenter (F-91-CESP-00029) states that exempting ta trucks and railcars is consistent with the proposed exemption of transporters and suggests that it could be accomplished by exempting containers greater than 500 gallons.

Response: Tank trucks and tank railcars are containers used to handle relatively large quantities of hazardous waste. The capacity of a typical tank truck is approximately 30 m^3 (8,000 gallons). Tank railcars are frequently used to handle hazardous waste in quantities of 38 m^3 (10,000 gallons) or more. Furthermore, tank trucks and tank railcars are used as an integral part of the hazardous management operations at TSDF nationwide. Therefore, the EPA concluded that it is appropriate to regulate air emissions from tank trucks and tank railcar operations at TSDF under the subpart CC standards.

The EPA reviewed the proposed container emission control requirements as applied to tank trucks and tank railcars. Based on this review, the EPA concluded that the tank truck requirements the EPA has adopted for its air rules under the Clean Air Act to control organic emissions from gasoline tank trucks are an appropriate alternative to be included in the subpart CC standards. Under the final subpart CC standards, an owner or operator can elect to place the hazardous waste into a container that is attached to or forms a part of any truck, trailer, or railcar and that has been tested for organic vapor tightness within the preceding 12 months in accordance with the requirements of Method 27 in 40 CFR 60 appendix A. This method is a pressure test procedure for determining vapor-leak tightness of tank trucks and railcars into which gasoline is placed.

Regardless of whether a TSDF owner or operator is or is not the owner of a tank truck or tank railcar, it is the TSDF owner or operator's responsibility to place hazardous waste in tank trucks and tank railcars in accordance with the requirements of subpart CC standards. With respect to the 10-day exemption, the subpart CC standards do not change the exemption conditions under 40 CFR 264.1(g)(9) and 40 CFR 265.1(c)(12) for a transporter storing manifested shipments of hazardous waste in containers meeting the requirements of 40 CFR 262.30 at a transfer facility for a period of 10 days or less.

Comment: Two commenters (F-91-CESP-00033, 00048) request that the EPA clarify if the definition of waste fixation processes as applied to containers includes the addition of an absorbent to drums such as in the repackaging of drummed liquids for incineration. Another commenter (F-91-CESP-00010) states that waste fixation processes performed in containers should explicitly not include methods intended to make waste safer for transport off site, such as the addition of absorbents into a container used to handle lab packs, spilled waste, or solids removed from tanks or surface impoundments. The commenter noted that these management practices would seem to be exempted under §265.1(c)(13).

Response: The addition of absorbent material to a hazardous waste in a container or the addition of waste to absorbent material in a container is specifically exempt from all requirements under 40 CFR parts 264 and 265 when these actions occur at the time the hazardous waste is first placed in the container and certain other conditions are met [refer to 40 CFR 264.1(g)(10) and 265.1(c)(13)]. The final subpart CC standards do not revise the general applicability requirements of either part 264 or 265. Thus, for the purpose of implementing the final subpart CC standards, the requirements of the subpart CC standards do not apply to those activities currently performed by a TSDF owner or operator in compliance with either 40 CFR 264.1(g)(10) or 265.1(c)(13).

Comment: One commenter (F-91-CESP-00061) requests that waste fixation processes performed in containers be exempted from the control requirements provided that total operating time is less than 40 hours per month and all other containment and associated personnel monitoring ensures adequate protection. The commenter states that allowing this exemption would enable TSDF owners and operators to avoid the cost and inconvenience in terms of vehicle access that totally enclosing the process would impose.

Response: Exemption of waste fixation processes performed in containers that are operated intermittently or for short time periods is not appropriate. Source tests and laboratory studies of waste fixation processes conducted by the EPA show that most of the organics contained in wastes that are fixated are emitted during the mixing of the binder with the waste and the subsequent curing of the mixture. Consequently, even performing waste fixation in containers for 40 hours per month can emit significant quantities of organics.

Comment: One commenter (F-91-CESP-00010) states that the definition of "container" as described in the preamble for the proposed rule (56 FR 33503 and 33525) is inconsistent.

Response: The subpart CC standards apply to containers managing hazardous waste as defined by 40 CFR 260.10. The subpart CC standards do not change the existing RCRA definition of container, which is "any portable device in which material is stored, transported, treated, disposed, or otherwise handled." The container types cited in the proposal preamble serve only as examples and do not define applicability of the subpart CC standards to containers.

6.6.2 Container Cover Requirements

Comment: Comments were received regarding the application of the proposed container cover requirements to drums meeting DOT requirements for transporting hazardous waste. Two commenters (F-91-CESP-00010, 00014) ask for clarification as to whether the standard covers and bungs found on DOT specification 17E, 17C, and 17H drums meet the proposed container standards. A third commenter (F-91-CESP-00062) states that it is unclear whether a cover would have to be sealed water- or air-tight and recommends that the no detectable organic emissions requirement be deleted specifically for bung-type containers.

Response: The EPA reviewed the DOT regulations regarding the transport of hazardous materials in commerce. The DOT

Research and Special Programs Administration (RSPA) regulates both shippers and transporters of hazardous materials under the Hazardous Materials Transportation Act. The RSPA issues regulations and performs inspection and enforcement activities. These regulations are codified in 49 CFR parts 106, 107, and 171 through 179. Any material identified or listed as a hazardous waste under RCRA regulations is classified a hazardous material under the DOT regulations (49 CFR 171.3). The DOT regulations address: (1) interstate transportation of hazardous materials by motor vehicle, rail car, aircraft, and vessels; and (2) intrastate transportation of certain materials (hazardous wastes, hazardous substances, and flammable cryogenic liquids in portable tanks and cargo tanks) by motor vehicles.

The DOT requirements for drums used to transport hazardous materials are specified under 40 CFR part 178. There are two basic types of drums used to handle hazardous waste: open-head drums and closed-head drums. An open-head drum has a removable top that is secured to the drum with a bolt ring. Because the entire top of the drum is open when the lid is removed, an open-head drum can be used to handle any form of hazardous waste, including solids, sludges, and liquids. A closed-head drum is used only for liquid materials because the top is permanently attached to the drum. There are two openings, referred to as "bungs," on the container top. One opening (typically 2 to 3 inches in diameter) is used to fill or empty liquids from the drum, and a second, smaller opening is for venting the drum. These openings are closed with plugs.

The DOT regulations require that the drums be leakproof under normal transport conditions. Closures (i.e., plugs or other devices used to close the openings on the drum) must be designed and applied to remain secure and leakproof. Gaskets or other sealing elements must be used with all removable heads and drum closures. The drum body seams must be welded, and openings for filling, emptying, and venting in closed-head drums may not exceed 3 inches in diameter. The regulations specify a test to demonstrate a drum is leakproof. The test involves pressurizing the drum with air while the drum is restrained under water. Every drum used to transport liquid materials must be tested and pass the leakproof test. For drums used to transport solids and semisolid waste, a sampling of drums from a manufacturer is tested.

Drums with DOT codes 17E, 17C, or 17H refer to steel drums using DOT's old code system for designating drums. The DOT has now adopted the United Nations' alphanumeric code system for designating drums. Under this coding system, a 17C steel drum, for example, is designated either as a 1A1 (closed head) or 1A2 (open head) container.

Based on the review of DOT regulations, the EPA decided it is appropriate to add as an alternative container cover requirement to the final subpart CC standards the option of allowing an owner or operator to place affected waste in a drum [a container having a design capacity less than or equal to 0.46 m^3 (approximately 119 gallons)] meeting the DOT specifications and testing requirements under 49 CFR part 178. The size of container classified as a drum was chosen to be less than or equal to 0.46 m^3 to be consistent with DOT regulations. For a drum meeting these DOT regulations, no organic leak detection testing is required under the subpart CC standards. It is important to note that none of the exceptions to the 49 CFR part 178 regulations other than the exception for lab packs used for combination packagings as specified in 49 CFR 173.12(b) apply to a container for the purpose of complying with the subpart CC standards.

Comment: Four commenters (F-91-CESP-00008, 00010, 00048, 00081) commented on the feasibility of applying the proposed container cover requirements to dumpsters and roll-off boxes. One commenter (F-91-CESP-00081) is not aware of any dumpster or receiving container that will meet the proposed requirement of "gasketed and latched" closure and still meet the commenter's need for containers to collect large volumes of empty paint cans, brushes, wipes, and paper painted with overspray from a surface coating operation. The commenter suggests adding a provision to the rule allowing rigid containers to not be sealed if volatile wastes that must be managed pursuant to subpart CC are placed in closed plastic bags prior to being placed in the container. One commenter (F-91-CESP-00008) requests that use of a tarp to cover a roll-off box containing sludge or solids be considered acceptable cover. One commenter (F-91-CESP-00010) knows of no commercially available substitutes for roll-off boxes. The fourth commenter (F-91-CESP-00048) states that, because of the size of roll-off boxes, steel covers are not feasible and requests a variance for situations where the proposed air emission controls are not physically practicable. This commenter notes that roll-off boxes with steel covers would be very difficult to handle and that mechanized assistance would be necessary to remove and replace covers. Also, the added weight would reduce the quantity of waste that could be placed in a roll-off box. In addition the covers would be in short supply.

Response: The final subpart CC standards require a container to use a cover that operates with no detectable organic emissions when all cover openings are secured in a closed, sealed position. According to one of the commenters (F-91-CESP-00048), roll-off boxes with gasketed, fiberglass covers are commercially available. However, using a gasketed and latchable cover on a dumpster or roll-off box is only one of several ways that an owner or operator can comply with the rule. The rule requires an owner or operator to determine that there are no detectable organic emissions from a covered dumpster or roll-off box by testing the container cover using Method 21.

The use of a cover other than a gasketed, latchable cover for a dumpster or roll-off box can comply with the subpart CC standards depending on the nature of the hazardous waste placed in the container and the circumstances under which the container is used. For example, the EPA has concluded (refer to Docket No. F-94-CESP-S00507 and F-94-CESP-S00508) that use of a tarpaulin as a cover on a roll-off box meets the container requirements for the benzene waste operations NESHAP (40 CFR part 61, subpart FF) when all of the following conditions are met: (1) the affected container in which waste is placed is a roll-off box with a minimum volume of no less than 20 yd^3 and a maximum volume of no greater than 40 yd^3; (2) the waste placed in the container is only bulk solids (e.g., soils, filter cake, or air pollution control device residue) and not a liquid, sludge, or slurry; (3) the waste placed in the roll-off box is covered (sprayed) as soon as practicable with an appropriate long-term vapor-suppressing foam that covers the entire exposed surface of the material in the roll-off box; (4) the tightly fitting tarpaulin cover is installed with no holes, gaps, or tears; and (5) the waste is stored in the roll-off box container for a limited period of time, such as less than 30 days. Process-specific conditions should be considered when determining a reasonable storage time.

Comment: One commenter (F-91-CESP-00048) requests clarification of the cover requirements with regard to sampling drums. The commenter states that drum sampling often is performed by punching a hole in the cover to draw a sample and then sealing the hole with a rubber bung.

Response: The final subpart CC standards require container openings to be maintained in a closed, sealed position with no detectable organic emissions except when it is necessary to add, remove, inspect, or sample the waste in the container. Punching a hole in the container creates a new opening that must be sealed once facility personnel are finished drawing the waste sample. A rubber bung may be used to seal the opening provided the rubber bung is secured so that there are no detectable organic emissions as determined by Method 21. If a drum meeting DOT specifications is sampled by punching a hole in the lid, then the EPA considers it altered, and it no longer meets the DOT specifications. Thus, the plug needs to meet the no detectable organic emissions criteria as determined by Method 21.

Comment: One commenter (F-91-CESP-00010) states that the EPA does not discuss the availability of nationally manufactured containers that meet the standards.

Response: As discussed previously in this section, the final subpart CC standards allow the use of drums meeting DOT regulations on packaging hazardous waste for transport to comply with the control requirements. Drums meeting these DOT hazardous waste packaging specifications are commercially available from many vendors.

Comment: One commenter (F-91-CESP-00011) states that a container cover opening should only be required to operate with no detectable organic emissions when in the closed, sealed position. It cannot be operated with no detectable organic emissions when open for filling.

Response: The EPA realizes that a container cover cannot be operated with no detectable organic emissions when it is necessary to remove the cover or uncap an opening on the container to add or remove waste from the container. Under the subpart CC standards, each opening on the container cover must be closed and sealed (i.e., operated with no detectable organic emissions) by a hatch, cap, plug, or other device except when work practices require a cover fitting such as a hatch to be opened by a worker or when safety considerations require a cover fitting such as a pressure-relief valve to open. Accordingly, the language of the final rule has been revised to explicitly require the container cover and all cover openings to be designed to operate with no detectable organic emissions when all cover openings are secured in the closed, sealed position and require that each cover opening be maintained in a closed, sealed position except under the specific conditions set forth in the rule.

Comment: One commenter (F-91-CESP-00062) believes that including the EPA's proposed definition for "cover" in 40 CFR part 260 would result in all containers required to use covers under RCRA regulations to be leak-tight regardless of whether or not a container contains waste to which the subpart CC standards apply. The commenter requests that either the definition of "cover" be moved to parts 264 and 265 and indicate that the definition applies only to equipment pursuant to subpart CC requirements or specifically exempt satellite areas from requirements for a sealed cover.

Response: The EPA did not intend its proposed definition for "cover" as used for the subpart CC standards to apply to existing references to the term "cover" as already used in other parts of the RCRA regulations. Therefore, all definitions that are specific to the requirements of the subpart CC standards have been moved to a section incorporated directly in the subpart CC regulation. Under the final rule, the definition of "cover" applies only to units operated pursuant to the subpart CC standards and does not apply to the term "cover" when used elsewhere in RCRA. As discussed in section 7.2 of this BID, the subpart CC standards do not apply to containers used for satellite accumulation of hazardous waste in compliance with 40 CFR 262.34(c).

Comment: Six commenters (F-91-CESP-00032, 000036, 00046, 00062, 00072, 00076) submit that the container regulations need to provide for the use of pressure-relief devices. Three of the commenters (F-91-CESP-00036, 00046, 00063) state that use of a leak-tight cover on containers handling mixed radioactive waste is considered to be unsafe and unacceptable because of the potential for radiolytic generation of hydrogen from the decay of radionuclides. Without continuously venting the container, there is the potential for the hydrogen concentration to reach the lower explosive limit, creating an explosive atmosphere that would be extremely hazardous to personnel working in these facilities. The commenters request alternative compliance methods for radioactive mixed waste containers, such as placing the drums in a storage building vented to a control device and allowing monitoring of the actual organic emissions at building exhaust ports.

One commenter (F-91-CESP-00032) anticipates using containers designed to function under pressure in response to the proposed regulations. The containers will need to be vented during filling operations and will also require pressure-relief capabilities to allow for temperature variations when containers are not being filled. Another commenter (F-91-CESP-00072) requests that the standards for covers make allowances for the pressure-relief vents on rail cars. A third commenter (F-91-CESP-00076) states that diurnal variations should be recognized as conditions requiring venting of covers to prevent damage.

Response: The EPA expects that TSDF owners and operators will follow the proper safety procedures appropriate for their situations when designing and operating all air emission controls required by the subpart CC standards. Consistent with provisions added to the final subpart CC standards for tanks (as discussed in section 6.4.2 of this chapter) and surface impoundments (as discussed in section 6.5 of this chapter) provisions have been added to the final subpart CC standards specifically allowing safety devices that vent directly to the atmosphere to be used on the container, cover, enclosure, or closed-vent system with control device provided each safety device meets the following conditions: (1) the safety device is not used for planned or routine venting of organic vapors from the container, enclosure, or closed-vent system with control device; and (2) the safety device remains in a closed, sealed position at all times except when an unplanned event requires that the device be open to prevent physical damage or permanent deformation of the container, cover, enclosure, or closed-vent system with control device in accordance with good engineering and safety practices for handling flammable, combustible, explosive, or other hazardous materials.

In the case of containers handling radioactive mixed waste, as explained in section 6.1.3 of this chapter, the applicability of the subpart CC standards to waste management units handling radioactive mixed waste is being temporarily deferred. Regarding the comment on diurnal temperature changes, the language that has been added to the container regulations allowing venting devices implicitly includes diurnal temperature changes as a condition that might require venting of the container to prevent physical damage or permanent deformation of the container or cover.

6.6.3 Container Loading Requirements

Comment: Three commenters (F-91-CESP-00026, 00041, 00077) support the proposed requirement for submerged-fill container loading as being an appropriate and effective control technique. Two commenters (F-91-CESP-00010, 00075) disagree that submerged loading is effective in reducing emissions. One commenter (F-91-CESP-00075) states that, if a material is volatile enough that submerged loading is warranted, the material will evaporate and be displaced during filling anyway.

Response: The EPA maintains that submerged loading is effective in reducing organic emissions from container loading. Splash loading results in significant turbulence and vapor-liquid contact when the falling liquid splashes on the surface of the liquid already in the container. This results in organic vapor generation and emission to the atmosphere through the container opening used for waste loading. Use of submerged loading instead of splash loading is estimated by the EPA to reduce organic air emissions from hazardous waste loading operations by approximately 65 percent.

Comment: Many commenters (F-91-CESP-00010, 00021, 00033, 00037, 00038, 00040, 00046, 00047, 00053, 00054, 00056, 00060, 00062, 00076, 00081) request that submerged filling of containers not be required under certain conditions. Eleven commenters (F-91-CESP-00021, 00033, 00037, 00038, 00047, 00053, 00054, 00056, 00062, 00076, 00081) state that requiring submerged fill for drums could result in increased emissions and the generation of more hazardous waste. Two commenters (F-91-CESP-00040, 00046) request an exemption based on quantity of waste. One of these commenters (F-91-CESP-00040) specifically suggests a size cutoff of 1 gallon or less. Another commenter (F-91-CESP-00060) requests an exclusion for containers of no more than 5 gallons to accommodate lab packing services. Three commenters (F-91-CESP-00062, 00076, 00081) request exemptions for containers of 55 gallons or less. Two commenters (F-91-CESP-00047, 00056) recommend that the EPA adopt a flow-rate cutoff and require submerged fill only when the fill rate is greater than 5 gal/hr. One commenter (F-91-CESP-00010) states that submerged loading should be required only for "aqueous" waste, which nears the density of water. Two commenters (F-91-CESP-00033, 00040) request exemptions for situations when the fill pipe is likely to become clogged. One commenter (F-91-CESP-00072) states that submerged fill of 55-gallon drums should not be required to allow the current common practice of using funnels to fill these drums. One commenter (F-91-CESP-00054) recommends the rule allow the use of a funnel with a spring-loaded flap device at the end to prevent emissions during loading of drums.

Response: Application of submerged-fill techniques to drums involves the use of a hose or fill pipe that a worker inserts through a bung on the lid into the drum. When the fill pipe is removed from the drum after the drum is filled, the outer surface of the hose or pipe will be dripping with the hazardous waste placed in the container. The wet surfaces of the pipe will be a source of organic emissions and increase potential for hazardous waste spills. By virtue of the RCRA mixture rule, rags or cleaning solutions used to clean the hoses or fill pipes will become hazardous wastes as will materials used to clean up drips from the piping. Also, handling the fill pipes or hoses in this manner could pose safety hazards to workers.

The environmental benefit realized from submerged loading of drums is likely to be offset because of increased spills and the organic emissions resulting from removing the fill pipe from the loaded drum. Thus, the EPA concluded that it is appropriate not to apply the submerged fill requirement to the transfer of hazardous waste into drums [containers with design capacity less than or equal to 0.46 m^3 (approximately 119 gal)].

Drums are commercially available in a range of standard sizes, including 30, 43, 55, 59, 85, and 90 gallons. Commenters stated, and the EPA has evaluated and agreed, that applying a submerged fill requirement to drums of these relatively small sizes is environmentally counterproductive; more organic emissions would occur when the hose or fill pipe is removed from a drum and from spills than would otherwise occur under current drum filling practices. For the final subpart CC standards, the EPA thus chose to limit the requirement for submerged fill of hazardous waste to only those containers having a capacity greater than 0.46 m^3 (approximately 119 gal). Accordingly, the final subpart CC standards do not require drums with design capacities up to and including 0.46 m^3 to be loaded by submerged fill.

The requirement for submerged fill of containers with design capacities greater than 0.46 m^3 also has been revised to require submerged fill only of wastes that are transferred by pumping. Therefore, wastes with high solids content that could lead to clogging of the fill pipe can be loaded by alternative methods such as gravity feed (see response to the next comment).

Comment: Many commenters (F-91-CESP-00007, 00010, 00033, 00035, 00038, 00040, 00046, 00076, 00081) disagree with the submerged-fill requirement for heavy liquid waste streams or waste streams with solids. One commenter (F-91-CESP-00046) states that pumps/piping would be operating under high pressure, which might create risks to personnel safety. Two commenters (F-91-CESP-00010, 00076) submit that some sludges and slurries that are pumpable cannot practically be loaded with a submerged-fill pipe. One commenter (F-91-CESP-00033) cites problems in adding wastes to a drum containing absorbent. A fourth commenter (F-91-CESP-00081) states that paint shop wastes containing two-part epoxy paints "set up" after time and would clog a submerged-fill pipe. One commenter (F-91-CESP-00035) states that the words in the proposed regulation "pumpable waste" are confusing. The commenter recommends that the EPA establish an upper limit viscosity for "pumpable hazardous waste" and not preclude the use of attached funnels, gravity feed, and other devices for loading containers.

Response: Upon reviewing the proposed rule, the EPA has revised the regulatory language of the final subpart CC standards to clearly represent the EPA's intention of requiring submerged fill only when wastes are pumped into a container. The EPA recognizes that, although pumps are available that can transfer semisolid waste material such as thick sludges, it is common practice at TSDF to load these types of wastes into containers using gravity feed or conveyor systems. The EPA does not intend to require, under the subpart CC standards, that all TSDF owners and operators load pumpable wastes into containers with design capacities greater than 0.46 m^3 (approximately 119 gal) by pumping. Rather, it is the EPA's intention to require that whenever a TSDF owner or operator loads waste into such a container by pumping that the pumping system use submerged fill. Therefore, in the regulatory language for the final subpart CC standards, the term "pumpable wastes" has been replaced with a requirement that wastes transferred by pumping into a container use a submerged-fill apparatus that meets certain specifications.

Comment: Four commenters (F-91-CESP-00011, 00014, 00035, 00076) disagree with the EPA's proposed requirement for the submerged-fill pipe outlet location. One commenter (F-91-CESP-00011) states that submerged filling requires only that the fill pipe outlet discharge below the liquid surface during filling and notes that the proposed design criteria usually apply to fixed fill pipes in tanks and similar fixed installations. This commenter requests deletion of the specification for fill pipe outlet location. A second commenter (F-91-CESP-00014) recommends that the specification be in terms of distance below the top surface of the liquid. A third commenter (F-91-CESP-00035) requests that 6 inches' or three piping diameters' clearance between the bottom of the container and the fill pipe outlet be allowed. A distance of 6 inches is needed to prevent undue wear on the container during filling with a 2-inch submerged pipe and eliminates the potential for the pipe breaking off because of shearing force. The fourth commenter (F-91-CESP-00076) suggests requiring that the fill pipe extend a minimum of three-quarters of the depth of the container. One commenter (F-91-CESP-00035) does not agree with the requirement that the submerged-fill pipe used to fill tanks extend within two pipe diameters of the bottom of the vessel being filled. The commenter proposes a revision to allow 6 inches or three piping diameters between the bottom of the vessel and the submerged-fill pipe. According to the commenter, chemical companies have found that a distance of 6 inches is required to prevent undue wear on the vessel during filling using a 2-inch submerged pipe. In addition, increasing the distance to 6 inches eliminates the potential of the pipe breaking off because of shearing forces. The commenter submits that the pipe will still be submerged because of the rounded ASME tank bottom.

