

**PRESUMPTIVE MACT FOR
ORGANIC LIQUIDS (NON-GASOLINE)
DISTRIBUTION FACILITIES**

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**Waste and Chemical Processes Group
Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency
Research Triangle Park, NC**

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Attachment 2	Memorandum--State Rules Summary

1.0 OVERVIEW OF THE PRESUMPTIVE MACT DETERMINATION

1.1 Background

Section 112 of the Clean Air Act (the Act) mandates that the EPA promulgate national emission standards for hazardous air pollutants (NESHAP) on a timely basis. In response to Section 112(c), the EPA published an initial list of hazardous air pollutant (HAP) source categories in the Federal Register on July 16, 1992 (57 FR 31576). This list included Organic Liquids Distribution (non-Gasoline) as one of the categories of major sources for which standards were to be developed and promulgated in the year 2000. The Act further requires that the NESHAP for each listed source category require sources to adopt maximum achievable control technology (MACT) to reduce emissions of HAP. §112(d). If the EPA fails to meet this deadline by more than 18 months, Section 112 (j) includes a “hammer” provision requiring that operating permits for major sources contain HAP emission limitations determined to be equivalent to MACT. The equivalency determinations are to be made on a case-by-case basis for individual sources.

Section 112(g) requires case-by-case MACT determinations for sources where no applicable emission limitations for HAP material have been established. The final rule governing Section 112(g) case-by-case MACT determinations for constructed or reconstructed sources was published in the Federal Register on December 27, 1996 (61 FR 68384). This rule requires case-by-case MACT for new and reconstructed major sources to be consistent with “new source MACT”; i.e., no less stringent than the emission control that is achieved in practice by the best controlled similar source, as determined by the EPA Administrator.

The source category for which standards are to be developed in this rulemaking is organic liquids distribution (non-gasoline). The initial source category description includes activities associated with the storage and distribution of organic liquids other than gasoline that have a HAP content. This document presents options for presumptive maximum achievable control technology (P-MACT) to serve as a resource for States that must make case-by-case MACT determinations under Section 112(g). It also provides background and support information for developing a rule proposal and a final NESHAP regulation.

1.2 Available Data

The EPA project team (EPA and EPA contractor staff) considered several available sources of information in preparing this P-MACT document. These included a comprehensive literature search and review of existing regulations, as well as meetings and other contacts with companies and trade organizations. In addition, an industry survey has been prepared and was sent in April 1998 to several companies in this industry in order to collect detailed facility-specific information on current control practices. However, no survey results were available for use in reaching the P-MACT conclusions in this document.

The project team made site visits to three organic liquids distribution facilities in New Jersey and Philadelphia in December 1997, and four visits in Oklahoma and Texas in April 1998. Since the information obtained on these visits is being treated as confidential business information (CBI) pending review by the plant owners, detailed information from the visits has not been used to determine P-MACT.

A comprehensive review of regulations affecting this industry was also undertaken to allow the team to make conclusions concerning current levels of control. The results of this review served as the principal source of information in developing the P-MACT levels summarized in the next subsection.

Two Roundtable meetings of the EPA/States/industry Work Team were held, on January 21 and March 24, 1998. The second Roundtable was held to discuss comments of the Work Team on the draft P-MACT document that had been circulated for comment. Comments were received and subsequently incorporated into the document, which served to improve the clarity of the document and the information presented to support the P-MACT conclusions. A meeting/teleconference of the Work Team was also held on February 12, 1998 to discuss the draft industry survey questionnaire under development within the Agency. These discussions, along with a number of other conversations and written communications, were used by the project team in completing both this document and the industry survey.

Attachment 1 is a revised and updated version of a presentation made by the EPA at the first EPA/States/industry Roundtable meeting.

1.3 Summary of Presumptive MACT

1.3.1 Affected Sources

The initial source category description for this project indicated that the category would consist of activities associated with the storage and distribution of non-gasoline liquids with HAP content, at sites that serve as distribution points from which organic liquids may be obtained for further use and processing. The EPA project team has investigated the types of facilities that may operate within this broad industry description. For the P-MACT effort, a decision was made to consider the following facility types:

1. Stand-alone or separate liquid distribution terminals;
2. Distribution activities collocated with petroleum refineries or chemical production plants;
3. Pipeline facilities (including crude oil and natural gas liquids pipelines after the point of custody transfer); and
4. Facilities that compound, mix, or blend liquids, and may package these liquids or blends.

The project team will continue to work with industry to define all of the specific types of operations that should be included in this source category.

1.3.2 Control Levels for P-MACT

Section 112(d) of the Act requires that the emission standards for *new sources* “shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source, as determined by the Administrator.” Standards for *existing sources* “may be less stringent than standards for new sources in the same category or subcategory but shall not be less stringent, and may be more stringent than--

- (A) the average emission limitation achieved by the best performing 12 percent of the existing sources . . . for categories and subcategories with 30 or more sources, or
- (B) the average emission limitation achieved by the best performing 5 sources . . . for categories or subcategories with fewer than 30 sources.”