<u>Response</u>: For containers requiring submerged fill, the proposed fill pipe outlet location of within two fill pipe diameters of the bottom of the container is being revised in response to comments. As promulgated, the fill pipe outlet must either remain submerged below the waste surface for a container already holding waste or the lower bottom edge or the tube outlet must extend to within 6 inches or two piping inside diameters (whichever is greater) of the bottom of the container while the container is being loaded. Allowing the fill pipe outlet to be below the surface addresses those situations in which a removable fill pipe is being used to load a container that already holds some waste. Adding the minimum 6-inch clearance between the bottom edge of the tube outlet and the bottom of the container makes the requirement consistent with previously published EPA guidance on submerged fill.

Regarding the suggestion that 6 inches' or three piping diameters' clearance between the bottom of the container and the fill pipe outlet be allowed, according to the commenter the three piping diameters is based on the experience of chemical companies with vertical ASME pressure vessel tanks that have rounded shell bottoms. The submerged fill requirements of the subpart CC standards do not apply to tanks. Two tube inside diameters is sufficient to allow the clearance of solid particles that might be in the waste to prevent clogging of the fill pipe or hose. The addition of the minimum 6-inch clearance between the bottom edge of the tube outlet and the bottom of the container addresses the commenter's concerns about abrasion of the container bottom.

Comment: One commenter (F-91-CESP-00025) recommends that the EPA allow submerged fill to be accomplished by other methods such as the use of the valved port on the lower end of a container. This would prevent having to open the top hatch of a large container to insert a fill pipe.

Response: Bottom loading using a port in the lower end of the container is an effective alternative to splash loading. The subpart CC standards have been clarified to explicitly allow bottom loading as well as submerged loading. The bottom loading may be accomplished using a port mounted on the bottom of the container so that the lower edge of the port opening inside the container is located at a distance no more than 15.2 cm (6 inches) from the container bottom.

Comment: One commenter (F-91-CESP-00008) requests a special provision for the filling of containers with materials (i.e., filter press sludges) that are nonpumpable. It would be infeasible for these containers to be closed during the filling process.

Response: The EPA recognizes that there must be an opening in a container for waste to be added or removed. The final subpart CC standards require that each container opening be maintained in a closed, sealed position at all times that waste is in the container except when it is necessary to use the opening for waste loading, removal, inspection, or sampling or for venting to prevent physical damage or permanent deformation of the container or cover. Therefore, the final subpart CC standards do allow for a container opening to be open when waste is being added to the container.

Comment: One commenter (F-91-CESP-00060) requests that the EPA clarify the regulatory language to explicitly state that a submerged fill pipe is not required to unload pumpable waste from a container. The commenter cites potential problems with using a submerged pipe to pump wastes that have separated into phases with sludge as the bottom layer.

Response: The regulatory language states explicitly that for transfer of waste into a container having a design capacity equal to or greater than 0.46 m^3 (approximately 119 gallons), "waste transfer by pumping shall be performed using a conveyance system that uses a tube (e.g., pipe, hose) to add the waste into the container." A submerged fill pipe is not required for unloading.

6.6.4 Container Treatment Control Requirements

Comment: One commenter (F-91-CESP-00007) requests that the EPA consider requiring an enclosure for container treatment operations where all emissions from the enclosure are treated prior to discharge. In contrast, two commenters (F-91-CESP-00033, 00041) state that enclosure of some waste fixation processes is not practical and request variance provisions. One of the commenters (F-91-CESP-00041) states that containers used for waste fixation can be as large as railroad roll-off cars. The other commenter (F-91-CESP-00033) states that the fixation unit is usually loaded by dump truck and then the solidifying agent is added and mixed by backhoe. Enclosing this type of waste fixation process would make it unworkable.

Response: As discussed in conjunction with the control of emissions from tanks in section 6.4.2 of this chapter, locating open containers inside a building in which the entire airspace inside the building is ventilated to a single air emission control device does not comply with the control requirements of the final subpart CC standards. However, the EPA recognizes that fixation of a hazardous waste directly in a container can have special worker access requirements. Therefore, the final subpart CC standards pertaining to waste fixation processes performed in containers have been changed to specify that, whenever it is necessary for a container to be open during the treatment process, the container must be located in an enclosure connected to a closed-vent system with control device. The final rule specifies that an enclosure be a structure that is designed to operate with sufficient airflow into the structure to capture all organic vapors vented from the container and route the vapors through the closed-vent system to the control device. The enclosure may have permanent or temporary openings to allow worker access, passage of containers through the enclosure by conveyor or other mechanical means, entry of permanent mechanical or electrical equipment, or to direct airflow into the enclosure. The pressure drop across each opening in the enclosure shall be maintained at a pressure below atmospheric pressure so that whenever an open container is placed inside the enclosure no organic vapors released from the container exit the enclosure through the opening.

6.6.5 <u>Control Requirements for Vacuum Trucks</u>

<u>Comment</u>: One commenter (F-91-CESP-00081) asks why the proposed rule does not include vapor control for vacuum trucks. The commenter states that large volumes of air are exhausted during the loading process, and the volatile organics in the wastes that are already in the tanker are subjected to reduced atmospheric pressure, which stimulates evaporation. According to the commenter, the organics exhausted by a single truck loading (especially from drums) are significant. The commenter also notes that some cargo tanker operators run their exhaust through an onboard carbon canister, but many do not.

<u>Response</u>: A vacuum truck is a tank truck that is loaded through the use of the negative pressure created by a vacuum pump. Vacuum trucks are used in the cleaning of treatment and

storage tanks and in the transport of waste loaded from tanks and containers. Emissions from vacuum trucks are intermittent and short in duration. Vacuum trucks are not included in the sources regulated by the subpart CC standards because the feasibility of controlling the exhaust from the vacuum pump on a vacuum truck has not been demonstrated.

The vacuum pump on a vacuum truck typically has a high flow rate, ranging from 150 to 300 cfm. The pressure head created by the pump ranges from 5 to 25 psi. Vacuum truck loading is a short duration operation. For example, it takes around 11 minutes to fill a 3,000-gallon truck with water using a 3-in hose and loading from an 11-ft depth. Loading time is affected by the size of hose used and by the viscosity of the liquid being loaded.

Because a vacuum truck is a mobile source, any applicable add-on control will have to be mobile. Carbon adsorption is the most feasible potential control technique. However, the high flow rate will require a relatively large quantity of carbon. For example, in one solvent application a vacuum truck manufacturer estimated that a carbon canister would become saturated in 8 hours. Also, the back pressure created by applying an add-on control to the vacuum pump exhaust is a potential problem. The ductwork to the control device would have to be minimized to avoid creating enough back pressure to significantly reduce the efficiency of the pump. Thus, a practical means of controlling the exhaust from the vacuum pump on a vacuum truck has not been demonstrated.

<u>Comment</u>: One commenter (F-91-CESP-00005) operates a vacuum truck service that engages in tank cleaning, chemical transfer, and spill response and remediation. This commenter states that it would be very costly to have to scrub trucks while in transit. The commenter notes that emissions from vacuum trucks can be scrubbed through carbon, but it is federally mandated that components of vacuum equipment as well as tanks be cleaned before they leave the work site. Plants do not have the equipment to do

this. In addition, the commenter states that this will create additional waste to be treated, either contaminated carbon or water. The commenter requests criteria to address these problems and states that the no limit criteria as proposed are certain to be costly and put people out of work.

Response: The subpart CC standards do not include requirements for scrubbing containers or for controlling the emissions from the vacuum pump using carbon adsorption. Therefore, the requirements of the subpart CC standards will not result in the creation of additional wastes from vacuum trucks that will require treatment. The reuse of containers for transportation of hazardous waste is regulated by DOT standards including those set forth in 49 CFR 173.28.

6.7 SUBPART X MISCELLANEOUS UNIT STANDARDS

Comment: Many commenters (F-91-CESP-00008, 00045, 00046, 00047, 00051, 00056, 00069, 00070) request clarification as to how the subpart AA, BB, and CC standards apply to subpart X miscellaneous units. Commenters state that application of these standards to certain miscellaneous units is inappropriate and possibly unsafe. One commenter recommends that the requirements for miscellaneous units be satisfied as long as waste management is conducted within an enclosure that appropriately controls organic air emissions. The commenters request that the EPA defer action on such units or clearly state that no requirements may be appropriate for some subpart X units (e.g., open burning, open detonation units) and that these units will be regulated under the permit process.

Response: Subpart X miscellaneous units are permitted on a case-by-case basis with terms and provisions as needed to protect public health and the environment through generic performance standards specified in 40 CFR 264.601. Section 264.601 requires that appropriate portions of the existing technical standards for other waste management unit categories regulated by RCRA (e.g., tank, surface impoundment, container, hazardous waste incinerator) be incorporated into the permit conditions for the miscellaneous unit. Because it is the EPA's intention that all existing RCRA air and water technical standards be considered for issuance of a permit for a miscellaneous unit, a miscellaneous unit permitted under 40 CFR 264 subpart X must include, as appropriate, the air emission control requirements of subparts AA, BB, and CC.

Application of the subpart AA, BB, and CC standards to miscellaneous units first requires determining which one of the waste management unit categories, if any, is most similar to the miscellaneous unit. For example, waste is sometimes stored or treated in units consisting of a flexible, synthetic liner supported by an aboveground metal frame. The permit writer may determine that this unit is similar to a surface impoundment, which consists of a liner placed in a depression formed of earthen materials rather than a metal frame. Thus, using air emission controls required for surface impoundments under 40 CFR 264 subpart CC (e.g., floating membrane cover) is appropriate for controlling organic emissions for this miscellaneous unit. Therefore, in this case where the miscellaneous unit is determined to resemble a surface impoundment, relevant provisions of the subpart CC surface impoundment standards would be included in the permit for the unit.

The EPA is aware that certain waste management units that are permitted under subpart X must remain open to the atmosphere to operate safely such as units in which waste explosives are disposed of by detonation. A waste management unit that can only operate when open to the air cannot be enclosed with a leak-tight cover or vented to a control device. In this case, the determination may be made by the permit writer that application of the subpart AA, BB, or CC standards is not appropriate and, thus, none of the control requirements specified in these standards would be included in the permit for the unit.

6.8 CLOSED WASTE TRANSFER BETWEEN UNITS

<u>Comment</u>: Commenters (F-91-CESP-00029, 00069) disagree with the EPA's proposal to require closed transfer of waste to and

from tanks and surface impoundments that must be operated in accordance with the rule and submit that these requirements should not be included as part of this rulemaking. Reasons presented by the commenters include: (1) the EPA did not estimate organic air emissions from waste collection systems and the possible health effects associated with these emissions to support the need for air emission controls applied to waste transfer systems; (2) the impact of requiring closed-system transfer of waste will fall primarily on wastewater collection systems (e.g., sewers, drains, troughs) and waste collection systems cannot always be closed and effectively serve their intended purpose to collect wastes; (3) requiring closed-system transfer of waste will lead to enforcement and administration problems.

Response: Control of organic emissions from transfer of hazardous waste between waste management units is necessary and appropriate under the subpart CC standards. The EPA does not anticipate any enforcement or administration problems from including this requirement in the final subpart CC standards.

The subpart CC standards are based on containment of the organics in the waste stream from the point of waste origination through the point of waste treatment to remove or destroy the organics. Allowing open transfer of waste provides the opportunity for organics in the waste to be released directly to the atmosphere and thus reduces the quantity of organics in the waste when it is placed in the next downstream unit. Not requiring closed transfer of waste between the TSDF waste management units using the emission control equipment required by the subpart CC standards would reduce the effectiveness of the air emission controls applied to these units. The organic air emissions from uncontrolled waste transfer can be substantial. Consequently, for implementation of the subpart CC standards to achieve the level of environmental and health risk benefits estimated by the EPA, the requirement for a closed transfer of waste between waste management units operated pursuant to the air emission control requirements of the subpart CC standards is necessary and appropriate.

The EPA did address organic emissions from waste transfer operations in the impact analysis by assuming that no organic emissions occur during the transfer of waste between waste management units. This assumption effectively means that there is 100 percent control of emissions from waste transfer operations.

The EPA does not expect the requirement for closed transfer of waste between waste management units that are required to use air emission controls under the subpart CC standards to affect primarily wastewater collection systems. As discussed in section 6.1.6 of this BID, many wastewater treatment units as defined in § 260.10 are exempted from RCRA permitting requirements by § 270.1(c)(2), and, therefore, the requirements of 40 CFR part 264 or 265 are not applicable to these wastewater treatment units. Consequently, the wastewater collection systems for these units would not be affected by the closed waste transfer requirements of subpart CC standards. In a case where the requirements of the subpart CC standards are applicable to a wastewater collection system, the EPA believes that the system can be closed to minimize air emissions and still effectively serve its intended purpose of collecting wastes. The Benzene Waste Operations NESHAP (40 CFR part 61, subpart FF) already requires closed individual drain systems in the wastewater treatment systems of chemical manufacturing plants, coke byproduct recovery plants, and petroleum refineries to which the requirements of the standard apply.

<u>Comment</u>: One commenter (F-91-CESP-00076) requests a definition of "enclosed pipe" as well as examples of "other closed systems." The commenter requests clarification if a submerged fill pipe required under the container standards would meet the definition of "enclosed pipe or other closed system." The commenter requests clarification involving the overlap in definition of the words "transfer" and "transport." The commenter provides as an example containers that are moved

between sites at a facility by trucks. Ultimately the waste is loaded from the container into a tank. The commenter interprets the requirement to use an enclosed pipe or other closed system for transfer operations to be applicable to the operation in which waste is moved directly from the container to the tanks and does not include the various movements of the container by truck. The commenter requests that the requirement for an enclosed pipe or other closed system be clarified to include only those operations involving direct transfer of hazardous waste to the tank.

Response: An enclosed pipe is a tube in which the body has no holes, perforations, slots, or other openings to the air. A submerged fill pipe would meet the definition of enclosed pipe as long as the pipe is vapor tight. The EPA considers a drain system used for transferring wastewater that complies with standards under 40 CFR 61.346(a)(1) or 40 CFR 61.346(b)(1) through (b)(3) to be a "closed system."

The requirement for closed waste transfer applies to hazardous waste with an average volatile organic concentration greater than or equal to 100 ppmw at the point of waste origination. Use of an enclosed pipe or closed system is required for waste transfer activities from the point of waste origination through the point of waste treatment to remove or destroy organics in the waste in accordance with the requirements specified in the rule. It also should be noted that the requirements of the subpart CC standards for a container apply to a tank truck used to transport hazardous waste.

6.9 CONTROL DEVICE REQUIREMENTS

6.9.1 Closed-Vent System

Comment: One commenter (F-91-CESP-00011) notes that the term "closed-vent system" is defined in the preamble and requests that this definition be added to § 260.10.

Response: For the final subpart CC standards, the terms specifically applicable to the subpart CC standards have been removed from the general RCRA definitions under § 260.10 and placed directly in the subpart CC standards. In addition, the terms defined under the subpart AA standards (§ 264.1031) but also used in the subpart CC standards such as "closed-vent system" have been cross-referenced.

Comment: Several commenters requested clarification as to how the requirement for a closed-vent system under the subpart CC standards relates to the requirements under the subpart AA and BB standards. One commenter (F-91-CESP-00011) states that the requirements of the subpart AA standards already apply to many closed-vent systems while the proposed subpart CC standards appear to apply to others. The commenter suggests that the EPA clarify what types of closed-vent systems would be subject to which standard. Further, the commenter suggests that the EPA consider how systems covered by more than one standard are regulated (i.e., are they required to meet both standards or the more stringent of the two). A second commenter (F-91-CESP-00062) states that the subpart BB requirements must be applied to the pipes, ductwork, valves, fans, housings, etc., to ensure that they are producing no detectable organic emissions. As such, the commenter believes that proposed closed-vent requirements under the subpart CC standards are redundant, and the rule should be revised to reference requirements in subpart BB standards.

Response: Organic emissions from process vents for TSDF distillation, fractionation, evaporation, solvent extraction, air stripping, and steam stripping waste operations are regulated under the subpart AA standards in 40 CFR parts 264 and 265. The standards require that certain process vents on these treatment units cannot be open directly to the atmosphere but instead must be connected to a control device. Under the subpart CC standards, certain TSDF tanks, surface impoundments, and container treatment operations must be covered and vented to a control device. Both the subparts AA and CC standards require that the ducting used to route the organic vapors to the control device be designed to operate with no detectable organic emissions as determined by Method 21. In other words, the requirements are identical.

Organic emissions resulting from leaks associated with certain types of TSDF process equipment are regulated under the subpart BB standards in 40 CFR parts 264 and 265. Applicability of these requirements is determined by the organic content of the hazardous waste handled by the process equipment. The subpart BB standards do not apply to a closed-vent system with control device that is used to route organic vapors from a covered TSDF tank, surface impoundment, or container treatment operation in accordance with requirements under the subpart CC standards.

Comment: One commenter (F-91-CESP-00010) states that the requirement for vent/control systems to be designed to operate with no detectable organic emissions may be misconstrued during enforcement inspections to mean that any detection of emissions constitutes noncompliance. The commenter notes that the monitoring and repair requirements of §§ 264.1088 and 265.1089 assume that unanticipated leaks are possible. The commenter requests that the requirement to be "designed to operate with no detectable organic emissions" be clarified as a design requirement only.

Response: As was explained in section 6.4.2 regarding the no detectable organic emissions requirement for tank covers, the EPA does not believe any clarification is needed for this requirement for closed-vent systems. The records required by §§ 264.1089 and 265.1090 are designed to demonstrate compliance with the control requirements of the standards. Records of the Method 21 leak detection monitoring conducted in accordance with § 264.1088 or § 265.1089 show that the "no detectable organic emissions" design requirement is being met and that the closed-vent system is being maintained so that "no detectable organic emissions" are being achieved.

In addition, the recordkeeping requirements of the proposed standards have been revised to add records of any leaks detected and repairs of leaks. Leaks for which repair attempts are initiated within 5 days and repairs are completed within 15 days are not violations of the standards. Consequently, a leak that is detected during an enforcement inspection does not constitute noncompliance if repair attempts are started within 5 days and the repair is completed within 15 days.

<u>Comment</u>: One commenter (F-91-CESP-00032) recommends that if a closed-vent system is maintained under negative pressure at all times when a unit is in operation, then the monitoring of such a closed-vent system should not be required. The commenter notes that the negative pressure will ensure that all emissions are routed to a control device. According to the commenter, the EPA has included a similar provision in its NESHAP proposed rule for fugitive emissions control.

<u>Response</u>: The EPA has included in the final subpart CC standards the exemption for closed-vent systems "in vacuum service" included in the benzene waste operations NESHAP (40 CFR 61 subpart FF). The term "in vacuum service" means that the closed-vent system is operating at an internal pressure that is at least 5 kPa below ambient pressure. The EPA has concluded that it is unnecessary to cover equipment (e.g., pumps, valves, compressors, and closed-vent systems) "in vacuum service" because such equipment has little if any potential for organic emissions.

6.9.2 <u>Control Device</u>

<u>Comment</u>: One commenter (F-91-CESP-00062) states that the proposed subpart CC standards allow up to 5 percent of the organic emission in the gas stream to be emitted from the control device. The commenter submits that this amount could easily be above the "no detectable organic emissions" requirement of the system itself and requests clarification that the control device effluent is not included in the "no detectable organic emissions" requirement.

<u>Response</u>: The subpart CC standards require that the control device operate at conditions that reduce the organics in the controlled vapor stream by at least 95 percent by weight. The requirement for "no detectable organic emissions" does not apply to the exhaust gas stack or vent on the control device. However,

the requirement for "no detectable organic emissions" does apply to other openings on the control device such as access hatches.

Comment: One commenter (F-91-CESP-00060) states that the EPA's proposed standard of 95 percent reduction in organic emissions from waste management units is both achievable and reasonable assuming that the proposed 95 percent reduction standard refers to percentage reduction from uncontrolled emission levels. Two commenters (F-91-CESP-00026, 00041) submit that the proposed minimum of 95 percent efficiency for control devices may not be attainable in all cases. The commenters note that some type of activated carbon system will be the control device chosen for most operations. For high- and medium-organic loadings, the commenters believe that these systems can achieve 95 percent or better removal efficiency. However, under low-organic loadings, the commenters believe that it may be impossible for an activated carbon system to meet the 95 percent removal efficiency. The commenters request that an alternative control device outlet mass emission level be included in the rule.

Response: When a closed-vent system and control device is required to comply with subpart CC standards, the control device must reduce the quantity of organics in the controlled vapor stream by at least 95 percent by weight. Therefore the 95 percent reduction is the efficiency of the control device in removing or destroying the organics in the gas stream entering the control device.

Emission control technologies applicable to the organic vapors emitted by tanks, surface impoundments, and containers include carbon adsorbers, condensers, flares, thermal afterburners, incinerators, and scrubbers. The emission reduction potentially achievable by each control technology depends on the physical parameters of the stream vented to the control device and the design and operation of the control device. For example, the efficiency of a condenser is dependent on the physical/chemical properties of the organics being condensed, the organic concentration in the gas stream, and the operating temperature of the condenser. Extensive performance testing of each of the applicable control technologies under a range of conditions has demonstrated that 95 percent emission reduction is achievable for any organic concentration if a properly designed control device is applied.

Comment: Several commenters (F-91-CESP-00062, 00069, 00077) request that the EPA revise the subpart CC standards to be consistent with the control device requirements specified in the subpart AA standards. One commenter (f-91-CESP-00062) claims that requiring 95 percent reduction for each control device is unnecessary and overly restrictive. According to the commenter, requiring an average emission reduction of 95 percent for the facility, similar to the requirement of subpart AA, would allow the owner or operator the option of controlling some emission sources by more than 95 percent and other emission sources by less than 95 percent. This would provide the owner or operator the increased flexibility to devise a minimum cost control strategy that would achieve the same emission and health risk reductions as would be achieved by the proposed standards. One commenter (F-91-CESP-00062) requests that the rule reference conditions in § 264.1033(b), which would make the rule consistent with subpart AA requirements for efficiency of control devices. The commenter notes that this would allow control devices unable to meet 95 percent efficiency requirements, with the exception of flares and combustion devices, to be able to comply with achievable efficiency requirements. A third commenter (F-91-CESP-00069) requests that the EPA develop alternative facility-wide emission cutoffs as established in the subpart AA standards.

Response: Under the subpart AA standards, control devices are allowed to operate at efficiencies less than 95 percent if the total organic emissions from all affected process vents at a facility are less than 3 lb/hr and 3.1 ton/year. These facility-wide emission rate limits are based on a health risk analysis of all TSDF nationwide with process vents affected by the subpart AA standards (approximately 450 facilities). This health risk analysis was used to identify the emission rate limit providing an adequate degree of protection of human health. Control devices are allowed to operate at efficiencies less than 95 percent under the subpart AA standards because of health risk considerations and not because of low inlet concentrations as one commenter suggests.

The subpart AA standards apply to only one type of emission source at TSDF (i.e., process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or steam or air stripping operations). There are only a small number of process vents (typically one to three) per TSDF. Therefore, the calculation of facility-wide emission rates for these emission sources is relatively simple and easy to document.

In contrast, implementation of the subpart CC standards at a particular TSDF may require that air emission controls be applied to many waste management units with different emission mechanisms. For example, some provisions of the subpart CC standards apply to very large area sources such as surface impoundments. Other provisions of the rule apply to smaller emission sources, such as drums, from which most emissions would occur during waste loading and unloading or from vapor leaks in the covers. Because of the different types of emission sources and emission mechanisms, various types of air emission control equipment are used to comply with the standards. Some of the control equipment (e.g., carbon adsorbers or incinerators) capture or destroy organic emissions, while some (e.g., covers or lids) suppress organic emissions, potentially transferring the emissions to downstream waste management processes. Consequently, it is not possible for the EPA to calculate the emissions and to ensure that real emission reductions are being achieved because of the potential for transferring emissions from one affected source to another. Therefore, a "facility bubble" is not allowed by the subpart CC standards. Thus, there is no basis for allowing a control device under the subpart CC standards to operate at an efficiency less than 95 percent.

The EPA does not believe that the subpart CC requirements are unreasonably burdensome or will result in over control. The nationwide risk analysis performed in support of the subpart CC standards indicates that a 95 percent emission reduction nationwide is necessary to protect human health and the environment. In fact, for some facilities, more stringent control may be needed to lower the residual risk after implementation of the subpart CC standards to a level within the range of other promulgated RCRA rulemakings. The EPA is continuing to evaluate the waste management practices and the individual chemical compounds composing the organic emissions at these TSDF to determine if other actions are necessary to meet the health-based goals of RCRA section 3004(n).

Finally, the subpart CC standards do not require that each tank, surface impoundment and container that is vented to a control device be vented to a separate control device dedicated to only that particular unit. All of the tanks, surface impoundments, and containers that are vented to a control device could be vented to a single control device that achieves at least a 95 percent emission reduction. Therefore, the facility owner or operator does have some flexibility in devising a control strategy for affected sources. Also, the rule requires that the control device must achieve a minimum 95 percent emission reduction. If an enclosed combustion device such as a thermal incinerator is used, greater than 99 percent emission reduction should be achieved. Generally, other types of control devices will not achieve the control efficiency of an incinerator, but in most cases better than 95 percent should be achieved with a well-designed and well-maintained control device.

Comment: One commenter (F-91-CESP-00076) notes that when the control device selected is an incinerator that meets the requirements of parts 264 and 265, subpart O (incinerators), the unit must meet a minimum destruction and removal efficiency of 99.99 percent for each principal organic hazardous constituent. According to the commenter, incineration may be the only practical option for treatment, so that when the incinerator is "down" for brief periods of maintenance and repair, a facility may have no alternative control other than construction of a backup incinerator or the use of pressurized tanks for storing emissions until the main incinerator is again "up" and operating. The commenter submits that both of these alternatives are extremely costly and, in addition, the use of pressurized tanks as an alternative increases the potential of a release during maintenance and prohibits sampling for waste analysis. The commenter proposes that the requirements for control device efficiency be maintained at a minimum level of 95 percent but that the determination of efficiency be calculated on an annual basis. The commenter also proposes that the requirement that hazardous waste not be placed in tanks when the control device is not operating be replaced with the requirement for 95 percent overall annual control device efficiency.

<u>Response</u>: Determining the efficiency of a control device on an annual average basis would greatly increase the complexity and cost of determining compliance with the standards while achieving no net environmental benefit. An annual average control efficiency would have to be based on weighted averages of emission rates while the control device is operating and when it is down. This determination would require either continuous monitoring of emissions or engineering calculations of emissions for each waste stream managed as a function of operating conditions. The calculations and recordkeeping would be particularly burdensome for facilities venting emissions from several waste management units to a single control device. Therefore, the control device efficiency requirement is being promulgated as proposed. Similarly, the requirement that hazardous waste not be placed in tanks when the control device is not operating is also being promulgated as proposed.

<u>Comment</u>: One commenter (F-91-CESP-00046) notes that, according to the proposal preamble, an existing boiler or process heater can be used for organic vapor destruction. However,

according to the commenter, the discussion does not indicate whether such uses of boilers or process heaters will require that the appropriate regulatory authorities be notified. The commenter requests that the EPA expand this discussion to indicate whether the appropriate regulatory authorities must be notified of the destruction of organics in boilers and process heaters. The commenter also requests that the EPA describe in detail the types of information that must be supplied in such a notification, if required, as well as the format of the notification.

Two commenters (F-91-CESP-00010, 00028) request guidance as to how the control devices that may be installed to meet the proposed rule will be regulated by existing RCRA standards and whether the use of an existing boiler or industrial furnace for emissions destruction can be achieved through a modification of an existing air permit. As examples of control devices that could be installed, the first of these commenters presents the thermal vapor incinerators, catalytic incinerators, flares, boilers, and process heaters mentioned by the EPA as acceptable destruction devices designed to control organic vapor emissions from TSDF. The commenter questions how or if 40 CFR 264 and 265, subpart O, 265 subparts P and Q, and 266 subpart H will apply to these units in addition to subparts AA through CC of 40 CFR 264 and 265. Likewise, the commenter notes that discussions on regeneration of carbon adsorption systems do not clarify the applicability of subpart X. According to the commenter, should the TSDF unit standards apply to any of these control devices, 40 CFR 270 requires that they be permitted prior to installation. The commenter requests clarification for State agencies to determine their role in permitting these control devices, and for TSDF owners and operators to determine the precise design, construction, monitoring, and operation of these devices to develop design details. The second commenter recommends that a combustion unit used as an air emission control device for the destruction of organic constituents not be required to be a RCRA-permitted unit.

Response: Regarding the use of an existing boiler or process heater as an air pollution control device, subpart CC does not require notification to regulatory authorities for such use. To satisfy the requirements of subpart CC, records must be maintained pursuant to §§ 264.1089(a)(4) or 265.1090(a)(4) in the facility operating record documenting the design performance level of the boiler or process heater. It should be noted that, if an incinerator, boiler, or industrial furnace that is used as a hazardous waste treatment unit is also used as a control device, then the unit must be operated in accordance with the applicable RCRA requirements (e.g., 40 CFR 264, subpart O for a hazardous waste incinerator or 40 CFR part 266 for a boiler or industrial furnace).

Venting emissions to an existing boiler or industrial furnace that is permitted as an air emission source will result in an increase in emissions and will constitute a change in the permit conditions for the unit. A modification of the existing air permit will be required.

The organic vapors emitted from hazardous waste are not hazardous wastes. Therefore, the control devices installed specifically to comply with subpart CC organic vapor control requirements are not hazardous waste management units and are not required to be permitted under RCRA. Thus, the requirements of 40 CFR 264 and 265, subpart O, 265 subparts P and Q, and 266 subpart H do not apply to control devices.

Regarding the applicability of subparts AA through CC of 40 CFR 264 and 265 to these units, control devices must be designed and operated pursuant to the requirements of §§ 264.1087 or 265.1088. Also by reference, the owner or operator of a control device used to comply with subpart CC must demonstrate control device performance as required by §§ 264.1034 and 264.1035 or by §§ 265.1034 and 265.1035 of subpart AA and monitor control device operating parameters pursuant to §§ 264.1033 or 265.1033 of subpart AA.

Comment: One commenter (F-91-CESP-00009) notes that, with respect to combustion devices, § 265.1087 requires, by reference to § 265.1033, adjustment of emission levels to 3 percent oxygen on a dry basis. According to the commenter, the boilers and industrial furnaces (BIF) regulations published February 21, 1991 require adjustment to 7 percent oxygen. The commenter believes that this disparity will result in confusion for those TSDF opting to control tank emissions by venting to boilers complying with the BIF rules. The commenter recommends that a single oxygen correction factor be chosen.

Response: Owners and operators that must comply with the BIF rules for emissions of toxic organic compounds, toxic metals, hydrogen chloride, chlorine gas, and particulate matter from boilers and industrial furnaces burning hazardous waste must correct emissions to 7 percent oxygen on a dry basis. Owners and operators of enclosed combustion devices used as control devices pursuant to subpart CC should correct emissions to 3 percent oxygen on a dry basis. Several Clean Air Act rules require that emissions be corrected to 3 percent oxygen on a dry basis. A correction factor of 3 percent was chosen for the TSDF organic emission rules to maintain consistency with similar Clean Air Act air emission rules. The requirements of the BIF rules and the Clean Air Act air emission rules do not overlap, therefore there are no inconsistent requirements.

6.9.3 Changeout of Small Carbon Canisters

Comment: One commenter (F-91-CESP-00062) notes that the replacement interval of small carbon canisters is to be determined using worst-case conditions, based on the assumption that worst-case conditions occur 100 percent of the time. According to the commenter, there are situations where worst-case conditions may occur as little as 20 percent of the time. As a result of the worst-case assumption, the commenter submits that changeout of the control device will be required long before the control device experiences breakthrough, which will not be economically beneficial. The commenter proposes that nonregenerative carbon adsorption systems that are used on individual tanks and low-volume vapor streams be allowed to periodically or continually monitor the downstream vapor vent line against a volumetric organic concentration limit for determining carbon changeout if it would be more economically beneficial. Immediate shutdown of the process would occur when breakthrough occurred and would not restart until changeout had occurred.

Response: Owners and operators using a carbon adsorption system such as a carbon canister that does not regenerate the carbon bed directly onsite in the control device must comply with § 264.1033(h). Section 264.1033(h) specifies two procedures for determining when to replace the existing carbon in the control device with fresh carbon. The first of these procedures requires monitoring the concentration level of organic compounds in the exhaust vent stream from the carbon adsorption system on a regular schedule, and replacing the existing carbon with fresh carbon immediately when carbon breakthrough is indicated. The monitoring frequency must be daily or at an interval no greater than 20 percent of the time required to consume the total carbon working capacity. Therefore the standards do allow for monitoring the organic concentration in the exhaust from the carbon canister to determine when carbon changeout is needed.

6.9.4 Demonstration of Compliance

Comment: One commenter (F-91-CESP-00012) supports the concept of implementing general design criteria consistent with the Clean Air Act.

Response: The general design criteria for control devices that have also been included in regulations promulgated under Clean Air Act authority are being promulgated in subpart CC as proposed. This is an example of how the EPA is seeking to provide for consistent implementation of potentially parallel Clean Air Act and RCRA requirements affecting similar emission sources.

Comment: One commenter (F-91-CESP-00023) remarks that the requirement for owners or operators to certify that control devices are designed to operate at the performance level is unnecessary.

<u>Response</u>: The EPA believes that the owner or operator certification of control device performance is a minimal requirement for demonstrating compliance with the standards. It is intended to ensure that sound engineering practice is followed in designing and installing the control device. Consistent with RCRA policy, the owner or operator assumes accountability for the control device performance.

<u>Comment</u>: One commenter (F-91-CESP-00062) requests that the rule specify how background levels are established to determine "no detectable organic emissions." The commenter believes that the rule also needs to be clarified as to when and how background levels are established (i.e., before or after the abatement equipment is installed).

<u>Response</u>: The standards require that each closed-vent system with control device be monitored in accordance with the procedure specified in subpart AA of 40 CFR parts 264 and 265. Subpart AA requires that a closed-vent system be monitored for leaks with Method 21 initially upon installation of the equipment, annually, and at other times as requested by the Regional Administrator. After the initial leak detection monitoring, the owner or operator is not required to monitor those closed-vent system components which continuously operate in vacuum service or those closed-vent system joints, seams, or connections that are permanently or semi-permanently sealed (e.g., a welded joint between two sections of metal pipe or a bolted and gasketed pipe flange).

For a closed-vent system with control device to be in compliance with the standards the monitoring must indicate "no detectable organic emissions." According to Method 21 procedures for Type II-"No Detectable Emission" monitoring (paragraph 4.3.2 of Method 21), the local ambient concentration around each source must be determined as a part of the no detectable organic emission monitoring. Therefore, the background levels must be established each time the leak detection monitoring is conducted.

Paragraph 4.3.2 of Method 21 also specifies how the local ambient concentration is to be determined. The probe inlet should be moved randomly upwind and downwind at a distance 1 to 2 meters from the source. If an interference exists with this determination due to a nearby emission or leak, the local ambient concentration may be determined at distances closer to the source, but in no case shall the distance be less than 25 centimeters.

Comment: One commenter (F-91-CESP-00062) submits that performance testing of a carbon adsorber requires three 1-hour tests. The commenter notes that fulfilling this requirement in one of the commenter's facilities would result in adding 11,000 gallons to a 4,500-gallon blend tank, thus overfilling the tank. The commenter feels the test method is appropriate for tanks 15,000 gallons or larger and proposes alternate test methods for small tank operators.

Response: The subpart CC standards provide two methods by which the owner or operator can determine the performance of a control device. One method is by performance testing. The alternative method is by using engineering calculations in accordance with the requirements specified in the rule.

6.10 MANAGEMENT OF SPENT ACTIVATED CARBON

6.10.1 TSDF Owner/Operator Certification

Comment: Seven commenters (F-91-CESP-00011, 00044, 00045, 00048, 00060, 00069, 00077) disagree with the EPA's proposal that the TSDF owner or operator certify that carbon is "regenerated or reactivated by a process that minimizes emissions of organics to the atmosphere" for spent carbon that is regenerated or reactivated off site. The commenters submit that offsite regeneration processes are not under any control by the TSDF owner/operator of the carbon adsorption system generating the spent activated carbon.

One commenter (F-91-CESP-00077) believes that if the EPA considers standards for carbon regeneration and reactivation to be warranted, such requirements may only be imposed through due process rulemaking. The commenter considers pseudo-enforcement via certification by users of such services to be entirely outside the authority and authorized procedures of the the EPA.

Commenter F-91-CESP-00045 notes that under existing RCRA provisions, generators of spent carbon from carbon adsorption systems will be held ultimately responsible for the proper disposal of such waste. The commenter feels that a certification requirement would add nothing to these existing provisions and submits that all that is needed is a disposal requirement.

Two commenters (F-91-CESP-00060, 00077) submit that spent carbon can be sent to a subpart O incinerator, but that only the incinerator operator can certify that the incineration process in fact "achieves the performance standards in subpart O" at the time the carbon is incinerated. One commenter (F-91-CESP-00077) notes that it is the EPA's sole authority (which by law it can only delegate to a State with an authorized program) to establish, implement, and enforce regulations under RCRA. According to the commenter, the responsibility and burden of complying and certifying compliance with regulations can only be assumed by the facility or operations to which it applies and cannot be diverted to a third party.

The following alternatives to the proposed certification requirement were suggested by the commenters. One commenter (F-91-CESP-00048) suggests that standards for spent carbon reactivation/regeneration be developed and the carbon generator then be required to maintain records that the material was sent to a facility complying with the requirements. Another commenter (F-91-CESP-00069) states that owners/operators could be required to document that they send their carbon to facilities which certify that they meet the applicable requirements. A third commenter (F-91-CESP-00044) suggests that it may be possible for the TSDF owner or operator to make a general certification that the spent carbon is being sent to a facility that uses control devices or that is regulated under 40 CFR subpart O. A fourth commenter (F-91-CESP-00060) suggests that the requirement of paragraph (2) of §§ 264.1086(e) and 265.1087(e) should require that the carbon be "incinerated by a unit regulated under subpart O of this part."

Response: As proposed, the subpart CC standards would have required an owner or operator using a carbon adsorption system to comply with the control requirements of subpart CC to certify that all carbon removed from the carbon adsorption system is either: (1) regenerated or reactivated by a process that minimizes emissions of organics to the atmosphere, or (2) incinerated by a process that achieves the performance standards specified in subpart O of part 264. The certification requirements were included in the proposal to ensure that organic emissions would not be moved from one site to another through uncontrolled regeneration or reactivation of the spent carbon from a control device.

In response to comments and as a result of the promulgation of the BIF rules (56 FR 7200, Feb. 21, 1991), the proposed requirements for spent carbon management have been revised as follows. The requirement for a certification by the TSDF owner or operator has been changed to a requirement that the owner or operator document and maintain records that the spent carbon is managed in accordance with the requirements of §§ 264.1033(m) or 265.1033(l) as appropriate. Sections 264.1033(m) and 265.1033(l) have been revised to require that all carbon removed from the carbon adsorption system be managed in one of the following manners: (1) regenerated or reactivated in a thermal treatment unit that is permitted under 40 CFR 264 subpart X; (2) incinerated by a process that is permitted under 40 CFR 264 subpart O; or (3) burned in a boiler or industrial furnace that is permitted under 40 CFR 266 subpart H.

At the time the proposal package was prepared, organic air emissions from offsite spent carbon regeneration and reactivation operations were not regulated. The BIF rules require that carbon regeneration/reactivation units be regulated as thermal treatment units under the interim status standards of part 265, subpart P, and the permit standards of part 264, subpart X. Also because of promulgation of the BIF rules, the option has been added allowing the owner or operator to burn carbon removed from a carbon adsorption system in a boiler or industrial furnace that is permitted under 40 CFR 266 subpart H. The EPA believes that the BIF regulations pertaining to carbon regeneration/reactivation units in combination with the revised requirements of the TSDF organic air emission rules will ensure proper handling of the TSDF spent carbon.

<u>Comment</u>: One commenter (F-91-CESP-00060) notes that §§ 264.1086(e) and 265.1087(e) do not specify to whom the required certification should be sent. The commenter suggests that the EPA should simply require that the facility maintain documentation that the spent carbon was sent to an offsite facility meeting the requirements of §§ 264.1086(e)(1) or (2), or managed on site so as to meet those requirements.

<u>Response</u>: As is explained in the previous response, the certification requirement has been changed to a documentation and recordkeeping requirement.

6.10.2 <u>Spent Carbon Management Alternatives</u>

<u>Comment</u>: Three commenters (F-91-CESP-00019, 00060, 00077) state that spent carbon should be clearly identified as a hazardous waste. Then spent carbon regeneration, reactivation, fuel substitution, and incineration activities would be directly controlled by the requirements of these air emission rules (commenters F-91-CESP-00019, 00077) or by separate standards specifying the type of emission control equipment that a carbon regeneration/reactivation facility must use to minimize air emissions (commenter F-91-CESP-00060).

<u>Response</u>: Spent carbon, with adsorbed organics, used to control air emissions from hazardous waste treatment, storage, or disposal is not necessarily a hazardous waste. It is a hazardous waste if it exhibits a characteristic, or if it was used to capture emissions from treating listed hazardous waste. However, subpart CC, as promulgated, specifically identifies the

acceptable methods for managing spent carbon. Spent carbon must be either regenerated or reactivated in a thermal treatment unit that is permitted under subpart X of part 264, incinerated in a process that is permitted under subpart O of part 264, or burned in a boiler or industrial furnace that is permitted under subpart H of 40 CFR 266.

<u>Comment:</u> One commenter (F-91-CESP-00033) supports the concept that activated carbon should not be used merely to transport the emissions of organics to another location. However, the commenter believes that the control of carbon adsorption should not have higher standards or be more burdensome than other control device technologies. The commenter suggests requiring certification that the use of carbon adsorption results in a removal from the atmosphere of 95 percent of the emissions of organics that result from the hazardous waste having greater than 500 ppmw volatile organic content. As an example, the commenter notes that percent of organics removal from the atmosphere could be determined by a combination of the carbon removal efficiency and the destruction efficiency of the unit used to incinerate the carbon.

<u>Response</u>: First it should be noted that, as discussed previously in this BID, the proposed 500-ppmw action level referred to by the commenter has been changed to a mass-weighted average volatile organic concentration of 100 ppmw in the final subpart CC standards. As proposed and promulgated, §§ 264.1087(b)(2) and 265.1088(b)(2) require that the control device shall operate at conditions that reduce the organics in the gas stream vented to it by at least 95 percent by weight. For control devices other than carbon adsorption, reducing the organics in the gas stream by at least 95 percent will result in a corresponding reduction in the quantity of organics emitted to the atmosphere. However for carbon there is the potential that the adsorbed organics could still be emitted to the atmosphere in the carbon reactivation/regeneration or disposal processes. Therefore, as the commenter suggests, §§ 264.1087(c)(3) and

265.1088(c)(3) require that the determination of carbon adsorption system efficiency be based on the total quantity of organics vented to the atmosphere from all carbon adsorption system equipment that is used for organic adsorption, organic desorption or carbon regeneration, organic recovery, and carbon disposal.

Comment: According to one commenter (F-91-CESP-00007) most carbon from nonhazardous applications is shipped off site for regeneration. The commenter notes that spent carbon from TSDF is hazardous waste and raises the question of whether carbon regenerators mix this carbon with their nonhazardous variety for regeneration. The commenter believes that regeneration will require manifesting of spent TSDF carbon and payment of hazardous waste fees unless the EPA can develop an automatic delisting procedure.

Response: Carbon with adsorbed organics, having been used to control air emissions from hazardous waste treatment, storage, or disposal, is not necessarily a hazardous waste. The spent carbon is a hazardous waste if it exhibits a hazardous characteristic or if used to treat listed wastes. However, under the BIF rules, regeneration or reactivation of carbon used to control air emissions from hazardous waste treatment, storage, or disposal facilities must be performed in a RCRA thermal treatment unit. Hence carbon used to control air emissions from hazardous waste treatment, storage, or disposal will require a manifest to ensure that it is regenerated or reactivated in a unit subject to subtitle C regulation. The subpart CC standards further provide that regeneration must occur in either a subpart X unit or in a BIF subject to the standards in subpart H of part 266.

Comment: Six commenters (F-91-CESP-00045, 00047, 00048, 00056, 00060, 00067) request that the EPA specifically authorize the burning of spent carbon in a BIF pursuant to the requirements of subpart H. One commenter (F-91-CESP-00045) notes that the BIF rule requires the same level of control of organic emissions as subpart O. Both subpart O and the BIF rule require the attainment of a destruction and removal efficiency (DRE) of 99.99 percent for each principal hazardous constituent designated for each waste feed. This commenter further notes that, unlike incinerators that would merely destroy the spent carbon, BIF units would utilize the spent carbon as a substitute for other fuel sources. According to another commenter (F-91-CESP-00047), spent carbon exhibits a high heating value per pound and has proven to be a suitable material for inclusion into waste-derived fuel.

Response: As has been noted in response to a comment in section 6.10.1 of this BID, at the time the proposal package was prepared, organic air emissions from offsite spent carbon regeneration and reactivation operations were not regulated. However, as the commenters submit, the BIF rules regulate carbon regeneration and reactivation as thermal treatment under subparts P and X and require the same level of control of organic emissions as the subpart O requirements. Consequently, the promulgated standards have been revised to specifically allow carbon removed from a carbon adsorption system to be regenerated in a unit that complies with subpart X of part 264, a BIF subject to subpart H of part 266, or incinerated in a part 264 incinerator.

6.11 INSPECTION/MONITORING REQUIREMENTS

Comment: Ten comments were received on the weekly visual inspection requirements. Seven commenters (F-91-CESP-00023, 00029, 00061, 00072, 00076, 00077, 00078) agree with the proposed weekly inspection requirements. The commenters state that the weekly inspections along with the existing and proposed requirements for tight covers should be adequate to ensure compliance with the performance standard [Note: Many of these commenters state this position in the context that weekly visual inspections are adequate in lieu of semiannual leak monitoring - refer to comments below.] In contrast, three commenters (F-91-CESP-00036, 00046, 00055) do not agree with the weekly inspection requirements. Two of these commenters (F-91-CESP-00036, 00046) address their comment to containers handling radioactive mixed wastes and cite health and safety concerns for the inspection personnel. One of these commenters (F-91-CESP-00036) states that the containers are stored in a "dense pack" to reduce radiation exposure from the surface of the drums. Disassembling the stacks of drums would expose workers to radiation. The third commenter (F-91-CESP-00055) also stores containers stacked in groups in accordance with State regulatory agency drum configuration requirements and cites health and environmental concerns from moving the drums as well as reduced storage capacity.

Response: The proposed inspection requirements called for the visual inspection of each cover initially upon installation of the cover and thereafter at least once a week. In response to commenters' concerns with the weekly inspection requirements, the EPA evaluated the effectiveness of less frequent visual inspections and determined that semiannual visual inspections should be sufficient to ensure that the covers are being properly used and adequately maintained. In addition, a cover is not required to be inspected if it has remained in the closed, sealed position continuously for the entire time since the previous inspection. Also, the subpart CC standards do not add any visual inspection requirements beyond the weekly visual inspections of container storage areas required by subpart I for a container that has a design capacity less than or equal to 0.46 m^3 (approximately 119 gallons). Regarding containers handling radioactive mixed waste, as explained in section 6.1.3 of this chapter, the applicability of the subpart CC standards to waste management units handling radioactive mixed wastes is being temporarily deferred.