As noted in the previous subsection, data on the control levels in effect at specific organic liquids distribution facilities were not available for making a presumptive MACT determination. However, the review of Federal, State, and local regulations currently in effect for sources in this category or similar categories supports the control levels in effect and therefore was used for selecting P-MACT.

Based on this regulatory review and other information as discussed in Section 1.2, Table 1-1 summarizes the preliminary P-MACT control levels for the emission sources at the affected facilities listed above in subsection 1.3.1.

TABLE 1-1. SUMMARY OF P-MACT DETERMINATIONS FOR
ORGANIC LIQUIDS DISTRIBUTION SOURCES
BASED ON FEDERAL, STATE, AND LOCAL AIR POLLUTION RULES

Emission Source	P-MACT	
	New Sources	Existing Sources
I. STORAGE VESSELS		
A. Fixed Roof Tanks, <u>low</u> vapor pressure liquids	> 10k gallons and > 1.9 psia, or > 20k gallons and > 1.5 psia, or > 40k gallons and > 0.15 psia: Floating roof, or closed vent system controlled at 95% by weight.	> 20k gallons and > 1.5 psia, or > 40k gallons and > 0.5 psia: Floating roof, or closed vent system controlled at 95% by weight.
B. Fixed Roof Tanks, <u>high</u> vapor pressure liquids	> 11 psia: Pressure tank with no detectable emissions (NDE) or 95 % control by weight. No floating roofs.	>25k gallons and > 11 psia: Pressure tank with NDE, or 95% control by weight. No floating roofs.
C. Top Loaded Tanks	<40k gallons and > 0.5 psia: Install a permanent submerged fill pipe or perform bottom loading.	> 580 gallons - 40k gallons and >1.5 psia: Install a permanent submerged fill pipe or perform bottom loading.
D. External Floating Roof Tanks (General)	> 10k gallons and > 1.9 psia, or > 20k gallons and > 1.5 psia, or > 40k gallons and > 0.15 psia: Specified roof seal and fittings requirements (see Section 5.1.2.1).	20k-40k gallons and > 1.5 psia, or > 40k gallons and > 0.5 psia: Specified roof seal and fittings requirements (see Section 5.1.2.1).
E. External Floating Roof Tanks (Welded)	Tanks of welded construction and < 4 psia: No secondary seal required if specified primary seals in use (see Section 5.1.2.2).	
II. LIQUID TRANSFER		
A. Loading Racks, > 20k gallons loaded per day at entire facility averaged over a rolling thirty-day period	> 0.5 psia: 10 mg/liter emission limit; >1.5 psia: 10 mg/liter emission limit or 98% emission reduction.	>0.5 psia: 90% emission reduction.

TABLE 1-1. (Concluded)

Emission Source	P-MACT	
	New Sources	Existing Sources
II. LIQUID TRANSFER (Cont.)		
B. Cargo Tank Leakage	DOT test or EPA Method 27. ^a	DOT test, possibly EPA Method 27. ^a
III. EQUIPMENT LEAKS		
Pumps, Valves, and Flanges	Detailed industry leak check practice data needed to make a determination; see Section 5.1.5.	
IV. WASTEWATER TREATMENT AND CONTROL		
A. Wastewater Storage Tanks	>20k: Fixed roof required >20k and >1.9 psia or >40k and >0.75 psia: Fixed roof and 95% control by weight.	Detailed industry wastewater treatment technology data needed to make a determination; see Section 5.1.4.
B. Individual Drain Systems	Vapor suppression on individual drain system openings.	
C. Oil-Water Separators	Fixed roof and 95% control by weight or a floating roof.	
V. BLENDING		
Blending Operations	Detailed industry data required to make a determination; see Section 5.1.6.	

^a Further industry information is needed in order to determine prevalence of cargo tank testing and the relative stringency of DOT tests and the EPA's Method 27 (vapor tightness) testing.

The development of these preliminary P-MACT control levels is described in Section 5 of this document. A memorandum presenting summaries of the State rules reviewed for this document is included as Attachment 2.

2.0 SOURCE CATEGORY AND AFFECTED SOURCES

In the background information document (1) for the EPA's initial source category listing under Section 112(c) of the Act, a preliminary description of this source category provided that organic liquids distribution (non-gasoline) source category activities are associated with the storage and distribution of non-gasoline liquids with HAP content, at sites that serve as distribution points from which organic liquids may be obtained for further use and processing. This description is very broad, and the rest of this section is devoted to providing more detail in defining the makeup of this industry.