For clarity in the final standards, the visual inspection requirements have been amplified. A visual inspection requires viewing the entire cover surface and each cover opening in a closed, sealed position for evidence of any defect that may affect the ability of the cover or cover opening to continue to operate with no detectable organic emissions. A visible hole, gap, tear, or split in the cover surface or a cover opening is defined as a leak, which must be repaired in accordance with the requirements of subpart CC.

Comment: Thirteen commenters (F-91-CESP-00010, 00021, 00023, 00029, 00034, 00038, 00044, 00061, 00069, 00072, 00076, 00077, 00078) do not believe initial or semiannual monitoring of containers is necessary. An additional four commenters (F-91-CESP-00046, 00047, 00054, 00056) disagree with the requirement for semiannual monitoring following the initial leak check. The commenters present a variety of reasons for disagreeing with the monitoring requirements, including the following: (1) monitoring would be extremely burdensome and costly and would provide little emissions reduction; (2) containers generally are in use for a short period of time; (3) 90-day accumulation containers would not be on site for semiannual monitoring; (4) many containers are leased and subject to ownership and maintenance requirements of the lessor; (5) containers are already adequately controlled through existing RCRA and DOT requirements; (6) after sampling, containers are sealed and placed in storage where the waste is quiescent and the cover is not removed; (7) moving containers to monitor the covers will increase the likelihood of emissions due to accidental spills; and (8) extensive work would be required to determine which containers were due for semiannual monitoring and to locate the containers. One commenter (F-91-CESP-00046) states that it would be more reasonable to check for tight seals on hazardous waste containers initially, after the cover has been opened to add or remove wastes, and prior to removal from the unit for subsequent treatment or disposal.

Response: The inspection and monitoring requirements in the final subpart CC standards have been revised for certain types of containers. Semiannual monitoring of covers is not required under the final rules for a container with design capacity less than or equal to 0.46 m^3 (approximately 119 gallons) that meets all applicable DOT regulations on packaging hazardous waste for transport under 40 CFR part 178. The final subpart CC standards also exempt from the monitoring requirements a container that is attached to or forms a part of any truck, trailer, or railcar and that has been tested for organic vapor tightness within the preceding 12 months in accordance with the pressure test procedures specified in Method 27 of 40 CFR part 60, appendix A. Method 27 was developed for the determination of vapor tightness of a gasoline delivery tank and involves the measurement of the ability of a container to maintain pressure or a vacuum for a specified period of time. In addition, an enclosure used to control air emissions from open treatment containers is exempt from the semiannual cover monitoring requirements if it is operated in accordance with the requirements of subpart CC. Finally, a cover that has continuously remained in the closed, sealed position for the entire period since the last time the cover was monitored is not required to be monitored.

If a container is used that is attached to or forms a part of any truck, trailer, or railcar and has not been tested for organic vapor tightness within the preceding 12 months in accordance with Method 27 procedures, the owner or operator must show that the container cover is vapor-leak tight and maintain records to this effect. Demonstration that a cover is vapor-leak tight should be by Method 21 leak detection monitoring when waste is first placed in the container.

Comment: Three commenters (F-91-CESP-00018, 00059, 00060) believe that monitoring of the drums upon receipt at the storage or treatment facility is unnecessary, provided that the existing and proposed requirements for containers are followed and that the containers remain unopened. The commenters believe that the weekly inspections will reveal the condition of the containers. One commenter (F-91-CESP-00060) notes that, unlike tanks, potential for emissions from containers is physically limited since containers are nonvented systems, and therefore requests dropping the semiannual monitoring requirement or changing it to an annual basis. The second commenter (F-91-CESP-00059) states that monitoring container cover connections and seals on receipt of the container by a TSDF that did not generate the waste is repetitive since monitoring is required initially upon installation of the cover. The commenter believes that monitoring should not be required of facilities that do not open containers at any time. The third commenter (F-91-CESP-00018) does not object to the monitoring of drums in storage for 6 months.

<u>Response</u>: A drum [a container having a design capacity less than or equal to 0.46 m^3 (approximately 119 gallons)] that is used for hazardous waste transport must meet DOT packaging specifications under 49 CFR part 178. As is explained in the previous response, neither initial nor semiannual monitoring is required by the final standards for a drum meeting DOT packaging specifications under 49 CFR part 178. Also as is explained in the previous response, a cover opening that has continuously remained in the closed, sealed position for the entire period since the cover opening was monitored is not required to be monitored semiannually.

<u>Comment</u>: One commenter (F-91-CESP-00053) questions whether any additional emission reduction, beyond that achieved through the current implementation of § 265.173(a), can be gained by requiring monitoring of the containers at the generator site.

<u>Response</u>: As noted above, the final standards do not require monitoring of a container having a design capacity less than or equal to 0.46 m^3 (approximately 119 gallons) at the generator site if the container meets DOT specifications under 49 CFR part 178.

<u>Comment</u>: Two commenters (F-91-CESP-00069, 00076) request that, if monitoring of containers is required, the monitoring requirements should be consistent with the Clean Air Act rules and specifically the new MACT standards for fugitive emissions.

Response: The commenters are referring to the Federal Register Notice of Agreement on Negotiated Regulation (56 FR 9315). This regulation applies to leaks from equipment such as valves, pumps, compressors, sampling connections, and flanges. The Notice of Agreement on Negotiated Regulation is not relevant to the monitoring of emission control equipment required by the subpart CC standards.

Comment: The EPA received many comments (F-91-CESP-00010, 00038, 00040, 00046, 00069) that, for some units, it would be very difficult and even impossible to comply with the proposed inspection and monitoring requirements. Two commenters (F-91-CESP-00038, 00069) request the addition of allowances for container covers designated as unsafe- or difficult-to-monitor consistent with the subpart BB standards and with the MACT standards for fugitive emissions. One commenter (F-91-CESP-00046) states that many radioactive mixed waste treatment and storage tanks are located in reinforced cement cells that are lined with stainless steel and surrounded with earthen materials. The cells are designed for radiation shielding and to isolate the tanks from the environment. Another commenter (F-91-CESP-00010) submits that tops or covers currently existing or subsequently installed may not be accessible or designed to support the weight of an individual. In addition, the commenter believes that the requirement to monitor during loading of waste in the unit, or, for nonquiescent processes, while the unit is generating emissions, poses additional critical safety concerns for the personnel performing the monitoring. Two of the commenters (F-91-CESP-00040, 00046) request exemptions to the visual inspection requirements when it can be shown that completing the inspections would be prohibitive because of health and safety considerations. One commenter (F-91-CESP-00046) also requests an alternative method for inspecting for leaks on seals and fittings when the affected equipment is located in a closed ventilation system (i.e., a building or cell where all of the air is vented out of a single stack). Another commenter (F-91-CESP-00038) with tanks for which there are no stairs or other means of access to the roof requests that inspection be tied to maintenance events, when scaffolding is in place. A fourth commenter (F-91-CESP-00010) states that the top exists as a part of the tank structure itself and as such must be inspected in accordance with the inspection requirements of subpart J of parts 264 and 265. The commenter requests that any increase in monitoring and inspection of "cover systems" over current RCRA or air rule requirements should be eliminated.

<u>Response</u>: Unsafe-to-monitor and difficult-to-monitor provisions have been added to the monitoring requirements of the subpart CC standards. The provisions are consistent with the provision for unsafe- and difficult-to-monitor valves included in the subpart BB standards. For a cover to be designated as unsafe-to-monitor, the following conditions must apply: (1) the owner or operator determines that the cover is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of the monitoring, and (2) the owner or operator adheres to a written plan that requires monitoring of the cover as frequently as practicable during safe-to-monitor times. For a cover to be designated as difficult-to-monitor, the following conditions must apply: (1) the owner or operator determines that the cover cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface, (2) the cover was in operation before (promulgation date), and (3) the owner or operator follows a written plan that requires monitoring of the cover at least once per calendar year.

For each cover that is designated as unsafe to monitor, the facility operating record must contain an explanation of why the cover is unsafe to monitor and the plan for monitoring the cover. Similarly, for each cover that is designated as difficult to monitor an explanation and planned monitoring schedule must be in the facility operating record.

Concerning the monitoring of radioactive mixed waste treatment and storage tanks, as explained in section 6.1.3 of this chapter, the applicability of the subpart CC standards to waste management units handling radioactive mixed waste is being temporarily deferred.

The subpart CC standards require that each cover connection and seal, with the exceptions discussed previously in this section of the BID, be monitored initially upon installation of the cover and thereafter at least once every 6 months. There are no specifications of operating conditions during the monitoring.

As discussed in section 6.4.2 of this chapter, placing treatment or storage waste management units within a building that is vented to a control device (e.g., locating several open-top tanks or multiple containers in a building for which the entire airspace inside the building is ventilated through a single carbon adsorber) does not comply with the control requirements of the final subpart CC standards. Finally, with respect to monitoring and inspection of "cover systems," the top is a part of the control system and not a part of the tank structure. The inspection requirements of subpart J do not address tops. Therefore, the monitoring and inspection requirements for "cover systems" are not duplicative of the inspection requirements of subpart J.

<u>Comment</u>: Two commenters (F-91-CESP-00036, 00046) request exemptions to the proposed weekly visual inspection requirements when such inspections would endanger worker safety and health.

<u>Response</u>: As has been discussed previously in this section of the BID, the visual inspection requirements have been revised so that weekly inspection of individual covers is not required. Also, a container having a design capacity less than or equal to 0.46 m^3 (approximately 119 gallons) that complies with all applicable DOT regulations on packaging hazardous waste for transport under 49 CFR part 178 is not required to be inspected.

<u>Comment</u>: One commenter (F-91-CESP-00054) requests clarification of "when workers require access." The commenter asks whether access means each time a rag is placed in a

container the lid must be unlatched and latched or is there a time interval, such as throughout the day, that a lid can remain unlatched while workers require access.

Response: First it should be noted that the container standards do not apply to satellite accumulation as provided by § 262.34(c). However, satellite accumulation containers must comply with § 265.173(a), which requires that a container holding hazardous waste must always be closed during storage, except when it is necessary to add or remove waste. Similarly, for containers to which the subpart CC standards are applicable, each cover opening shall be maintained in a closed, sealed position at all times when waste is in the container except when it is necessary to use the opening for waste loading, removal, inspection, or sampling. Therefore, if the container is a satellite accumulation container, the lid is not required to be latched, though the container must be covered if waste is not actually being added or removed. Containers to which the requirements of the subpart CC standards apply must be closed and latched when the opening is not being used for loading, removal, inspection, or sampling.

Comment: One commenter (F-91-CESP-00076) submits that tanks that are buried (to minimize fire and explosion concerns) as well as double-walled tanks should not be required to have a weekly visual inspection. According to the commenter, proposed § 264.1090(b)(1) allows for a 1- to 5-year frequency of inspection for internal tank roof seals. The commenter believes that this frequency of inspection would also be suitable for cover inspections of buried and double-walled tanks, particularly since the secondary containment requirements of proposed §§ 264.193(c)(3) and (e)(3)(iii) require that these tanks be provided with leak detection systems capable of detecting a release within 24 hours.

Response: The subpart CC inspection requirements for underground tanks have been clarified in the final rules. If a tank is buried partially or entirely underground, the owner or operator is required to perform the cover inspection only for those portions of the tank cover and those connections to the tank cover or tank body (e.g., fill ports, access hatches, gauge wells, etc.) that extend to or above the ground surface and can be opened to the atmosphere. As has been discussed previously in this section of the BID, inspection is only required initially and semiannually by the final standards. Also, a cover opening that has continuously remained in the closed, sealed position for the entire period since the last time the cover was visually inspected is not required to be inspected semiannually.

Concerning the covers of double-walled tanks, the covers should be visually inspected in accordance with the subpart CC requirements. The leak detection systems required for tanks must be designed to detect the release of hazardous waste or accumulated liquid (from leaks, spills, or precipitation) rather than vapor releases. The semiannual visual inspection required by §§ 264.1088(b) and 265.1089(f) is intended to identify visible defects in the cover that could release organic vapors to the atmosphere.

Comment: Two commenters (F-91-CESP-00060, 00077) request clarification that the monitoring requirements as proposed in § 264.1087(b)(2) do not apply to tanks constructed with roofs that have been fixed in place with welding. According to the commenter, such tanks do not have a reasonable likelihood of leaking in a manner that already-established inspection and testing procedures would not detect. The commenters believe that imposing the proposed monitoring requirements on fixed-roof tanks would therefore not be warranted for human health or environmental reasons and would be a waste of resources.

Response: The subpart CC standards monitoring requirements apply to cover connections and seals, i.e., the connections and seals on cover openings such as hatches. The joints on fixed roof covers are not required to be monitored.

Comment: One commenter (F-91-CESP-00035) interprets the proposed rule to mean that since fixed roofs on quiescent tanks are an alternative to control equipment, quiescent tanks using these alternatives need not be monitored and inspected and records need not be kept.

Response: To clarify that fixed roofs on quiescent tanks are control equipment, and as such are covered by the monitoring, inspection, and recordkeeping requirements of the subpart CC standards, the final subpart CC standards specify the requirements for the cover (e.g., fixed roof) in one paragraph in each part, i.e., §§ 264.1083(d)(1) and 265.1084(d)(1). Therefore the requirements for a fixed roof vented through a closed-vent system to a control device are identical to the requirements for a fixed roof only.

Comment: One commenter (F-91-CESP-00035) opposes the proposed requirement that all tanks be monitored monthly and testing records and reports be sent to the EPA. The commenter cites monitoring experience using a portable organic vapor analyzer (OVA) to test equipment pursuant to subpart BB. After 4 months, no leaks were found using Method 21 protocol. However, during actual operation, two leaks were noticed by chemical operators. The commenter does not believe that leak detection monitoring is an effective use of engineering resources to reduce emissions from hazardous waste tanks.

Response: Neither the proposed nor the promulgated standards require monthly monitoring of tanks. The subpart CC standards require monitoring of each cover connection and seal initially upon installation of the cover and thereafter at least once every 6 months with the exceptions that have been noted in previous responses in this BID section. Records must be kept in the operating record for a minimum of 3 years. Monitoring results do not have to be reported to the EPA. The EPA believes that the monitoring and recordkeeping requirements of the subpart CC standards are the minimum required to ensure timely detection and repair of organic vapor leaks in tank air emission control equipment.

Comment: Two commenters (F-91-CESP-00011, 00073) request that the EPA coordinate the leak detection monitoring frequency and the action level with those required under subpart BB.

Response: The air emission sources that are common to subparts BB and CC and for which there are leak detection monitoring requirements are closed-vent systems and control devices. Subparts BB and CC are consistent in their requirements that leak detection monitoring be conducted initially and annually thereafter. Regarding the action level, for closed-vent systems with control devices there is not an action level for the leak detection monitoring. Closed-vent systems with control devices used to comply with the RCRA air emission standards are required to operate with no detectable organic emissions when organic vapors are being vented to the control device.

Comment: Two commenters (F-91-CESP-00033, 00047) suggest that the additional inspection and monitoring required under subpart CC will be unduly burdensome and costly.

Response: The requirements for inspection and monitoring under the subpart CC standards are the minimum level needed to ensure compliance with the air emission control requirements for tanks, surface impoundments, and containers. Previous experience with similar inspection and monitoring requirements associated with Clean Air Act standards has shown that the requirements do not create an unreasonable burden.

Comment: Two commenters (F-91-CESP-00033, 00075) state that the inspection and monitoring requirements should be revised so they do not conflict with those under the Clean Air Act. One of the commenters submits, for example, that the requirement for semiannual equipment leak monitoring should be revised to an annual equipment leak monitoring requirement, as in the New Source Performance Standards.

Response: The equipment leak monitoring for identical sources is the same in subpart CC as for Clean Air Act standards covering equipment leaks. As is the case with the subpart CC standards, subpart VV, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, requires closed-vent systems and control devices to be monitored initially and annually thereafter. The semiannual leak monitoring referred to by the commenters is required for covers. Covers are not equipment requiring monitoring under the New Source Performance Standards for equipment leaks.

Comment: One commenter (F-91-CESP-00038) suggests that leak testing of equipment be tied to actual waste volatility and demonstrated performance of equipment components.

Response: The commenter is referring to the leak detection monitoring of each cover connection and seal required by §§ 264.1087 and 265.1088. The monitoring is required initially upon installation of the cover and thereafter at least once every 6 months. Since the requirements of subpart CC are applicable only to tanks, surface impoundments, and containers that accept waste with average volatile organic content greater than or equal to 100 ppm at the point of waste origination, the leak testing of covers is tied to actual waste volatility.

With respect to linking monitoring frequency to equipment performance, equipment performance will be a function of time. Cover connections and seals will degrade over time as the cover is opened and closed, and the seal materials will age and become more likely to leak. Basing leak testing strictly on demonstrated performance would place extra burdens on the owner/operator. Therefore, typical performance and typical degradation have been taken into account in determining the required monitoring frequency.

Comment: Two commenters (F-91-CESP-00010, 00012) agree with the EPA's proposal to extend the repair period for surface impoundments beyond the 15-calendar-day limit until the next time the process that generates the waste is shut down. One commenter (F-91-CESP-00023) requests that the EPA clarify what type of documentation would be necessary to show that delaying the repair would not cause the control equipment to be "significantly less protective of human health and the environment." Another commenter (F-91-CESP-00069) submits that the delay of repair provision for surface impoundments as proposed may be unworkable since the owner or operator must assess whether emissions are "significant" from the leak. The commenter believes that the significance of the leak can only be assessed accurately by monitoring and comparing the results of the monitoring to some undefined standard. The commenter suggests that the EPA revise the proposed requirements to incorporate the delay of repair standards promulgated in subpart BB (§ 264.1059).

Two commenters (F-91-CESP-00010, 00069) request that the delay of repair provisions for surface impoundment control equipment be expanded to incorporate delay of repair for tank and container control systems. One commenter (F-91-CESP-00010) states that mandating a 15-calendar-day repair completion time does not allow for code shop repair of tanks, State agency approval to make repairs, provisions for unanticipated delays in ordering equipment, or for repairs that are technically infeasible without a tank shutdown. The commenter suggests that, as in subparts AA and BB, the regulations should allow for delay of repair. For example, delay of repair should be allowed if the owner or operator determines that emissions of purged material resulting from immediate repair and/or emissions arising from unit shutdown are greater than the emissions likely to result from delay of repair.

Response: The primary reason for including the delay of repair provision for surface impoundment air emission controls in the proposed rule was that a surface impoundment may occasionally be a critical component of a company's manufacturing process (e.g., there is no backup or alternative waste management unit available for placing the hazardous waste generated by the manufacturing process). Shutdown of an entire manufacturing process could possibly create a substantial hardship and significant economic losses for a company. Since proposal, information has been collected indicating that many surface impoundments are being replaced with tank systems, which in some cases have less excess capacity than the surface impoundment being replaced. Because the shutdown of a tank also could impose substantial hardship and significant economic losses for a company, the delay of repair provisions have been broadened to include tanks. However, the EPA decided that delay of repair provisions for containers are not warranted because a container is not a permanent structure, and replacements can be easily and quickly obtained.

Repair of a leak detected on a cover installed on a tank or surface impoundment may be delayed beyond 15 calendar days if the owner or operator determines that: (1) repair of the leak requires first emptying the contents of the tank or surface impoundment, and (2) temporary removal of the tank or surface impoundment from service will result in the unscheduled cessation of production from the process unit or operation of the waste management unit that is generating the hazardous waste managed in the tank or surface impoundment. Repair of the leak must be performed at the next time the process unit or the waste management unit that is generating the hazardous waste managed in the tank or surface impoundment stops operation. The TSDF owner or operator does not have to document that delaying the repair would not cause the control equipment to be significantly less protective of human health and the environment. This is consistent with the delay of repair provisions promulgated in the subpart BB standards.

6.12 RECORDKEEPING REQUIREMENTS

Comment: One commenter (F-91-CESP-00010) believes that it is unreasonable to expect owners and operators to have the required information for recordkeeping for tanks that have existed for many years. The design and installation assessment requirements of subpart J of 40 CFR parts 264 and 265 relative to tank systems should provide enough detail to meet the intention of this section.

Response: The final subpart CC standards require cover design documentation only for each internal floating roof cover or external floating roof cover installed on a tank in accordance with the alternative control requirements for tanks of § 264.1091 or § 265.1091. The alternative control requirements for tanks are equipment standards requiring conformance with detailed equipment specifications. Required documentation includes information prepared by the owner or operator or provided by the cover manufacturer or vendor describing the cover design, and certifying that the cover meets the design specifications listed in the standard. The EPA expects the detailed design information to be maintained in the records of an owner or operator who chooses to comply with the alternative control requirements for tanks.

Regarding the adequacy of the design and installation requirements of subpart J, the requirements of §§ 264.192 and 265.192 include one assessment that includes design standards for tanks and/or ancillary equipment. The assessment will not necessarily include the detailed information on covers and cover openings required by §§ 264.1089(a)(1) and 265.1091(a)(1).

Comment: Seven commenters (F-91-CESP-00010, 00023, 00046, 00047, 00054, 00061, 00076) disagree with the proposed recordkeeping requirements for containers, claiming the requirements are unreasonable and burdensome. One commenter (F-91-CESP-00010) remarks that many containers are on site only for a short period of time or are rental bins that are exchanged with each shipment. The commenter recommends that the short period of time that containers are on site should allow for their exemption. Another commenter (F-91-CESP-00054) states that container storage areas are removed or relocated periodically, making it burdensome to keep the records for the life of the facility. This commenter suggests that container storage areas be excluded from the requirement for recordkeeping to improve recordkeeping quality and reduce the recordkeeping burden. A third commenter (F-91-CESP-00076) states that the recordkeeping requirements for the many containers mass-produced to meet DOT specifications would be redundant. The maintaining of engineering and design documentation for each container would be overly burdensome and will do nothing to ensure that the container covers form tight seals.

Response: The EPA revised the container recordkeeping requirements for the final subpart CC standards. The final rules do not include any cover engineering design documentation recordkeeping requirements. The only design documentation required for containers is for each enclosure used for a container subject to the subpart CC standards that must be open during a treatment process. The required information includes certification that the enclosure meets the design and performance requirements of the rules.

The final subpart CC standards require semiannual leak detection monitoring using Method 21 only for containers with design capacity greater than 0.46 m^3 (approximately 119 gallons) that have been opened within the 6-month period since the last previous monitoring. Records of the leak detection monitoring results for these containers must be kept for at least 3 years. A container that is attached to or forms a part of any truck, trailer, or railcar may be tested annually for organic vapor tightness using Method 27 rather than monitored for detectable organic emissions using Method 21. Records of Method 27 test results also must be maintained for 3 years.

Comment: Two commenters (F-91-CESP-00033, 00069) support the EPA's proposed requirements for recordkeeping including the placing of the implementation plan in the operating record and the consistency with existing recordkeeping requirements for tank inspections.

Response: The recordkeeping requirements are being promulgated as proposed with the exception of the revisions described in the other responses in this section of the BID and two additional revisions. One revision makes the recordkeeping requirements consistent with the requirements of the subpart BB standards. Records are required of the dates leaks are detected by Method 21 monitoring, the date of each attempt to repair a leak, repair methods applied, and the date of successful repair. The second revision requires records of the management of carbon removed from a carbon adsorption system in accordance with the requirements of subpart CC for managing spent carbon.

6.13 REPORTING REQUIREMENTS

Comment: Two commenters (F-91-CESP-00038, 00069) support the EPA's general approach of requiring reports only when exceedances occur rather than requiring regular general status reports at regular intervals. However, the commenters state that the proposed requirements are unclear as to the reporting obligations if there are no control device malfunctions within the 6-month specified time frame. The commenters also request that the EPA clarify if these reports are required to be maintained as part of the facility records.

Response: A report is not required to be submitted to the EPA for a 6-month period during which all control devices used to comply with the subpart CC standards are operated by the owner or operator so that during no period of 24 hours or longer did a control device operate continuously in noncompliance with the applicable operating values defined in 40 CFR 264.1035(c)(4) or a flare operate with visible emissions as defined in 40 CFR 264.1033(d).

The subpart CC standards do not require a copy of the report submitted to the EPA to be maintained as a part of the facility records. However, all of the information upon which the report is based is required to be maintained in the facility records for at least 3 years.

Comment: Two commenters (F-91-CESP-00046, 00054) suggest that reports of noncompliance with the rule requirements should only need to be maintained in the facility operating records as opposed to being submitted to the EPA Regional Administrator.

Response: The reporting requirements in the subpart CC standards are necessary for effective implementation and enforcement of the rule. The required reports serve to notify the EPA when a TSDF owner or operator is not complying with the rule requirements, and allow the EPA to decide upon an appropriate course of action depending on the extent, cause, and number of the noncompliance events. Tt shoud be noted that the required report must be submitted to the Regional Administrator within 15 days of the determination of noncompliance with the rules rather than within 30 days as proposed.

6.14 ALTERNATIVE ORGANIC AIR EMISSION CONTROLS

Comment: Six comments were received on the proposed rule regarding the addition of a provision to the rule to allow the use of air emission control technologies other than those specified in the rule. Three commenters (F-91-CESP-00060, 00061, 00077) state that air emission control technologies applicable to tanks, surface impoundments, and containers not included in the rule will be at an economic and developmental disadvantage if not eliminated from the market. Two commenters (F-91-CESP-00029, 00069) state that the EPA should include a variance provision in the rule that would provide facilities the opportunity to propose alternative air emission control strategies not unlike best available control technology (BACT) demonstrations under the Clean Air Act. One commenter (F-91-CESP-00038) requests that the EPA provide a more manageable mechanism than requiring *Federal Register* notices for alternate air emission controls. The commenter claims that requiring a *Federal Register* notice will impede the permitting process, delay the installation of cost-effective air emission control alternatives, and discourage innovative equivalent designs.

Response: The subpart CC standards do not include a provision specifying a mechanism by which a TSDF owner or operator can request a variance from the requirements of the rule. The subpart CC standards do allow TSDF owners and operators to meet tank control requirements consistent with the requirements in the NSPS for volatile organic liquid (VOL) storage under 40 CFR 60 subpart Kb. Under the VOL storage NSPS, a mechanism is provided by which a person can apply to the EPA to use an alternative means of emission limitation to comply with the rule provided the person demonstrates to the satisfaction of the EPA that the alternative means is at least equivalent to the control equipment specified in the rule. If approved by the EPA, a notice is published in the Federal Register permitting its use as an alternative means for purposes of compliance with the VOL storage NSPS. The subpart CC standards allow any such alternative control technology approved for use under the provisions of the VOL Storage NSPS also to be acceptable for use on TSDF tanks to comply with the subpart CC standards.

The EPA believes that the subpart CC standards provide TSDF owners and operators with flexibility in selecting the control technologies to be used to comply with the rule requirements and do not place any particular control technology at an economic and developmental disadvantage. The subpart CC standards allow a TSDF owner or operator to use any appropriate control technology provided that it can achieve the performance criteria specified in the rule. For example, any control device can be used that reduces the organics in the gas stream vented to it by at least 95 percent by weight or other conditions specified in 40 CFR 264.1033(c) and (d). Similarly, particular types of acceptable technologies for treating a hazardous waste to reduce the organic content of the waste are not specified in the rule. An owner or operator can choose any treatment technology that can destroy or reduce organics in the waste so that it achieves one of the general requirements for treated wastes specified in the rule.

7.0 GENERATOR 90-DAY ACCUMULATION TANKS AND CONTAINERS

7.1 PERMIT EXEMPTION CONDITION AMENDMENTS

Comment: Several commenters object to the EPA's decision to require permit-exempt 90-day tanks and containers to comply with the proposed control requirements to maintain their permit exemption. Five commenters (F-91-CESP-00023, 00031, 00033, 00047, 00069) make the following arguments: (1) the EPA is not authorized under RCRA section 3004(n), or under any other provision, to extend the requirements to 90-day tanks and containers; and (2) the proposed rules failed to cite authority to extend the requirements to 90-day tanks and containers, in violation of section 553(b)(2) of the Administrative Procedure Act (APA). One commenter (F-91-CESP-00069) further submits that should air emission controls be imposed on generators, this must be accomplished pursuant to the pre-HSWA authorization process and thus should not become effective in authorized States until enacted and implemented as State law. Two commenters (F-91-CESP-00015, 00065) assert that application of control requirements to 90-day tanks and containers impermissibly interferes with the manufacturing processes.

Response: The EPA disagrees with each of these comments. Conditions are specified in 40 CFR 262.34(a) (promulgated under the authority of RCRA sections 2002, 3001-3005, and 3007) with which large-quantity hazardous waste generators can choose to comply to exempt tanks and containers used to accumulate waste on site for no more than 90 days (referred to hereafter as "90-day tanks and containers") from the RCRA subtitle C permitting requirements. Amending these conditions is a valid exercise of the EPA's authority under RCRA section 3004(n).

Section 262.34 allows certain tanks and containers at generator facilities to accumulate hazardous waste for specified time periods without obtaining RCRA permits. The intent of this provision is to strike a reasonable balance between the congressional desire not to interfere with the generator's manufacturing or production processes and the need to provide adequate protection of human health and the environment (45 FR 12730, February 26, 1980). Thus, section 262.34(a) does not provide a hazardous waste generator with a complete exemption from all RCRA section 3004 requirements. On the contrary, it incorporates most of the relevant tank and container standards under 40 CFR part 265 and requires compliance with these standards as a condition for maintaining RCRA permit-exempt status [refer, e.g., to 40 CFR 262.34(a)(1)]. This rule is not intended to shield 90-day tanks and containers from future technical TSDF requirements. Therefore, it is wholly appropriate for the EPA to update the technical requirements for tanks and containers that serve as the basis for the RCRA permit exemption. The EPA has already done so, for example, when tank standards were amended in 1986.

Although 90-day tanks and containers are not required to be permitted under RCRA subtitle C, the EPA rejects the commenters' narrow reading of RCRA section 3004(n) as limiting the EPA's authority to extend the requirements to these units. Section 3004(n) of RCRA requires the EPA to promulgate rules for the control of air emissions from "hazardous waste treatment, storage, and disposal facilities." The EPA does not agree that RCRA section 3004(n) reflects a congressional intent that the EPA regulate air emissions only from permitted and interim-status TSDF and not from 90-day tanks and containers. These tanks and containers are physically identical (i.e., the same types of tanks and containers are used by generators to accumulate and by TSDF owners and operators to store and treat waste). There is no environmental basis for not considering them subject to the section 3004(n) mandate. Such units are, in fact, storing or treating hazardous waste, and are subject to numerous standards promulgated under the authority of both RCRA sections 3002 and 3004. The exemption of 90-day tanks and containers from the permitting requirements of RCRA subtitle C is regulatory, not statutory; there is no directive in the RCRA legislation that precludes the EPA from imposing any or all of the TSDF requirements on them. The use of the term "facility" in RCRA section 3004(n) can certainly be read to encompass 90-day tanks and containers, given the EPA's flexibility to construe that term (see United Technologies v. EPA, 821 F.2d at 814 (D.C. Cir 1988) and the fact that 90-day tanks and containers are already subject to the substantive standards for tanks and containers and pose precisely the same potential environmental risks as other tanks and containers holding hazardous waste. In addition, the EPA sees no reason that Congress intended 90-day tanks and containers to be subject to air emission controls at a different time than other tanks and containers (which would be the case if the 90-day units are not regulated pursuant to a HSWA provision).

Therefore, it is proper for the EPA to use its authority under RCRA section 3004(n) to amend 40 CFR 262.34(a) by adding air emission control requirements to the conditions required for a 90-day tank or container to be exempted from the RCRA permitting requirements. For these reasons, the EPA rejects the commenter's argument that the Agency is not authorized or failed to cite authority to use this rulemaking to amend the exemption requirements for 90-day tanks and containers. In addition, the EPA rejects the argument that the exemption requirements are under the EPA's pre-HSWA authority and, therefore, are not applicable in authorized States until the individual States are authorized to implement the rule (see 51 FR 25464, where the EPA indicated that the modifications to 40 CFR 262.34, to reflect amended tank standards, were HSWA rules).

As a variation of the argument that 90-day tanks and containers should not be regulated, one commenter asserts that RCRA section 3004(n) reflects a congressional intent that the EPA regulate air emissions only from permitted and interim-status TSDF and not from 90-day tanks and containers. The commenter apparently argues that the explicit inclusion of such authority under RCRA section 3004(n) and not under RCRA section 3002 implies a congressional finding that waste accumulation does not significantly contribute to air pollution. The EPA finds no indication, in the legislative history of RCRA, or elsewhere, that Congress ever made such a finding, and the EPA's conclusion, as discussed later in this chapter, is that on-site accumulation of hazardous waste in 90-day units is a significant source of organic air emissions. Again, the EPA finds no indication that Congress intended to preclude the EPA from regulating air emissions from nonpermitted hazardous waste storage and treatment under RCRA section 3004(n).

In addition to RCRA section 3004(n), the EPA has authority under RCRA section 3002 to amend 40 CFR 262.34(a). One commenter states that, although RCRA section 3002(a)(3) authorizes the EPA to require the use of appropriate containers, RCRA section 3002 provides no authority to regulate air emissions. The EPA disagrees with this statement. The RCRA section 3002(a)(3) authority, as well as the general authority under RCRA section 3002 to promulgate such rules regulating generators "as may be necessary to protect human health and the environment," is broad enough to encompass the regulation of air emissions from units storing or treating hazardous waste at generator facilities.

Finally, the EPA cited both RCRA sections 3002 and 3004 as the statutory authority for the proposed rule. Therefore, this rulemaking is in full conformance with section 553(b)(2) of the Administrative Procedures Act.

The EPA also rejects the argument that the application of air emission controls to 90-day tanks and containers impermissibly interferes with manufacturing processes. The EPA concluded in 1980, as cited above, that the appropriate balance between protection of the environment and noninterference with manufacturing processes was achieved by requiring 90-day tanks and containers to comply with certain technical requirements as a condition of being exempt from the requirement to have a RCRA permit. The EPA estimates that nationwide baseline organic emissions from 90-day tanks and containers are approximately 76,000 Mg/yr. Given the significant organic emissions from 90-day tanks and containers, the same rationale has led the EPA to require that these units comply with the appropriate control requirements of subparts AA, BB, and CC standards to maintain an exemption from RCRA permitting. In contrast, the EPA decided not to extend under this rulemaking the requirements of these air rules to containers used for satellite accumulation because of the widespread use of these containers by manufacturing process operators to collect small quantities of hazardous waste as generated, and the integrated use of these containers with the manufacturing operations (discussed further in section 7.2 of this document). The EPA believes that this regulatory framework maintains the appropriate balance between environmental protection and noninterference with manufacturing processes.

<u>Comment</u>: Six commenters (F-91-CESP-00015, 00031, 00033, 00049, 00053, 00066) suggest that the proposed regulations are redundant to existing regulations in 40 CFR part 265 that require containers to be closed except to add or remove waste. One commenter (F-91-CESP-00015) also adds that the rule is repetitious as tanks already must be designed or retrofitted to meet State and Federal emission limits under the Clean Air Act.

<u>Response</u>: The EPA disagrees with the commenters' conclusion that existing RCRA regulations are sufficient to control organic emissions from 90-day containers. Existing regulations under RCRA § 264.173 do require containers used to store hazardous waste at TSDF to be closed except when necessary to add or remove waste. However as discussed in section 5.1.1 of this document, these requirements do not adequately address the EPA's concerns regarding containers used to manage hazardous waste being a potential organic air emission source.

The EPA also disagrees that the regulation of tanks is repetitious because of Clean Air Act rules. Existing tank controls required by the New Source Performance Standards for volatile organic liquids apply only to new, modified, or reconstructed tanks of certain sizes and containing organic liquids above certain vapor pressures. These controls are considered the minimum design control required for any large tank containing organic hazardous waste, regardless of the date of construction of the tank. Accordingly, the minimum control requirements under the subpart CC standards incorporate the tank organic emission control requirements specified in 40 CFR part 60 subpart Kb (with the exception of a tank with a capacity greater than 75 m^3 and containing an organic liquid with a vapor pressure greater than 76.6 kPa, which is required to use only a closed-vent system and a control device). The EPA maintains that many tanks currently used at TSDF to store hazardous waste are smaller than the sizes that require emission controls under 40 CFR 60 subpart Kb; therefore the inclusion of these requirements should have minimal impacts. However, incorporating the subpart Kb requirements will ensure that any existing large tanks used for the storage of hazardous waste at TSDF are controlled at least as effectively as new, modified, or reconstructed tanks storing volatile organic liquids.

<u>Comment</u>: One commenter (F-91-CESP-00031) requests that emissions from generator accumulation tanks and containers be regulated on an individual toxic constituent basis under phase III of the EPA's program to implement RCRA section 3004(n). The commenter submits that the rule provides no justification for inclusion of generators in the current rulemaking.

<u>Response</u>: In the <u>Federal Register</u> notice for the proposed rule, the EPA presented the rationale for including 90-day tanks and containers in this rulemaking and presented organic emission, cancer incidence, and cost impact estimates for applying the proposed requirements to 90-day tanks and containers (56 FR 33530-33531). The EPA believes that this rationale is still valid and it is appropriate to regulate total organic

emissions from 90-day tanks and containers as part of this rulemaking.

The impact estimates presented at proposal for regulating 90-day tanks and containers have changed. As discussed in chapter 4 of this document, after proposal the EPA revised the impact analysis methodology used for this rulemaking. Based on the revised impact analysis, the EPA now estimates that applying subpart CC standards control requirements to 90-day tanks and containers will reduce nationwide organic emissions from 90-day tanks and containers by approximately 73,000 Mg/yr. Annual cancer incidence as a result of exposure to organic emissions from 90-day tanks and containers is estimated to be reduced from approximately four cases per year to less than one case per year. These estimated impacts are substantial and support the EPA's decision to regulate 90-day tanks and containers as part of this rulemaking.

Finally, the EPA is using a phased approach to implement RCRA section 3004(n) to address the control of not only organic constituents emitted from hazardous wastes that are air toxics but also the control of organic constituents that are ozone precursors. Thus, as discussed in chapter 3 of this document, the EPA decided that the best approach to achieving these emission control objectives is to first develop standards controlling the emissions of organics as a class (i.e., standards controlling total organic emissions) and then evaluate whether other actions are necessary to meet the health-based goals of RCRA section 3004(n). Developing a separate set of standards for 90-day tanks and containers based solely on individual toxic constituents in the hazardous waste is not consistent with the approach used by the EPA for regulating TSDF tanks and containers and may not adequately address the control of organic constituents that are ozone precursors.

<u>Comment</u>: Eleven commenters address the impact analysis performed by the EPA to support regulating generators under the rulemaking. Three of these commenters (F-91-CESP-00015, 00033,

00049) state that emissions from 90-day accumulation units have not been quantified or confirmed. Eight commenters (F-91-CESP-00015, 00031, 00043, 00046, 00048, 00062, 00066, 00069) argue that the data used from surveys of 90-day facilities are outdated and do not reflect current practices of facilities (such as modifications due to the LDR and recycling) or the common compounds found at these facilities. Commenters also state that the estimate of container emissions is based on spillage of materials, which the commenters believe to be insignificant. One commenter (F-91-CESP-00015) submits that there is no basis to show that most organics are emitted before wastes are transmitted to TSDF, as is suggested in the preamble to the proposed rulemaking. Two commenters (F-91-CESP-00031, 00034) state that the assumption that emissions from generators are identical to emissions from TSDF is unwarranted.

Response: The EPA disagrees with the commenters' statement that organic emissions from 90-day tanks and containers have not been quantified. In the Federal Register notice for the proposed rule, the EPA presented organic emission, cancer incidence, and cost impact estimates for applying the proposed requirements to 90-day tanks and containers (56 FR 33530). As discussed in the previous response, the impact estimates presented at proposal for regulating 90-day tanks and containers have been revised by the EPA to reflect the updated waste data obtained by the EPA and changes to the impact analysis methodology used for this rulemaking.

The EPA also disagrees with the commenters' conclusion that managing organic-containing wastes in 90-day containers is not a significant source of emissions. As discussed in section 5.1.1 of this document, limited available information requires the EPA to use emission factors for drums based on spillage of wastes. However, the organic emissions value estimated by the EPA is not the only factor that the EPA considered in assessing the organic emission potential of 90-day containers. Waste generators use accumulation containers to collect hazardous waste at or near the point where the waste is generated, where the potential to emit organics is highest for a given waste because the concentration of any organics in the waste will be highest. The most volatile organics in the waste will be emitted soon after being exposed to the atmosphere. If these containers remain open to the atmosphere, a significant portion of the organics in the waste may be emitted to the atmosphere before the waste is transferred to a TSDF waste management unit pursuant to the subpart CC standards. Under these conditions, organic emissions from certain 90-day containers could be substantial. Consequently, the organic emission reductions from downstream TSDF tanks, surface impoundments, or containers receiving the wastes and using the required organic emission controls would be decreased since a portion of the organics in the waste had already escaped to the atmosphere from the open 90-day containers.

The use of the TSDF waste data base and national impacts analysis results are appropriate for estimating impacts from 90-day tanks and containers. As discussed in section 4.1.1 of this document, for the 90-day tanks and containers impact analysis, the EPA used the most current information available to the EPA on a consistent, nationwide basis. The organic emissions from a 90-day tank or container are dependent on the characteristics of the waste managed in the unit. Many waste generators treat hazardous waste on site. Consequently, wastes accumulated in RCRA permit-exempt 90-day tanks and containers are often transferred to RCRA-permitted tanks and containers at the same facility. The EPA estimates that nationwide over two-thirds of the hazardous wastes accumulated in 90-day tanks and containers are treated at an onsite TSDF (refer to section 4.1.1 of this document). Thus, the EPA believes it is reasonable to use impact estimation factors for 90-day tanks and containers based on results from the national impact model analysis of RCRA-permitted tank and container units.

<u>Comment</u>: Several comments were received related to the implementation costs of applying the required controls to 90-day tanks and containers. One commenter (F-91-CESP-00065) states

that the EPA proposed standards for 90-day tanks and containers without fully assessing the cost impacts to generators. Two commenters (F-91-CESP-00037, 00053) state that sufficient cost benefit analyses were not performed for this aspect of the rulemaking. One of these commenters (F-91-CESP-00053) submits that monitoring and recordkeeping costs must be considered. The commenter estimates that for 71,000 generators, annual monitoring and recordkeeping costs for containers will total $355,000,000 and $590,000,000, respectively. One commenter (F-91-CESP-00069) believes that the economic analysis performed for this proposed provision of the rulemaking underestimates the cost. Three commenters (F-91-CESP-00033, 00043, 00066) state that the contribution from containers to total nationwide organic emissions is minimal and therefore does not warrant the increased cost and manpower.

Response: In the Federal Register notice for the proposed rule, the EPA presented estimates of the nationwide capital and annual costs of applying the proposed requirements to 90-day tanks and containers (56 FR 33530). The cost estimation methodology used by the EPA was presented in appendix L of the proposal BID (EPA-450/3-89-023c). No specific comments were received on the EPA's cost estimation methodology. In addition, the EPA specifically considered the costs to waste generators of complying with the proposed rule monitoring, inspection, testing, and recordkeeping requirements for 90-day tanks and containers. Estimated monitoring, inspection, testing, and recordkeeping compliance costs to waste generators were included in the information collection request (ICR No. 1593.01) submitted to the OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. Copies of this ICR document were made available to the public at proposal and the EPA specifically requested comment on the burden estimates presented in the document (56 FR 33541). No comments were received on the ICR document.

As discussed in chapter 4 of this document, the EPA revised the impact analysis methodology used for this rulemaking after proposal. Based on the revised impact analysis, the EPA now estimates that the total nationwide capital costs to hazardous waste generators of installing the required air emission controls to 90-day tanks and containers to be approximately $23 million. Total nationwide annualized cost for the 90-day tank and container controls is estimated to be approximately $7 million.

The regulatory impact analysis prepared for the proposed rule did not include impacts for 90-day tanks and containers. Following proposal, the EPA corrected this omission by revising the RIA for the rulemaking to include an assessment of impacts on waste generators operating 90-day tanks and containers. Based on this assessment, the EPA concludes that the controls required by the final rule on 90-day tanks and containers do not produce a significant burden on waste generators.

Comment: One commenter (F-91-CESP-00034) believes that subparts AA and BB should not apply to 90-day tanks and containers because the effects of these rules have been minimal.

Response: Subpart AA in 40 CFR part 265 controls organic emissions from process vents associated with noncombustion type treatment processes (i.e., distillation, fractionation, evaporation, solvent extraction, air stripping, and steam stripping waste operations) managing hazardous wastes that have organic concentrations equal to or greater than 10 ppmw. The application of this standard includes venting of vapors to the atmosphere through a tank that is a component of the treatment process (e.g., distillate receiver, condenser, bottoms receiver, surge control tank, or hot well). Subpart BB in 40 CFR part 265 controls organic emissions resulting from leaks from pumps, values, compressors, and sampling connection systems contacting hazardous waste streams that have organic concentrations equal to or greater than 10 percent by weight.

The subpart AA and BB standards will be applicable to a 90-day tank or container only under special circumstances. The EPA expects that these standards will not apply to most 90-day tanks and containers as typically used by waste generators. However, the EPA believes it is appropriate to include compliance with these standards as a condition for maintaining RCRA permit-exempt status for a 90-day tank or container. For those limited cases for which the subpart AA standards or subpart BB standards are applicable to 90-day tanks and containers, implementing the requirements of the standards will achieve effective control of organic emissions from the source.

Comment: Three commenters (F-91-CESP-00043, 00066, 00065) state that the requirements of the rule have no effect on reducing spills and request exemption for 90-day accumulation units used for the storage of and/or treatment of spills.

Response: Section 262.34(a) allows a waste generator to accumulate hazardous waste on site for 90 days or less without a RCRA permit provided that the generator complies with certain specified conditions including the provision in 40 CFR part 265 under subpart C, subpart D, subpart I for containers, and subpart J for tanks. Under existing RCRA regulations specified in § 265.1(c)(11)(i), an owner or operator of an interim-status TSDF that engages in treatment or containment activities to provide for immediate response to a discharge (i.e., spill), threat of a discharge of a hazardous waste, or a discharge of a material that upon discharge becomes a hazardous waste must comply only with subparts C and D in 40 CFR part 265 but not the other subparts in part 265. A similar provision is provided in 40 CFR part 264 for owners and operators of permitted TSDF. It is the EPA's intention that generators operating 90-day tanks and containers comply with the same air emission control requirements specified for owners and operators of TSDF tanks and containers that must be permitted under RCRA. Therefore, regulatory language has been added to the final rule to clarify that the subpart CC standards control requirements do not apply to 90-day tanks and containers if these units are used for emergency or spill management activities, in accordance with the requirements under 40 CFR 265 subparts C and D.

Comment: Three commenters (F-91-CESP-00031, 00033, 00055) state that the requirements for monitoring, inspection, recordkeeping, and reporting are unwarranted, massive, and burdensome to waste generators. Another commenter (F-91-CESP-00048) requests that recordkeeping and reporting requirements for generators be defined.

Response: Section 262.34(a), as amended by this rulemaking, requires a waste generator to comply with the applicable tank and container standards under 40 CFR 265 subpart CC as a condition for maintaining RCRA permit-exempt status for a 90-day tank or container. Consequently a waste generator electing to comply with section 262.34(a) will need to perform the same inspection, monitoring, and recordkeeping requirements for tanks and containers that the owner or operator of an interim-status TSDF must perform as required by the subpart CC standards. The EPA did not propose any reporting requirements for tanks, surface impoundments, or containers pursuant to 40 CFR 265 subpart CC. Thus, there are no new reporting requirements for waste generators (or interim-status TSDF owners or operators) as a result of this rulemaking.

The EPA proposed specific inspection, monitoring, and recordkeeping requirements that would need to be performed by TSDF owners and operators as well as waste generators required to use emission controls on 90-day tanks and containers. In response to comments on the proposed rule, the EPA revised the inspection, monitoring, and recordkeeping requirements for tanks, surface impoundments, and containers specified in the subpart CC standards. These revisions to the inspection, monitoring, and recordkeeping requirements are summarized in chapter 1 of this document. The basis for each revision is discussed in section 6.11 (inspections and monitoring) and section 6.12 (recordkeeping) of this document. The EPA believes that the final subpart CC standards establish a set of inspection, monitoring, and recordkeeping requirements for tanks and containers that are necessary to effectively implement the rule and are reasonable for a waste generator to perform.

Comment: One commenter (F-91-CESP-00037) believes that if generators are regulated by these rules, then a higher action level should be used, the use of submerged fill for generators should be reconsidered, and drum construction standards should be used in lieu of recordkeeping.

Response: The EPA has made revisions to the final subpart CC standards that address several of the commenter's concerns. First, the final subpart CC standards require that submerged fill be used only when waste is loaded by pumping into a container with a capacity equal to or greater than 0.46 m^3 (approximately 119 gallons) (see section 6.6.3 of this document). Second, the final subpart CC standards for containers have been revised to allow wastes to be managed in drums that meet DOT specifications for transporting hazardous materials, which are specified under 40 CFR part 178 (see section 6.6.2 of this document). Recordkeeping requirements have been simplified eliminating the need for a waste generator to maintain cover design documentation for a container and leak monitoring data for each container that meets DOT specifications and has a design capacity less than or equal to 0.46 m^3 (approximately 119 gallons) or that is attached to or forms a part of any truck, trailer, or railcar and has been tested for organic vapor tightness within the preceeding 12 months using Method 27.

The EPA disagrees with the commenter's suggestion that a higher action level be provided for waste generators (i.e., establishing an average volatile organic concentration cutoff value for 90-day tanks and containers required to use air emission controls that is higher than the average volatile organic concentration value used for TSDF tanks and containers). As discussed in section 5.3.2 of this document, the EPA believes that applying the same action level for all waste management units to which the subpart CC standards apply is the most appropriate approach for reducing TSDF emissions of organic air toxics and ozone precursors. Using a more stringent action level for downstream TSDF waste management units than is used for the upstream 90-day tanks and containers would reduce the overall effectiveness of the subpart CC standards since a portion of the organics in the waste had already been allow to escape to the atmosphere from the open 90-day containers.

Comment: One commenter (F-91-CESP-00047) states that the rule will cause generators to become TSDF and that is neither practical nor manageable by the EPA.

Response: The EPA disagrees with the commenter's interpretation of the proposed rule. Under this rulemaking, waste generators are still allowed to accumulate hazardous waste without being required to obtain a RCRA permit as provided for by 40 CFR 262.34. The rulemaking only adds air emission control requirements to the existing conditions required under 40 CFR 262.34(a) to maintain this exemption for 90-day tanks and containers. These additional air emission control requirements are necessary to suppress the organics in the hazardous waste until the wastes are treated to remove or destroy the organics. Without the air emission control requirements, the organics could be emitted to the atmosphere.

7.2 APPLICABILITY TO OTHER GENERATOR ACCUMULATION UNITS

Comment: Twelve comments (F-91-CESP-00012, 00015, 00033, 00035, 00043, 00049, 00055, 00062, 00064, 00066, 00076, 00081) were received that requested clarification on the proposed rule's effect on small-quantity generators and satellite accumulation areas. All 12 commenters state that these activities should not be regulated under this rule.

Response: The EPA did not propose control requirements under this rulemaking for tanks and containers used by small-quantity generators for onsite accumulation of hazardous waste and operated in compliance with 40 CFR 262.34(d) or (e). Also, the EPA did not propose control requirements under this rulemaking for containers used for satellite accumulation of hazardous waste in compliance with 40 CFR 262.34(c). The final rule does not apply to any of these units.

"Small quantity generators" are designated under RCRA to be those facilities that generate at least 100 kilograms but less than 1,000 kilograms of hazardous waste in a calendar month. Section 262.34(d) allows a small-quantity generator to accumulate hazardous waste on site for up to 180 days and § 262.34(d) allows accumulation up to 270 days in a tank or container without a RCRA permit provided that generator complies with certain specified conditions. At proposal, the EPA decided not to amend these existing conditions to include the subpart CC standards control requirements because the organic emission potential from small-quantity generator accumulation units was estimated to be relatively small (56 FR 33531). However, the EPA stated at proposal that these units could be regulated at a future date if new information becomes available to indicate impacts different from those currently estimated.

"Satellite accumulation" is designated by existing RCRA provisions as the accumulation up to and including 55 gallons of hazardous waste or 1 quart of acutely hazardous waste listed in § 261.33(e) in containers at or near any point of generation where the waste is initially accumulated and which is under the control of the process operator. Section 262.34(c) allows a waste generator to use containers for satellite accumulation without complying with RCRA permitting requirements and 40 CFR 265 subpart I provided that generator meets certain specified conditions. The EPA decided not to amend these existing conditions to include the subpart CC standards control requirements because of the widespread use of these containers by manufacturing process operators to collect small quantities of hazardous waste as generated, and the integrated use of these containers with the manufacturing operations.

<u>Comment</u>: Two commenters (F-91-CESP-00076, 00081) suggest that the rule does not contain the necessary wording to reflect the EPA's intent expressed in the preamble that the subpart CC

control requirements should not apply to small-quantity generator accumulation units. These commenters recommend that § 262.34(d)(2) be modified to also exempt § 265.178. Similarly, the commenters suggest that § 262.34(d)(3) be modified to exempt § 265.202.

Response: Section 262.34(d)(2) currently lists, as one of the conditions that a small-quantity generator must meet for maintaining a RCRA permit exemption, compliance with "the requirements of 40 CFR 265 subpart I except § 265.176." The EPA agrees with the commenter that the regulatory language of § 262.34(d)(2) needs to be amended to also except compliance with § 265.178. This amendment is included in the final rule. However, it is not necessary to amend § 262.34(d)(3) as this paragraph currently states that small-quantity generators must comply only with § 265.201 of subpart J and not § 265.202.

Comment: Five commenters (F-91-CESP-00033, 00043, 00055, 00066, 00076) request that the satellite waste accumulation exemption include the handling of up to and including 55 gallons of hazardous waste (not just up to 55 gallons as stated in the preamble).

Response: In the preamble for the proposed rule, the EPA incorrectly stated the satellite accumulation capacity limit allowed under § 262.34(c)(1). Referring to the actual language of the regulation, § 262.34(c)(1) states that "a generator may accumulate as much as 55 gallons of waste . . ." in a container without having to comply with RCRA permitting requirements or § 262.34(a). Thus, existing RCRA requirements already allow a generator to accumulate up to and including 55 gallons of hazardous waste in containers used in satellite accumulation areas.

Comment: One commenter (F-91-CESP-00062) suggests that other types of small containers be added to the exemption (e.g. cardboard boxes with sealed plastic liners and a variety of small containers prior to lab packing).

Response: As discussed in section 6.6.1 of this document, containers with a design capacity less than 0.1 m^3 (approximately 26 gallons) are exempted from all container control requirements required by the subpart CC standards regardless of the volatile organic concentration of the waste managed in the container. Containers used for lab packing commonly have capacities smaller than this size cutoff and, consequently, in most cases the control requirements of the subpart CC standards would not apply.

Comment: One commenter (F-91-CESP-00055) states that the proposed provision to subject 90-day accumulation tanks and containers to air emission controls will penalize facilities in States whose State regulations do not allow satellite accumulation areas. Facilities in these States will either have to establish more satellite accumulation areas pursuant to Federal regulations, and consequently, have more areas regulated by the State, or they will have few if any areas that qualify for the satellite exemption.

Response: The EPA is not promulgating control requirements under this rulemaking for containers used in satellite accumulation areas in compliance with 40 CFR 262.34(c). However, individual States have the right to establish standards for air emission sources within their jurisdiction that are more stringent than standards promulgated by the EPA. Where multiple standards apply to the same source, the owner/operator must comply with the most stringent requirements.

Comment: One commenter (F-91-CESP-00049) states that the EPA has confused satellite accumulation areas with 90-day accumulation areas in reference to point of generation.

Response: Contrary to the interpretation of the commenter, the EPA maintains its position that 90-day tanks and containers are located near the point where the waste is generated even if satellite accumulation areas exist at the facility. A satellite accumulation area is where containers are used initially to accumulate small quantities of hazardous waste at or near any point of generation and within which the container is under the direct control of the process operator. A 90-day tank or container is used for the accumulation of hazardous waste generated on site. There remains a potential for significant organic emissions from 90-day tanks and containers whether they are located at the point where the waste is generated or located some distance away from the generation point but still at the facility where the waste is generated. It is also feasible that satellite accumulation areas are not used at all sites; therefore, the waste generator initially accumulates hazardous wastes in 90-day tanks or containers.

In satellite accumulation areas, the amount of hazardous waste managed in a container is limited to no more than 55 gallons. In contrast, there is no limit to the quantity of waste placed in 90-day tanks and containers, and RCRA-permitted tanks and containers at TSDF can handle unlimited amounts of waste for unlimited periods of time. Under this rulemaking, the EPA is requiring organic emission controls be applied to 90-day tanks and containers and RCRA-permitted tanks and containers at TSDF. The EPA believes this rulemaking provides a reasonable balance between the need to reduce TSDF organic emissions and the need to minimize disuption to manufacturing process operations.

8.0 TEST METHODS

8.1 METHOD 25D

Method 25D was proposed as a part of the subpart CC rulemaking. The method subsequently has been promulgated in a separate rulemaking (59 FR 19402, April 22, 1994). Comments regarding the proposed Method 25D and responses to the comments are included in this BID because Method 25D was originally proposed as a part of this regulatory package. Additional comments and responses relevant to the proposed Method 25D that were received as part of other EPA rulemakings are available in Air Docket Number A-90-23 located at the EPA's Air and Radiation Docket Information Center, Waterside Mall, room 1500, 1st Floor, 401 M Street, SW, Washington DC 20460.

8.1.1 Method 25D Sample Collection

Comment: Comments (F-91-CESP-00016, 00041, 00048, 00060, 00062, 00070, 00076) were received stating that the proposed sample collection requirement to use a static mixer is not applicable to sampling certain waste materials. Commenters state that using a static mixer for sampling wastes would be difficult for high-viscosity sludges and not feasible for solid materials such as solvent rags or spill debris. These materials will not pass through a static mixer meeting the specifications as proposed. One commenter questions whether a static mixer is required if no dispersed phase exists. Other commenters state that a static mixer is not appropriate for sampling waste transported in a tank truck or railcar because these units handle a large number of different wastes and there is a possibility of cross-contamination of wastes unless mixers dedicated to certain waste codes are used.

Response: The EPA proposed the use of static mixers for sample collection as a means of obtaining well-mixed samples of a waste so that the samples analyzed are a true representation of all organic compounds contained in the waste. Mixing the waste prior to the sampling point avoids the potential for intentional or unintentional selective sampling of only a portion of the waste such as collecting all of the samples from a stratified aqueous layer in a multiple-phase waste. However, the EPA recognizes that some wastes will be tested using Method 25D for which mixing the waste using a static mixer is not necessary (e.g., a homogeneous waste stream) or, under certain conditions, is not feasible (e.g., a waste composed entirely of solid materials). Therefore, the EPA decided to delete the proposed requirement for use of a static mixer and replace this requirement with specific procedures for sampling a single-phase or well-mixed waste, a multiple-phase waste, and solid materials. Also, as included at proposal, the final Method 25D provides the alternative of using a waste sampling technique not specified in the test method upon approval of the EPA Administrator.

Comment: Several comments were received on the selection of polyethylene glycol (PEG) as the matrix for collecting a waste sample for analysis. One commenter (F-91-CESP-00008) believes the retention properties of PEG may prevent the subsequent release of certain organic compounds from the sample matrix even at the 75 °C purging temperature. A second commenter (F-91-CESP-00076) states that the selection of PEG as the sample collection matrix seems reasonable, but expresses concern that the slightly acidic nature of PEG could result in either a positive or a negative bias in the determination of volatile organic concentration of the sample when organic acids or bases are present in the sample. A third commenter (F-91-CESP-00016) states that samples should be collected using standard volatile organic analysis (VOA) vials because these vials have been shown to be effective for many of the EPA methods and that using PEG introduces many sources of error. The commenter suggests that the use of PEG in the field be eliminated. This commenter also suggests a buffered solution be used rather than deionized water, which is specified by the method, because of the effects of pH on the purging efficiencies for compounds that can be ionized. The commenter further requests that a criterion for an acceptable blank level be specified in the method because pH has such a large influence on the blank level.

Response: Polyethylene glycol was proposed by the EPA as the sample collection matrix for Method 25D because it has a good ability to retain organic compounds in a liquid medium, it is a safe material for workers to handle, and it is widely available from commercial suppliers. The EPA reviewed the comments regarding the use of PEG for the sample collection matrix and concludes that the selection of PEG is appropriate.

The organic retention properties of PEG are especially important when sampling wastes that contain highly volatile compounds to prevent the loss of organics from the waste sample prior to analysis. Drawing a sample from a tap into an open container is analogous to an open waste water flow from the end of a pipe into a drain. A recent laboratory study investigated air emissions from wastewater collection systems (F-93-CESP-S00504). The results of this study indicate that organic emissions from the waste water to the atmosphere can be significant while the waste water is exposed to the ambient air when the waste water free falls from the pipe exit opening to the drain trap. Furthermore, no data were received from the commenters to support a reason for not using PEG. Thus, the EPA believes that sampling waste using PEG for the sample collection matrix provides an effective way to minimize the loss of organics from waste samples.

The EPA has investigated the effects of waste pH on the amount of organics recovered from the PEG sample matrix. This investigation indicates that only a very narrow group of constituents is affected by the waste pH. Neutralizing a waste sample to reduce high acidic or basic levels in the waste prior to analysis would alter the waste matrix artificially, thus biasing the test results. The EPA attempted to identify a buffer (or buffers) that could be added to the waste to control pH. However, the EPA found that the selection of a compatible buffer needs to be determined on a case-by-case basis because information is required regarding the specific organic constituents present in the waste. Collection of these constituent data for each waste sample analyzed would be expensive and burdensome.

In addition to the pH of the waste, the effects of the weak acid characteristic of PEG was studied by EPA. This study showed that the PEG acidity is a result of the inherent chemical structure of PEG and is not due to any impurity. The EPA developed the parameters of Method 25D using the PEG for the sample collection matrix (in conjunction with the purge temperature of 75 °C, purge time of 30 minutes, and other conditions specified in the test method). Therefore, the pH characteristic of PEG was considered in the development of the test method and is one of the factors that defines the relative measure of emission potential of a waste as determined by Method 25D.

The influence of pH on the blank level was considered by the EPA. The affinity of PEG for organic compounds results in a greater than zero blank response. Because PEG contributes some volatile organics to the measurements obtained with the method, it is appropriate to specify an acceptable maximum blank level. This option is allowed not due to an inherent impurity in the PEG but due to the difficulty in storing cleaned PEG in the atmosphere. For the final Method 25D, the EPA specified that the maximum blank volatile organic concentration be less than or equal to 10 ppmw. This value may be subtracted from the results of the test sample analyses.

Comment: One commenter (F-91-CESP-00016) submits that the cleaning procedure for the PEG has been found to result in decomposition of PEG into compounds that are purged at low pH. According to the commenter, the upper temperature limit for PEG 400 in chromatographic applications due to excessive column bleed is listed by one supplier to be 100 °C, which is quite a bit lower than the 200 °C specified by the proposed method.

Response: The results of the first interlaboratory studies (Docket No. F-91-CESP-S00485) to assess the precision and accuracy of Method 25D showed that PEG tended to degrade at a temperature of 200 °C. Therefore, the EPA lowered the cleaning temperature for PEG specified in the final Method 25D to 120 °C.

Comment: One commenter (F-91-CESP-00060) states that the proposed Method 25D is inappropriate for certain situations such as when an inert gas blanket is used to maintain the vapor space inside the tank free of oxygen. The commenter claims that a method that requires absorption of organics in a liquid medium with subsequent purge by nitrogen is not appropriate. The commenter suggests that when nitrogen is used as an inert gas blanket, direct collection of a sample of this gas for injection into an online gas chromatograph would be appropriate and should be allowed.

Response: The purpose of Method 25D is to provide a relative measure of the organic emission potential of a waste. The test method is not intended to measure the organic concentration of gases collected in the vapor space above a waste managed in a covered tank. Therefore, Method 25D is not applicable to the situation described by the commenter.

8.1.2 Method 25D Sample Analysis

Comment: Commenters (F-91-CESP-00008, 00027, 00033, 00043, 00060, 00061, 00063, 00069, 00076) state that the volatile organic concentration determined using Method 25D includes semi-volatile compounds that will not be significantly emitted from a waste under actual facility operating conditions. The specified sample purging temperature of 75 °C is higher than most normal operating temperatures for waste treatment units, and higher than the most extreme temperatures encountered in the southern portion of the United States. Also, the nitrogen purge at an extremely high velocity will physically strip organics that are not volatile under normal storage conditions. The commenter also stated that this situation creates a safety concern in the laboratory.

Response: The EPA's objective in developing Method 25D is to define a practical screening procedure that provides a relative measure of the organic emission potential of a waste. The test method is not intended to be an actual measure of the organic emissions from waste at the facility operating conditions (e.g., waste storage temperature, retention time of the waste in a management unit). Defining the test conditions to simulate these actual waste management field conditions would result in a test method that is not reasonable to perform quickly and inexpensively in a laboratory on a routine basis. Consequently, to achieve the desired objective for the test method, the EPA developed a set of test conditions so that most of the specific organic compounds purged from the PEG matrix are those compounds more likely to be emitted from a waste under actual field conditions while most of those compounds remaining in the PEG matrix are less likely to be emitted.

Method 25D can safely be performed in a laboratory provided the procedures specified in the test method are properly followed. The oven containing the purge apparatus is to be placed inside a laboratory hood enclosure. Only a small fraction of the sample gas stream (less than 1 percent) is carried by stainless steel tubing outside of the hood enclosure to the two detectors. The majority of the waste gas stream (more than 99 percent) is captured by the hood.

Comment: Three commenters (F-91-CESP-00027, 00049, 00066) state that any test method used to evaluate compliance should measure organic compounds with similar properties to those that were evaluated in the source emissions analysis used to support the rule. One commenter (F-91-CESP-00049) notes that the 75 °C temperature required in the Method 25D analysis does not simulate the conditions in the national impacts analysis performed by the EPA to select the regulatory action level and control requirement. For example, the temperature used in the mathematical models used to estimate nationwide emissions was 25 °C. The commenter requests that the proposed test method temperature be revised downward to reflect ambient and waste unit operating temperatures.

Response: The EPA developed Method 25D to provide a relative measure of the organic emission potential of a waste. For the national impacts model, compound-specific factors were applied to site-specific waste stream data to estimate the concentration that would be determined by direct measurement using Method 25D. The estimated Method 25D results were then used to determine which streams, if measured by Method 25D, would be regulated under each evaluated control option and action level. For each control option and action level, the mathematical model to which the commenter refers (ChemDat7) was then used to estimate the nationwide emissions that would result if the required controls were applied to those waste streams.

The EPA believes that these are practical applications of the Method 25D parameters and of the ChemDat7 model. The Method 25D paramaters were used to model the waste streams that would be controlled, which is consistent with the practical purpose of Method 25D, and the ChemDat7 model was used to estimate national emissions, which is consistent with the purpose of that model. The Method 25D and the ChemDat7 are used for different purposes in the national impacts model, and it is not necessary for the parameters of the Method to match those of the ChemDat7.

Comment: One commenter (F-91-CESP-00016) submits that the gas standard in the proposed method requires a propane concentration that is too high and, therefore, the concentration value should be lowered. According to the commenter, the high propane concentration (25 percent) prevents the standard from being prepared at pressures above 250 psi. This limits the lifetime of the gas standard and increases the cost of using the test method. The commenter also states that concentrations above 1 percent propane are flammable and present a greater safety risk. Also, obtaining low-level calibration points using a high concentration of propane requires very low standard injection volumes, which are difficult to make and prone to errors because of dead volume in the standard introduction system.

Response: The EPA conducted two different interlaboratory studies to assess the precision and accuracy of the Method 25D obtained by "novice" laboratories (Docket Nos. F-91-CESP-S00485, S00504). While conducting these studies, the EPA learned that high-pressure cylinders containing low-concentration propane could be more easily obtained by these laboratories than cylinders containing high concentrations of propane at high pressure. Department of Transportation regulations restrict the shipment of cylinders containing high concentrations of propane at high pressure. The EPA does not want to limit the number of laboratories capable of performing Method 25D on the basis of access to the required calibration gas. Upon review of the test method, the EPA decided that the required concentration of propane in the calibration gas could be lowered without affecting the test method performance. For the final Method 25D, the required concentration of propane in the gas standard is established at 10 percent. The required concentration of 1,1-dichloroethylene in the calibration gas remains set at 1 percent.

Comment: One commenter (F-91-CESP-00016) states that a ±5 °C temperature difference in the purge conditions will have a large effect on the recovery of a semivolatile compound over a 30-minute period. The commenter suggests that tighter specifications should be specified.

Response: The proposed Method 25D specified that the temperature around the purging chamber and coalescing filter be maintained at 75 ± 5 °C. For each of the two interlaboratory studies, gravity-convection ovens were used capable of maintaining a temperature of 75 ± 5 °C. The gravity-convection oven did not provide adequate temperature control because of temperature striation within the oven. Improved test method precision results in more consistent implementation and enforcement of a rule. Therefore, based on the temperature precision that can be achieved using a forced draft oven, the EPA revised Method 25D to specify that the temperature around the purging chamber and coalescing filter be maintained at 75 ± 2 °C.

Comment: Comments were received challenging the validity of Method 25D. Five commenters (F-91-CESP-00008, 00033, 00060, 00066, 00069) refer to the EPA interlaboratory study that used only synthetic wastes and showed large variability in interlaboratory results. One commenter states that the statistical evaluation of the interlaboratory study results did not follow standard approaches for these types of studies. A second commenter (F-91-CESP-00060) believes that it is important to test real waste samples including solids, sludges/slurries, and liquids. Another commenter (F-91-CESP-00008) states that the requirement to run four replicate analyses and to perform statistical data reduction is a futile attempt to account for and control the variability indicated by the interlaboratory study. Two commenters (F-91-CESP-00033, 00069) state that the method has not been validated. Two commenters (F-91-CESP-00010, 00043) request the opportunity to review the Method 25D validation study. One commenter (F-91-CESP-00063) submits that, additionally, results are not available from actual waste samples and that it is not clear how results from this analytical method correlate with already available analytical tests.

Response: During the development of Method 25D, the EPA conducted extensive studies to assess the precision and accuracy of the method using various simulated and real wastes. Most of the waste types tested showed relative percent deviations below 10 percent. The EPA conducted two different interlaboratory studies to assess the precision and accuracy of the method. The information acquired during these studies resulted in the EPA modifying the test method procedures to improve the test method performance. For example, the results of the first interlaboratory study (Docket No. F-91-CESP-S00485) prompted the EPA to modify the purge apparatus and remove external moving parts to make the apparatus less prone to leakage. A second interlaboratory study (Docket No. 91-CESP-S00504) was conducted among seven laboratories using the modified purge apparatus equipment. The results of this study showed a significant improvement in both within-laboratory and between-laboratory variability. With the addition of quality control sample analysis requirements, the precision within each laboratory should improve. The EPA has conducted various studies on the precision of the method with various waste matrices, both synthetic and real. Most waste types, including actual waste samples, showed relative standard deviations below 10 percent.

The replicate sampling analyses are required by Method 25D to account for the variability in composition of most wastes, not the variability in the analytical technique of the test method. Because it is difficult to obtain a representative waste sample, replicate sampling is required to better characterize the volatile organic concentration.

Validation is the comparison of a new test method to an established, accepted test method. Method 25D is the only test method currently available that the EPA is aware of that provides a relative measure of the air emission potential of a waste. Consequently, at this time there are no other test methods with which to correlate or compare Method 25D in a validation study. However, as previously discussed, Method 25D has been reviewed extensively by the EPA and outside laboratories for precision, recovery, and interlaboratory variability.

<u>Comment</u>: Commenters (F-91-CESP-00016, 00057, 00066) stated that Method 25D needs to have acceptable quality assurance/quality control (QA/QC) criteria. One of the commenters (F-91-CESP-00016) suggests for QC measures using either liquid calibration standards or liquid QC check samples. In contrast, another commenter (F-91-CESP-00008) believes that

the operational checks and calibration procedures specified in the test method are excessive.

Response: The EPA believes that appropriate and reasonable QA/QC requirements are included in Method 25D. The test method requires three-point calibration checks and daily calibrations with specific linearity and precision requirements. A performance audit requirement consisting of a liquid sample is also included in the test method.

Comment: One commenter (F-91-CESP-00010) submits that differences in flame ionization detector (FID) or electrolytic conductivity detector (ELCD) response of simple compounds may bias the results high or low. A second commenter (F-91-CESP-00016) states that the assumptions of the equal-per-carbon response of the FID and the equal-per-chlorine response of the ELCD are limited.

Response: The EPA is aware that responses of the FID and ELCD to the calibration gas are parameters that affect the volatile organic concentration value determined by Method 25D. The response factors of these detectors were addressed during the development of the test method, and the EPA determined that their effect on the Method 25D results is not significant enough to change the compliance status of most wastes. However, an owner/operator has the option to use other waste determination techniques or knowledge of their waste as an alternative to a Method 25D analysis.

Comment: One commenter (F-91-CESP-00048) believes that inserting the purging lance into solid, semisolid, or highly viscous samples is likely to damage or plug the lance.

Response: The EPA disagrees that the purging lance is susceptible to damage or plugging when the sample is prepared as specified in Method 25D. The test method specifies that the sample matrix placed in the purging chamber consist of 10 grams of waste and 100 mL of PEG/water. The EPA's experience analyzing samples with the test method has shown that solid, semisolid, and highly viscous samples prepared in this manner do not damage or plug the purge lance.

Comment: One commenter (F-91-CESP-00033) states the audit sample requirement may be unworkable. The commenter submits that the use of audit samples is appropriate for quality assurance, however, the requirement that the audit samples be obtained from a regulatory agency has not been demonstrated to be workable.

Response: The EPA has provided audit service with other methods to regulatory agencies for many years. The program provides, free of charge, performance audit samples to sources with the appropriate regulatory agency acting as requestor. The audit requirement in Method 25D requires the analysis of an audit sample only if it is available (at this time, audit samples are not available).

Comment: One commenter (F-91-CESP-00016) notes that, in the calculation of mass of carbon, the molecular weight of methane is used instead of the molecular weight of carbon. According to the commenter, this results in a positive error for all hydrocarbons except methane, with as much as a 22 percent overprediction for benzene. The commenter states that such a large source of inherent error in the method should be discussed in the applicability of the method and allowances provided so that a more accurate value could be used for sources where the average molecular weight of the volatile fraction is known.

Response: Method 25D is not intended to be a definitive test method for measuring the concentration of the specific organic compounds in the waste. The sample purge stream is analyzed using an FID to measure carbon and an ELCD to measure chlorine. Hydrogen, oxygen, sulfur, and nitrogen are not measured by these detectors. In addition, oxygenated organic compounds (e.g., formaldehyde) produce a smaller FID response per carbon atom than other organics. Therefore, it was necessary to develop a method to account for these effects.

The EPA calculated a weighted average equivalent molecular weight of carbon in volatile organic compounds to be approximately 16. Using the molecular weight of 16 (that of methane), as opposed to 12, to represent carbon, accounts for hydrogen, oxygen, nitrogen, and sulfur. The EPA believes that using a molecular weight of 16 for carbon will result in neither significantly overstating nor significantly understating the true equivalent molecular weight of the mixture of organic compounds. For certain individual compounds, the volatile organic measurement could be affected by the molecular weight of 16 for carbon. Most standards allow the owner/operator the option of using alternate waste determination techniques or their knowledge of the waste in lieu of Method 25D or Method 305 analyses.

8.2 METHOD 25E

Comment: One commenter (F-91-CESP-00033) states that no known validation work has been done on Method 25E.

Response: Validation is the comparison of a new test method to an established, accepted test method. There currently are no validated methods that measure vapor pressure for the applications for which Method 25E was developed. Therefore, at this time there are no test methods with which Method 25E can be compared or correlated. The EPA selected the apparatus used for Method 25E because this apparatus is generally accepted for determining vapor pressure. The EPA conducted laboratory comparisons of Method 25E using substances of known vapor pressure. Laboratory trials (Docket No. F-93-CESP-S00506) using the test method have shown acceptable performance when conducted on organic mixtures with known vapor pressures.

Comment: One commenter (F-91-CESP-00070) states that in Method 25E, the sample is to be taken prior to entering the tank with a balanced pressure head space sampler. Therefore, the commenter submits that the method is not applicable to solid material or to any material that is not in a closed system.

Response: Method 25E was developed by the EPA as one test method that can be used to determine the organic vapor pressure of a waste that potentially must be managed in accordance with regulatory requirements to use a floating roof or other equivalent air emission controls. Consequently, EPA did not intend the test method be used for solid materials nor materials that are not loaded into a tank by a pipeline.

Comment: One commenter (F-91-CESP-00076) states the term "balanced pressure" in the description of the vapor sampling technique refers to the procedure employed by a single manufacturer of head space sampling equipment. The commenter notes that there are other suitable methods for head space vapor sampling that use slightly different techniques.

Response: Mention of trade names or specific products in the test method does not constitute endorsement by the EPA. It is not the EPA's intention to preclude equivalent products available from other manufacturers from being used to perform a test method. Any alternative head space sampling equipment can be used to perform Method 25E provided that the user demonstrates the differences in the equipment design are not significant when compared to the specific equipment models cited in the test method. "Not significant" in this case means that the differences in equipment design will not affect the accuracy and precision of the test results.

8.3 APPLICATION OF TEST METHODS TO SUBPART CC STANDARDS

Comment: Four commenters (F-91-CESP-00008, 00048, 00053, 00060) submit that Method 25D is inappropriate for the subpart CC standards because the method is expensive, time consuming, and labor intensive to perform.

Response: The EPA believes that Method 25D provides an analytical method for a direct measurement waste determination that is neither unusually expensive nor time-consuming for a laboratory analytical technique. The EPA estimates that performing Method 25D currently costs approximately $250 per sample. However, the EPA expects that the costs to perform Method 25D will become substantially lower as more laboratories become equipped to perform the analysis on a routine basis. The EPA estimates the time to perform a Method 25D analysis including sample preparation is approximately 45 minutes per sample. This analysis time is not unusually long for a laboratory analytical technique.

<u>Comment</u>: Commenters (F-91-CESP-00008, 00010, 00048, 00060, 00063) state that the equipment required to perform Method 25D is not commercially available. The commenters note that the regulated community cannot determine the feasibility of the test method or the facility precompliance status because the necessary analytical studies cannot be performed.

<u>Response</u>: The main components of the test apparatus (i.e., flame ionization detector, electrolytic conductivity detector, integrators, bench-top oven) are equipment commonly used in analytical laboratories. The purging chamber glassware required for Method 25D currently is not available from a commercial supplier and, consequently, must be custom made. However, fabrication of this glassware is not difficult for a glassblower using the specifications described in the method. In addition, at least one commercial supplier has expressed interest in marketing the assembled glassware required by Method 25D for retail sale.

<u>Comment</u>: Three commenters (F-91-CESP-00046, 00036, 00062) submit that the Method 25D sampling and analysis procedures are not appropriate for radioactive mixed wastes. One commenter (F-91-CESP-00062) states that Method 25E is not safe for testing radioactive mixed wastes. The commenters state that sampling would pose health and safety risks to personnel. Specifically, the requirement to cool the samples would involve handling by personnel. Also, the commenters state there is currently very little laboratory capacity available to analyze mixed wastes.

<u>Response</u>: As explained in section 6.1.3 of chapter 6 of this BID, the applicability of the subpart CC standards to waste management units handling radioactive mixed wastes is being

temporarily deferred for reasons not related to the waste determination procedures required for the subpart CC standards. The EPA acknowledges that sampling and analysis of radioactive mixed wastes will require special handling and procedures. For situations where performing a waste determination using direct measurement is not practical or possible, the subpart CC standards allow the TSDF owner or operator to use knowledge of the waste, which does not require samples of the waste to be collected.

Comment: One commenter (F-91-CESP-00033) states that the analysis temperature in Method 25E is undefined. According to the commenter, Method 25E, section 5.2.1, states "...headspace vials to equilibrate at the temperature specified in the regulation." The proposed subpart CC standards do not contain this information. The commenter notes that the preamble states that measurements would be required to be taken at the maximum temperature reasonably expected to occur. The commenter submits that the analytical laboratory will need to reset the temperature of the headspace unit, depending on the source of the sample, requiring time for the unit to equilibrate at each setting and introducing a source of variation affecting the analytical results.

Response: The user of Method 25E is referred to the regulation for the headspace vials equilibration temperature value. For application of Method 25E to the subpart CC standards, the maximum organic vapor pressure is defined in the rule to be "the equilibrium partial pressure exerted by the hazardous waste contained in a tank determined at the temperature equal to: (1) the local maximum monthly average temperature as reported by the National Weather Service when the hazardous waste is stored or treated at ambient temperature; or (2) the highest calendar-month average temperature of the hazardous waste when the hazardous waste is stored at temperatures above the ambient temperature or when the hazardous waste is stored or treated at temperatures below the ambient temperature." In most applications of Method 25E to the subpart CC standards, the EPA expects that the test method analysis will be performed at the TSDF site. Therefore, any variation in local maximum monthly average temperature between the location where the sample is collected and the location where the sample is analyzed will not be significant.

9.0 RULE IMPLEMENTATION

9.1 PERMIT-AS-A-SHIELD POLICY

A total of 24 commenters addressed the EPA's proposed action of modifying the "permit-as-a-shield" practice to require that owners and operators of TSDF that have been issued final permits prior to the effective date of the subpart CC rulemaking comply with the air rules under 40 CFR 265 subparts AA, BB, and CC until the facilities permit is reviewed or reissued by the EPA. Four of the commenters support the EPA's proposed modification. The other 20 oppose the proposed modification and maintain that "permit-as-a-shield" should remain unchanged. Responses to specific comments in opposition to modifying the "permit-as-a-shield" are presented below.

Comment: Three commenters (F-91-CESP-00029, 00040, 00065) argued that the EPA is without the legal authority to rescind the "permit-as-a-shield" practice and that to do so would be contrary to congressional intent. They claim that the EPA cites no compelling legal authority or persuasive reasoning why a practice that has been part of the RCRA program since its inception should now be suspended.

Response: The practice known as "permit-as-a-shield" is derived from an exercise of the EPA's regulatory authority and was first codified in the 1980 implementing regulations of the RCRA permit program (45 FR 33290, May 19, 1980). It is not a provision of RCRA and is therefore not part of the statutory mandate by Congress to manage the nation's hazardous wastes. Shell Oil v. EPA, 950 F.2d at 741, 762 (D.C. Cir. 1991). Because it is a regulatory and not a statutory provision, the EPA can modify the "permit-as-a-shield" practice in any situation where it determines that the practice does not serve the EPA's mandate to protect human health and the environment. For the final subpart CC standards, the EPA estimates that baseline nationwide excess cancer incidence resulting from exposure to TSDF organic emissions are 48 cases per year. In addition, total nationwide organic emissions from TSDF are estimated to be approximately 1 million Mg/yr and, thus, contribute significantly to the formation of atmospheric ozone. These health and environmental impacts are very high relative to the impacts of emissions from other sources regulated under RCRA and the Clean Air Act. Accordingly, the EPA has determined that the health and environmental impacts resulting from organic air emissions from TSDF are of a magnitude to warrant narrowly rescinding the "permit-as-a-shield" practice for this limited case.

Comment: Four commenters (F-91-CESP-00032, 00035, 00045, 00077) state that the removal of the permit shield will violate their due process rights as permittees, which are normally protected through the permit process.

Response: The "permit-as-a-shield" practice is not a consequence of Constitutional or statutory obligations of the EPA to any individual and its removal does not violate any substantive or procedural due process rights of individuals. The "permit-as-a-shield" practice was established by regulations promulgated by the EPA and therefore can be modified when the EPA determines it is necessary to do so for the protection of human health and the environment. Numerous government regulations have a direct effect on regulated entities, and the EPA's "permit-as-a-shield" practice does not vest the regulated community with a right to be "shielded" from all new RCRA regulations. Furthermore, the proposal put the public on notice that the EPA was planning to modify the "permit-as-a-shield" practice in this rule, and the public has therefore had an opportunity for meaningful comment on the issue.

Comment: Eight commenters (F-91-CESP-00023, 00032, 00035, 00037, 00043, 00066, 00069, 00077) claim that the EPA's "permit-as-a-shield" practice is a valuable component of the RCRA program because it unifies all the regulatory requirements in one location, namely the permit; and that the permit modification and renewal processes can adequately accommodate the timely implementation of the subpart CC standards. These commenters claim that eliminating "permit-as-a-shield" for RCRA air rules negates the purpose and importance of the RCRA permit.

Response: The EPA continues to believe that the permit process and requirements are fundamental components of the RCRA program and that, by and large, compliance with the permits should constitute compliance with the RCRA program. To date, the EPA has rescinded "permit-as-a-shield" in only two other rulemakings. The first rulemaking is the land disposal restrictions, which prohibit the land disposal of certain untreated hazardous wastes. The second rulemaking requires double liners and leak detection systems for hazardous waste land disposal units. In each of these cases, as here, the EPA determined that the risk to human health and the environment was too high to allow the practices to continue (for remaining permit periods) and required that all TSDF comply with the new requirements regardless of their permit status. The EPA has determined that allowing owners and operators of permitted TSDF to be shielded from compliance with the regulatory requirements of subparts AA, BB, and CC standards will allow excessively high risks. These actions do not negate the value of the RCRA permit program or of the "permit-as-a-shield" practice. Instead, the EPA is making a distinction between a provision that is sufficiently protective in most cases and one that is not in these specific instances.

The EPA disagrees with the commenters' claims that the permit modification process can adequately accommodate the timely implementation of the subpart CC standards. For the EPA to apply the subpart CC standards rules into permits by way of modifications would require a significant and unreasonable resource commitment. Furthermore, the fact that existing permits can be modified to incorporate new regulatory requirements [per 40 CFR 270.41(a)(3), which implements RCRA section 3005(c)(3)] shows that permit-as-a-shield is hardly an inviolate principle. The rulemaking simply accomplishes nationally what a modification would accomplish individually. Accordingly, the EPA developed the subpart AA, BB, and CC standards to be "self-implementing" so that State and Regional permit writers will not be required to reopen and rewrite permits to incorporate the provisions. Permitted facilities will be able to comply directly with the regulatory standards in the same way that interim-status facilities must comply. Modifying "permit-as-a-shield" for these rules eliminates any confusion or ambiguity as to whether the requirements are applicable to a particular TSDF.

Comment: Three commenters (F-91-CESP-00037, 00045, 00077) claim that the removal of the permit shield will violate the EPA's previous practice expressed in 45 FR 33290 (May 19, 1980) whereby the EPA binds itself to the principle of using "permit-as-a-shield".

Response: These commenters correctly state the commitment that the EPA adopted a "permit-as-a-shield" in the May 19, 1980 final rules (the so-called consolidated permit regulations). This does not mean that the 1980 rule can never be amended. The EPA has never agreed to "bind" itself to any particular policy or provision. Instead, the EPA may adhere to a general practice or policy with the understanding that, if the circumstances warrant and the EPA provides a rational explanation, it can modify or rescind a particular provision. It should be noted, for example, that Congress has since amended RCRA to require that air emissions from TSDF be controlled, and in the same amendments provide that the EPA may reopen permits to add conditions reflecting new control practices and to redress potential risks posed by the facility. [RCRA section 3005(c)(3) and S. Rep. No. 284, 98th Cong. 1st Sess. at 31]. Here, the EPA is determining that there are excessively high risks from these facilities, and therefore that these more protective provisions should become effective immediately.

It should also be noted that the EPA does not intend to rescind "permit-as-a-shield" on a regular or frequent basis for other rulemakings. As stated earlier, the EPA generally does view "permit-as-a-shield" as a beneficial and legitimate part of the RCRA program and that, in most cases, it will apply.

Comment: Four commenters (F-91-CESP-00033, 00037, 00047, 00065) state that removing the permit shield to accelerate implementation will be disruptive to TSDF owner and operator planning, be burdensome to comply with, and will have an adverse effect on the availability and cost of control equipment.

Response: The EPA believes that these commenters are greatly overstating the adverse or disruptive effects that an accelerated implementation will have on TSDF owner and operator planning and operations because the control technologies for the different kinds of management units are varied and widely available. The EPA specifically considered the costs and economic impacts of the various control options in the regulatory impact analysis for the proposed rules (Docket No. F-91-CESP-S00494). Based on this analysis, the EPA found that the costs of installing and operating air emission control equipment required by the control options are projected to be less than 1 percent of the total cost of hazardous waste management at TSDF. Any air emission control equipment supply availability constraints resulting from this rule should be short term, if at all. Furthermore, TSDF owners and operators required to install air emission control equipment to comply with the subpart CC standards are allowed up to an additional 30 months after the effective date of the rule to complete the equipment design and installation if they can document that the air emission controls cannot be installed and operating by the effective date, for reasons such as the unavailability of control equipment.

Also, the EPA expects that many TSDF owners and operators will choose to treat their hazardous waste earlier in the management sequence than they now do to reduce the volatile organic concentration in accordance with one of the treatment requirements allowed for in the final subpart CC standards, and thus avoid the cost of installing and operating the control equipment on the downstream tanks, surface impoundments, and containers. The EPA also encourages the use of pollution prevention techniques as a means of reducing the quantity of waste generated, the organic concentration of the waste, or the toxicity of constituents in the waste.

9.2 IMPLEMENTATION SCHEDULE (COMPLIANCE DATES)

Comment: A total of 22 commenters (F-91-CESP-00010, 00019, 00021, 00024, 00026, 00027, 00029, 00038, 00043, 00046, 00048, 00051, 00057, 00061, 00062, 00066, 00067, 00069, 00071, 00075, 00078, 00082) request the deadline for compliance with the rule be extended, citing various reasons and suggesting alternative compliance schedules ranging from site-specific deadlines to granting a 5-year extension for any TSDF. Many of these commenters expect widespread noncompliance if the proposed implementation times are promulgated. One of these commenters adds that hazardous waste generators required to install controls on 90-day tanks and containers should be given more time to comply with the rules than permitted or interim-status TSDF.

Response: Under RCRA regulatory requirements, when a new RCRA rule is promulgated for TSDF, the owners and operators of interim-status TSDF are required to comply with the rule on the effective date of the regulations. For the subpart CC standards, owners and operators of permitted TSDF will have to comply with the subpart CC standards in the same manner that owners and operators of interim-status TSDF have always been required to comply with new rules. The effective date of the subpart CC standards is 6 months after the date of promulgation. All TSDF owners and operators (both permitted and interim-status TSDF) will need to comply with the standards by the effective date. However, the EPA recognizes that for certain types of air emission control devices, more than 6 months are required to evaluate, design, procure, fabricate, install, and test the equipment as well as obtain necessary permits. Therefore, the EPA proposed that TSDF owners and operators installing control devices to comply with the requirements of the subpart CC standards be allowed up to 18 months after the effective date to complete the installation of this equipment if they can document that installation of the air emission controls cannot be completed by the effective date.

The EPA still believes that, for many air emission control applications, the required control devices can be installed and in operation within 18 months. However, the EPA agrees that under some circumstances, the owner's or operators's approach to complying with the air emission control requirements under the subpart CC standards may involve a major design and construction project which requires longer than 18 months to complete (e.g., replacing a large open surface impoundment with a series of covered tanks). In recognition of these cases, the EPA decided that it is reasonable to extend the maximum period allowed TSDF owners and operators to install air emission controls required by the subpart CC standards to 30 months from the effective date of the rule. However, it is important to note that by extending this period it is not the EPA's intent for TSDF owners and operators to needlessly delay the installation of control equipment. On the contrary, the EPA expects TSDF owners or operators to install the air emission controls required by the subpart CC standards as soon as possible but no later than 3 years from the promulgation date.

The EPA does not agree that hazardous waste generators need more time than permitted or interim-status TSDF owners or operators to comply with the subpart CC standards control requirements. The rules are designed to be "self-implementing," and the EPA believes that the implementation schedule established for all facilities provides ample time to achieve compliance. The regulated community has been on notice since the rule proposal date, July 22, 1991, that the EPA plans to apply the subpart CC standards control requirements to 90-day tanks and containers. The effective date of the subpart CC standards is 6 months after the date of promulgation. Furthermore, as discussed above, facilities that must install control devices to comply with the requirements of the standards are allowed up to 30 months after the effective date to complete the design and installation of this equipment if they can document that installation of emission controls cannot be completed by the effective date.

The EPA is aware that some hazardous waste generators do not have on-site laboratory analysis capability and must rely on commercial laboratories to analyze their waste. However, the additional time required for a commercial laboratory to analyze samples and return the results to the generator does not justify the need for more time to comply with the rules. The rules provide sufficient time for owners and operators of all affected units to achieve compliance.

<u>Comment</u>: Eight commenters (F-91-CESP-00010, 00026, 00029, 00038, 00048, 00067, 00069, 00078) believe that timely compliance with the accelerated implementation resulting from removal of permit-as-a-shield will be impossible. The commenters claim that there will be extensive delays in obtaining both RCRA and air permits due to lengthy permit review periods required by State or Regional authorities. These commenters envision that the EPA will be inundated by permit modifications and extensive delays will result.

<u>Response</u>: The commenters who expressed concern about permit reviews or unmanageable work loads may be interpreting the rule proposal to mean that each RCRA permit would have to be modified or reopened to include the subpart CC standards. The EPA has designated the subpart CC standards to be self-implementing rules because a TSDF owner or operator can determine the applicability of the standards and the means to implement them without interpretation or intervention by the permitting authority. Furthermore, the EPA has been successful in applying the emission controls required by the subpart CC standards to similar air

emission sources in the chemical and petroleum industries under the Clean Air Act (section 112, 42 U.S.C. 7412). Therefore, the EPA believes that self-implementation of the subpart CC standards will likewise be a successful implementation strategy.

As is discussed in the previous response, the EPA agrees that in a case involving a major design and construction project, more than 18 months could be required to have the air emission controls in operation. Therefore, the final rules provide up to 30 months beyond the effective date to complete the design and installation of emission control equipment. The EPA believes that the 3-year period that is provided after promulgation of the final rules is reasonable.

Also, the EPA disagrees that, in most cases, timely compliance with the subpart CC standards will be impossible. The requirements of the rule are straightforward and specific as to whom they apply and what the controls must be. The same is also true for the subparts AA and BB standards promulgated for process vents and equipment leaks, respectively. In all cases, the TSDF owner or operator can directly measure and calculate the appropriate parameter for comparison to the action level specified in the standards and determine if emission controls are required on a particular emission source. If controls are required, the equipment specifications and performance criteria are also contained in the standards. In the case of equipment leaks, the leak detection and repair program that must be implemented is also specified in the standards.

The EPA does recognize that, in many cases, compliance with the subpart CC emission control requirements will require State permit modifications. The TSDF owner or operator may need to obtain a State permit modification before emission control equipment installation or process changes can be implemented. In such a case, the Regional Administrator may extend the implementation date beyond 3 years after the date of publication. To obtain an implementation schedule extension, the owner or operator must demonstrate that the situation is beyond the owner or operator's control and that the owner or operator has made all reasonable and prudent attempts to meet the compliance date.

9.3 HSWA INTERIM STATE AUTHORIZATION EXTENSION

Comment: One commenter (F-91-CESP-00062) requests guidance on when the EPA will need to modify a permit as a result of the EPA's retained authority for the subpart CC standards.

Response: The subpart CC rule removes the "permit-as-a-shield" provision as it applies to the control of organic emissions under RCRA section 3004(n). This provision generally shields owners and operators of RCRA-permitted TSDF from having to comply with new RCRA standards promulgated in 40 CFR part 264 until the facility permit is renewed, modified, or reviewed under 40 CFR 270.50. However, under the provisions of this rulemaking, this rule does not apply. The owners and operators of RCRA-permitted TSDF must comply with the subpart CC standards promulgated under 40 CFR part 265 until the facility permit is renewed, modified, or reviewed under 40 CFR 270.50. Thus, the EPA does not need to modify permits to incorporate these standards. However, the EPA does have authority pursuant to 40 CFR 270.41 to reopen a permit to include new standards promulgated in 40 CFR part 264 before the permit is reissued or reviewed.

9.4 OPTIONS FOR PART B APPLICATION INFORMATION

Comment: Two commenters responded to the EPA's request in the preamble of the proposed rule regarding the alternatives provided in the preamble for submittal of Part B permit application information. One commenter (F-91-CESP-00062) suggests the EPA use the option that would establish no specific deadline for modification of Part B and that the EPA request the information under § 270.10(e)(4) of the regulations on a case-by-case basis. Another commenter (F-91-CESP-00060) believes that once a proposed Part B permit has been issued, the permit application process should not be reopened by a requirement to submit a modification to the application.

Response: In the proposal preamble, the EPA requested comment on four options for when permit applications should be updated. After reviewing the options and comments, the EPA believes option one has the most appropriate approach for part B permit application submittals. Option one establishes no specific deadline for revision of the part B application, and the EPA would request information under 40 CFR 270.10(e)(4) on a case-by-case basis. Once the EPA requests information, the owner or operator must submit the information within 6 months to avoid potential enforcement action or permit denial. This is consistent with the Agency's historical approach to updating permit applications to reflect new requirements.

The EPA disagrees with the commenter who believes that the permit application should not be reopened and revised to reflect new regulations once a draft RCRA permit has been developed by the Agency. The RCRA regulations require that all permits have conditions that ensure compliance with applicable standards. If regulations take effect before permit issuance, the permit must reflect these new requirements. Therefore, if a permit is not issued to a facility by the effective date of these regulations, its permit application must be revised to incorporate information to demonstrate the facility will be in compliance with the new air standards.

9.5 PERMIT MODIFICATION CLASSIFICATION

Comment: One commenter (F-91-CESP-00029) asks that the EPA include language in the proposed rule that states that modifications made to tanks or surface impoundments to comply with these regulations will not constitute physical modifications to permitted systems that require RCRA permit modification.

Response: The EPA is not requiring permitted facilities to modify their permits in response to this rule. Changes at facilities necessary to comply with this rule are regulated under the self-implementing procedures of part 265 subpart CC and do not require permit modifications. During permit reissuance or review, the EPA will incorporate conditions corresponding to the subpart CC requirements into the permit.

Comment: One commenter (F-91-CESP-00047) requests that modifications required for air emission standards be considered a class 1 modification to avoid lengthy permitting processes. The commenter also asks for a clarification of what the EPA would consider to be a class 1, 2, or 3 modification.

Response: The EPA is not classifying air emission standards in appendix I to 40 CFR 270.42, since these modifications will primarily be initiated by the EPA under 40 CFR 270.41. If facilities wish to initiate permit changes to incorporate the air emission standards in their permits, the procedures for "other modifications" under 40 CFR 270.42(d) may be used.

9.6 RELATIONSHIP TO COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA)

Comment: Several comments were received concerning the relationship of the proposed subpart CC standards to CERCLA. One commenter (F-91-CESP-00033) disagrees that the EPA has authority to extend control requirements under RCRA section 3004(n) as "applicable or relevant and appropriate requirements" ("ARARs") to CERCLA. The commenter states that: (1) no statutory authority has been given for the inclusion of the proposed standard as ARARs under CERCLA as required under the Administrative Procedures Act, 5 U.S.C. 553(b)(2); (2) the EPA's renewed definition of ARARs and its new action levels are not binding; and (3) CERCLA release reporting should be implemented under the CAA. A second commenter (F-91-CESP-00065) states that the preamble language does not address how and whether these requirements will apply to onsite removal and remedial actions under CERCLA or comparable programs.

Another commenter (F-91-CESP-00069) states that: (1) it is not appropriate for ARARs to be established in this rulemaking as they are covered in detail in the proposed revised National Contingency Plan and in the EPA guidance documents, and

(2) determinations regarding ARARs should be conducted on a site-specific basis through the Office of Emergency and Remedial Response. This commenter also expresses concern that the standards for units managing recently generated waste may not apply to media, such as soil or groundwater, contaminated with organics, even if the contaminated media is managed to some extent in tanks, surface impoundments, or containers.

Three commenters (F-91-CESP-00021, 00033, 00069) express concern that cleanups under Superfund and RCRA corrective actions need to be completed in a timely and efficient manner; the use of these proposed standards as ARARs will hamper expeditious actions. One of these commenters suggests that onsite remedial and removal actions should be given a limited time exemption from the control requirements to foster rapid-response actions.

Two commenters (F-91-CESP-00046, 00064) believe the proposed rule has the potential to impose significant additional management, including analytical requirements, for onsite and offsite environmental restoration activities, and that installing potentially expensive emission controls on temporary tanks used for the short-term storage of hazardous waste is unrealistic and not cost effective.

Response: The EPA has decided to temporarily defer application of the subpart CC standards to tanks, containers, and surface impoundments which are being used onsite to treat or store hazardous wastes containing organics generated from remedial activities required under RCRA corrective action or CERCLA response authorities, or similar State remediation authorities, provided that the wastes are managed in units that do not also manage as-generated volatile hazardous wastes. Since this provision applies only to on-site management of such wastes, for the purpose of determining applicability of the subpart CC requirements, the point of waste origination for these wastes will be the point at which the wastes are physically moved outside the facility boundary (or for CERCLA response actions, outside the site boundary).

As the D.C. Circuit recently explained, a temporary deferral such as the deferral described here is permissible if the Agency legitimately needs further time to ascertain the best means of integrating concurrent statutory and regulatory schemes to avoid potential interference with the objectives of both schemes, and where Congress has not expressly forbidden a temporary deferral. Edison Electric Inst. v. EPA, 2 F. 3d 438, 451-53 (D.C. Cir. 1993). See also RCRA section 1006, requiring the EPA to integrate all provisions of RCRA for purposes of administration and enforcement, and to avoid duplication to the maximum extent practicable in doing so.

This situation is presented here. Control of air emissions from units at remediation sites implicates the overlapping and potentially competing concerns of RCRA section 3004(n) and the complex statutory provisions under RCRA, CERCLA, and State laws relating to remediation. The EPA's primary goal in the subpart CC rulemaking has been to develop air emission standards for tanks, containers, and surface impoundments holding as-generated hazardous wastes containing organics. At proposal, the Agency thus did not fully consider the issue of whether different standards should appropriately apply to wastes that are generated and managed as the result of remedial activities, or how the proposed rules for air emissions could best be integrated with the remediation authorities of RCRA and other Federal or State laws. 56 FR at 33497-98 (July 22, 1991).

The EPA agrees with the commenters that these are important issues deserving careful attention. It is possible that certain provisions of the subpart CC air emission regulations may be inappropriate or unnecessarily restrictive if applied to remediation activities. 58 FR at 8660 (Feb. 16, 1993). For example, hazardous wastes that are generated as the result of site cleanups are often very heterogeneous mixtures of contaminated soils, debris and other wastes. Thus, characterization of such wastes for the purpose of compliance with air emission standards may be more complex than for industrial process wastes, and may merit regulations to address those complexities. In addition, compliance with the air emission regulations may be problematic for certain types of remediation treatment technologies (such as pug mills) that could be regulated as tanks under RCRA, and thus subject to subpart CC standards. Further, subpart CC specifies certain requirements for transportation of hazardous wastes that may be unnecessarily stringent for on-site transport of wastes during cleanup activities.

The EPA notes further that some measure of control of air emissions from remediation tanks, containers, and impoundments will be assured during the deferral period. Remediation authorities of RCRA and CERCLA and similar State authorities allow overseeing officials to impose on a site-specific basis appropriate air emission controls on these types of units, as well as on other waste management units and handling operations. In addition, hazardous wastes containing organics that are managed off-site (i.e., outside a RCRA facility's boundary, or outside a CERCLA site) would be subject to the subpart CC management standards.

Finally, the Agency emphasizes that the deferral is indeed temporary. The issue of appropriate air emission controls for remediation units is likely to be addressed in the context of the Hazardous Waste Identification Rules which are currently being developed by the EPA. The issue is also potentially part of the third phase of the RCRA section 3004(n) implementation rules. In addition, waste remediation sites are on the initial list of source categories under section 112 of the Clean Air Act (57 FR 31576, July 16, 1992), and the EPA currently is scheduled to issue technology-based standards to control emissions of hazardous air pollutants from this source (See 57 FR 31576, July 16, 1992). Consequently, the EPA will be addressing this issue in the reasonably near future.

After the temporary deferral has been lifted, the subpart CC standards may be considered ARARs for certain types of remedial and removal actions. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), authorizes the EPA to undertake removal and remedial actions to clean up hazardous substance releases. Under CERCLA on-site remedial actions are required to comply with the requirements of Federal and more stringent State environmental laws that are applicable or relevant and appropriate to the remedial action unless certain statutory waivers apply. In addition, the National Oil and Hazardous Substances Contingency Plan (NCP) provides that removal actions shall attain ARARs to the extent practicable considering the exigencies of the situation. [40 CFR 300.415(i)].

A requirement under a Federal or State environmental law may be either "applicable" or "relevant and appropriate," but not both, to a remedial or removal action conducted at a CERCLA site. An ARAR is identified on a site-specific basis in a two-part analysis that considers first, whether a given requirement is applicable; then, if it is not applicable, whether it is nevertheless both relevant and appropriate. "Applicable" requirements as defined in the NCP are those that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. [40 CFR 300.415(i)]. "Relevant and appropriate" requirements are those that, while not "applicable" at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. [40 CFR 300.415(i)].

Some waste management activities used for remedial and removal actions in cleaning up hazardous organic substances require the use of tanks, surface impoundments, and containers. For example, a TSDF may treat hazardous organic liquids and surface water contaminated with hazardous organic waste on site using destruction, detoxification, or organic removal processes that occur in tanks or surface impoundments. The facility may perform on-site solvent washing of soils contaminated with hazardous organic sludges in a tank or container. At a TSDF, hazardous waste in leaking drums may be repacked in new containers for treatment and disposal at another site.

The air emission control requirements of the subpart CC standards are likely to be at least "relevant" to on-site remedial and removal actions that use tanks, surface impoundments, and containers to manage substances exhibiting characteristics or listed under RCRA as hazardous waste and having an average volatile organic concentration equal to or greater than 100 ppmw. In other cases, the standards may be "relevant and appropriate"; this determination must be made on a site specific basis.

On the other hand, the subpart CC standards do not specify control requirements for wastepiles, landfills, and land treatment units that manage hazardous wastes at TSDF. Therefore, the standards are not likely to be "applicable" to excavation, capping of wastes, land treatment, land farming, in situ treatment activities, and other activities involving wastepiles and landfills at CERCLA sites. Although in most cases the EPA does not expect the subpart CC standards to be "relevant and appropriate" to these types of units at CERCLA sites, remedial and removal actions performed in wastepiles may in some cases be similar in nature and scale to the waste management activities performed in surface impoundments; and waste fixation may involve the basic process and air emission mechanism regardless of whether the mixing of the waste and binder is conducted in a tank, surface impoundment, container, wastepile, landfill, or land treatment unit. Thus, in some cases the subpart CC standards may be "relevant and appropriate" for such actions; again, this determination must be made on a site specific basis.

Comment: One commenter (F-91-CESP-00075) requested clarification regarding the applicability of the subpart CC standards to mobile treatment units owned and operated by independent contractors when used for temporary on-site remediation activities at TSDF (e.g., soil washing, filter pressing). The commenter is concerned that TSDF owners and operators are required to obtain RCRA permit modifications for equipment which they neither own nor operate.

Response: Under RCRA regulations, the site owner and the owner and operator of a mobile treatment unit are both equally subject to RCRA subtitle C permitting requirements for each location where the unit remains on-site for more than 90 days. Pertaining to the situation described by the commenter, if the site (or TSDF) owner is not willing to participate in the permitting or permit modification process necessary to allow the mobile treatment unit to operate, then the unit cannot operate at that site.

Comment: Three commenters (F-91-CESP-00039, 00033, 00069) state that the proposed standard should not apply as ARAR's at CERCLA or corrective action sites when applied to wastes containing volatile organics in concentrations less than the action level. A fourth commenter (F-91-CESP-00046) believes the nature of the waste may change frequently during remediation and removal actions, therefore the requirement of performing a waste determination for each change may be difficult.

Response: First it should be noted that as is stated in the response to the first comment in this section of the BID, the EPA has decided to temporarily defer application of the subpart CC standards. The deferral applies to tanks, containers, and surface impoundments which are being used onsite to treat or store hazardous wastes containing organics generated from remedial activities required under RCRA corrective action or CERCLA response authorities, or similar State remediation authorities. For the deferral to apply, the wastes must be managed in units that do not also manage as-generated hazardous wastes containing organics.

After the temporary deferral has been lifted, the subpart CC standards requirements would not be "applicable" to CERCLA wastes with mass-weighted average volatile organic concentration less than 100 ppmw (the mass-weighted average volatile organic concentration action level in the final standards). However, based on site-specific health risk considerations, the standards may be "relevant and appropriate" to onsite CERCLA removal and remedial actions that use tanks, surface impoundments, and containers to manage substances that contain organics that are not covered by subpart CC standards (e.g., hazardous wastes with mass-weighted average volatile organic concentrations less than 100 ppmw).

Regarding the commenter's concern with performing a waste determination for each change, once a standard has been determined to be "relevant and appropriate," subpart CC control requirements must be met and further waste determinations will not be needed. The identification of ARARs must be done on a site-specific basis.

Comment: Two commenters (F-91-CESP-00039, 00046) question the EPA's inclusion of the application of the proposed standard as ARARs for wastepiles and for waste fixation in units other than tanks, surface impoundments, and containers at CERCLA sites.

Response: As is stated in response to the first comment in this section of the BID, promulgation of the subpart CC standards is not in itself promulgation of ARARs and does not characterize any specific applications as ARARs. Again, the identification of ARARs must be done on a site-specific basis.

Comment: One commenter (F-91-CESP-00033) states that covers for extensive areas, which are typical of Superfund sites, have not been adequately studied.

Response: As discussed in section 6.5.2 of this document, the EPA has extensively studied the application of covers to surface impoundments for the purpose of organic emission control. The purpose of this rulemaking is to regulate air emissions from TSDF that are required to obtain a permit under RCRA subtitle C. The purpose of the rulemaking is not to study air emissions from Superfund sites. If a cover for a large area is not feasible, the site-specific determination of whether to apply subpart CC to a Superfund site as "reasonable and appropriate" would lead the permit writer away from making such a site comply.

10.0 OTHER COMMENTS

Comment: One commenter (F-91-CESP-00033) asserts that the EPA failed to comply with the Administrative Procedure Act. The commenter submits that the EPA proposed new conditions for applicable or relevant and appropriate requirements under CERCLA without providing adequate notices as required by APA 553(b)(2) and that the EPA has improperly attempted to promulgate a new definition of ARAR's in the proposal preamble by referring to a CERCLA-proposed definition in violation of APA 553. In addition the commenter states that the EPA based its action level and the control requirements for surface impoundments on extrapolations, rather than on science and data.

Response: The rulemaking complies with all provisions of the APA. The EPA is not using the rulemaking to propose new conditions for ARARs under CERCLA nor promulgate a new definition of ARARs. Furthermore, the rulemaking is based on data and reasonable judgments from these data and does not violate the APA or any other statute or principle with respect to its factual foundation.

The commenter apparently misunderstands the nature of ARAR's. "Applicable" and "relevant and appropriate" requirements are defined in regulations promulgated under CERCLA with full notice and comment pursuant to the APA. "Applicable requirements" are defined in 40 CFR 300.5 as "those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site." "Relevant and appropriate requirements" are defined in 40 CFR 300.5 as "those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that, while not 'applicable' . . . address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site." After the temporary deferral as explained in section 9.6 of this BID, the final subpart CC standards are potentially ARARs in that the applicable or relevant and appropriate requirements contained in the rule itself, which was properly promulgated pursuant to the APA, apply in appropriate circumstances to CERCLA onsite remedial actions as a matter of law [CERCLA 121(d)(2)]. The EPA does not, and need not, promulgate a separate rule identifying which standards or requirements operate as ARARs in particular circumstances. The EPA's discussion in the preamble to the proposal for the subpart CC standards was not, in itself, the promulgation of ARARs; it was merely a statement of the EPA's view of the status of the proposed standards as ARARs.

With respect to the commenter's concern that the EPA had attempted to promulgate a new definition of "applicable requirements" through preamble discussion by referencing a proposed rule, the concern is moot because the proposed definition was promulgated in final form on March 8, 1990, 55 FR 8666 and is now codified (as quoted above) at 40 CFR 300.5. It was never the EPA's intent to incorporate as binding a proposed definition.

The EPA agrees with the propositions in the cases cited by the commenter, such as the fundamental notion that the EPA must identify the data and methodology that support its rules and must explain its thinking and the data relied on. See, e.g., Lloyd Nolan Hospital and Clinic v. Heckler, 762 F.2d 1561 (11th Cir. 1985); Home Box Office, Inc. v. FCC, 567 F.2d 9, 35 (D.C. Cir.), cert. denied, 434 U.S. 829 (1977). The EPA promulgated the subpart CC standards according to these principles; as explained above, the EPA has identified in detail the data it used and the methodology, including reasonable assumptions and inferences, it used to develop the subpart CC standards. Nothing in these cases or any other authority prevents the EPA from making reasonable assumptions and inferences, as long as their bases and uses are fully explained. Indeed, given the complexity of the regulatory schemes that the EPA is charged with developing under RCRA and the other statutes it implements, it would be virtually impossible to proceed in any other way. Courts have recognized that "there must exist some reasonable termination point in the process of data collection," and that, at some point, "rulemaking may cease and compliance must commence." See Kennecott v. EPA, 780 F.2d 445, 449, 451 (4th Cir. 1985).

Finally, the commenter's belief that the action level is established from extrapolations is unfounded; it is, in fact, based on the results of the detailed national impact analysis as described further in section 4.0 of this document. Also, the surface impoundment control requirements are based on application of these controls at RCRA-permitted TSDF, not those regulated under CERCLA. The EPA believes that few TSDF surface impoundments will be required to install emission controls under the subpart CC standards as many TSDF owners and operators are converting existing surface impoundments to tanks to comply with other RCRA regulations. Regardless, the EPA personnel have observed floating membrane covers on surface impoundments of the size expected to manage wastes with volatile organic concentrations greater than or equal to the action level at TSDF. Therefore, the required controls on surface impoundments are appropriate.

Comment: One commenter (F-91-CESP-00024) states that the impact of the rule is unknown as there has been no experience with proposed Method 25D. As such, the regulated community is unable to determine how many waste streams will be found with organic concentrations above the rule action level. It is suggested that the EPA's proposed rules be based on established analytical test procedures to enable facilities to calculate impacts of rules prior to their promulgation.

Two commenters state that Method 25D should be promulgated before the subpart CC standards are promulgated. One commenter (F-91-CESP-00007) states that Method 25D is a proposed new method that should become effective before the proposed air emission rules become final to avoid delays in implementing the proposed rules. A second commenter (F-91-CESP-00025) recommends that the EPA accelerate the promulgation of the new test methods to allow sufficient time for laboratory certification (which may take 6 months) and subsequent determination by the regulated community to the applicability of the new standards. If promulgation of the test methods cannot be accelerated, it is suggested that the EPA extend the effective date of the proposed standards.

Response: Method 25D was promulgated in a separate rulemaking (59 FR 19402, April 22, 1994) before the promulgation of the subpart CC standards. Therefore, the regulated community has had the opportunity to assess the impact of the air emissions rules before the rules become final.

With regard to the recommendation that the promulgation of new test methods be accelerated to allow sufficient time for laboratory certification, the EPA currently does not require laboratory certification. Rather than requiring that waste analyses be performed by a certified laboratory, Reference Method 25D requires the analysis of an audit sample, if available, and it also includes daily quality control checks. The EPA is currently studying the issue of certifying laboratories to perform the EPA reference method analyses.

Comment: One commenter (F-91-CESP-00062) suggests that the existing Reference Method 21, Determination of Volatile Organic Compound Leaks, be added to SW-846 so that all required RCRA test methods will be located in one document.

Response: The EPA decided that Reference Method 21 is already readily available from other sources, and it is not necessary to add the test method to SW-846. The test method has been published in 40 CFR 60, appendix A, and has been available for more than 10 years. Method 25D is also available electronically on the Emission Measurement Technical Information Center Bulletin Board System (EMTIC BBS), which may be accessed through a modem by dialing (919) 541-5742 (for any speed baud system).

<u>Comment</u>: One commenter (F-91-CESP-00050) recommends that environmental releases of toxic chemicals from TSDF be reported to the Toxic Release Inventory established under the Emergency Planning and Community Right-to-Know Act (1986). In addition, the chemicals included under the Toxic Release Inventory should be expanded to include all chemicals managed in accordance with the EPA's hazardous waste regulations due to concerns relating to toxicity; this information could then be used to improve the data base utilized in the proposed rule.

<u>Response</u>: Under Emergency Planning and Community Right-to-Know Act section 313 (EPCRTKA), as regulated under 40 CFR 372 et seq., toxic release reporting is required for those facilities that have 10 or more full-time employees and have a primary SIC code of 20 through 39, along with other applicable criteria. This section of EPCRTKA was established for those facilities that are involved in the manufacturing or processing of toxic chemicals, as indicated by the SIC codes of manufacturers to which the rule applies. Many TSDF do not fall under these SIC categories because they do not manufacture or process toxic chemicals for distribution in commerce and, as such, do not report under section 372. The Administrator may add SIC codes to this section; however, they must be relevant to the purpose of the section that is for manufacturing and processing.

However, the requirements of 40 CFR 264.75 and 265.75 apply to permitted and interim-status TSDF, respectively, and require the owner or operator to prepare a biennial report by March 1 of each even-numbered year. This report must include a description and quantity of each hazardous waste received by the facility during the year. In addition, under §§ 264.77 and 265.77, owners and operators are required to report to the Regional Administrator any releases, fires, and explosions as specified under sections 264.56(j), which governs emergency procedures. The EPA believes that such reporting procedures are sufficient for TSDF.