Facility types that the EPA project team is currently evaluating within the broad category description include (see also Attachment 1, page 10):

1. Stand-alone or separate distribution terminals;
2. Collocated distribution activities (i.e., associated with refineries or chemical plants);
3. Pipeline facilities (including crude oil and natural gas liquids pipelines after the point of custody transfer); and
4. Compounding/blending/packaging plants.

Following is a brief discussion of each type of facility being considered within the overall organic liquids distribution source category.

2.1 Stand-Alone or Separate Distribution Terminals

Stand-alone distribution terminals are commercial bulk liquid loading terminals that typically have storage tanks, as well as piping and equipment to transfer the liquids. These terminals receive, store, and distribute organic liquids throughout the United States. Modes of transportation for stand-alone terminals include, but are not limited to, oceangoing tankers, tank barges, tank trucks, tank railcars, containers, and pipelines. The commodities handled at these terminals include a variety of chemicals, crude oil, fuel oils, refined petroleum products, animal fats and oils, and other liquids. Customers of these terminals include oil producers, chemical manufacturers, product manufacturers, utilities, and transportation companies.

Many of these facilities are members of the Independent Liquid Terminals Association (ILTA), which maintains a current directory of its associated member facilities (2). Stand-alone terminal Standard Industrial Classification (SIC) codes fall predominantly under Major Group 42, Industry Group Number 4220, SIC code 4226, "Special Warehousing and Storage, Not Elsewhere Classified." Other SIC codes identified by the EPA project team include 4491, "Marine Cargo Handling", 5169, "Chemicals and Allied Products, Not Elsewhere Classified," 5171 "Petroleum Bulk Stations and Terminals," and 5172 "Petroleum and Petroleum Products Wholesalers, except Bulk Stations and Terminals." For a more detailed presentation of applicable SIC codes, refer to Attachment 1, page 14.

2.2 Collocated Distribution Facilities

Many chemical and petrochemical companies and petroleum refineries may have distribution facilities in the form of tank farms and pipelines that are collocated (contiguous and under common control) with the manufacturing facilities. These distribution facilities would serve similar functions to those described in the stand-alone terminal source, the only difference being that these facilities may receive their material from the collocated plant site. HAP-containing liquids may be stored in these facilities and then distributed via the various modes of delivery.

At present, applicable SIC codes for collocated distribution facilities are thought to fall under the Major Group 51, which includes SIC code 5169, "Chemicals and Allied Products, Not Elsewhere Classified." It is conceivable that there may be some overlap in SIC codes with facilities regulated by the Hazardous Organic NESHAP (HON) and/or the Refinery NESHAP. A further determination and identification of applicable SIC codes will be performed in the future (see also Attachment 1, page 16).

2.3 Pipeline Facilities

Two types of pipelines are of interest to the organic liquids distribution source category, crude oil pipelines and product (non-gasoline) pipelines. Product pipelines may carry either refined petroleum products or liquid chemicals. The source category is considered to include crude oil and natural gas liquids pipeline facilities that handle and distribute non-gasoline hydrocarbon liquids (containing HAP) after the point of custody transfer from oil and gas production operations. At this time, it is believed that the principal liquid of interest at these facilities is crude oil, because of its significant vapor pressure and the large volumes that are transported. Pipeline facilities are often subsidiaries of oil and gas producing companies.

The proposed Oil and Gas MACT rule would apply to those sources upstream from the point of custody transfer for crude oil and natural gas liquids pipelines. The proposed Oil and Gas MACT activities consist of the various facilities used to recover and treat hydrocarbons from production wells. These sources include the processing, storage, and transportation of hydrocarbons to the point of custody transfer. Custody transfer means the transfer of hydrocarbon liquids, after processing and/or treatment in the producing operations, from storage vessels or automatic transfer facilities to pipelines or any other forms of transportation. As mentioned above, the Organic Liquids Distribution MACT category is likely to include crude oil and natural gas liquids pipelines downstream of the custody transfer, as well as all other organic liquid pipelines. These pipelines are described as line pipe, valves, and other appurtenances connected to line pipe, pumping units, metering and delivery stations, and breakout tanks. Breakout tanks are storage vessels used to relieve surges in a pipeline or to receive and store crude oil transported by the pipeline for reinjection and continued transportation by pipeline.

Product pipelines move liquids such as gasoline, aviation gasoline, fuel oils, and other organic liquids from refineries or chemical plants to storage and distribution facilities/terminals in

areas where they will be consumed or transferred.

Applicable SIC codes for the pipeline industry primarily include Major Groups 46 and 47, Industry Group Numbers 4610 and 4780, and the following four codes (see also Attachment 1, page 13):

4612	Crude Petroleum Pipelines
4613	Refined Petroleum Pipelines
4619	Pipelines, Not Elsewhere Classified
4789	Transportation Services, Not Elsewhere Classified

The first three SIC codes relate to facilities that are engaged in the pipeline transportation of petroleum and other liquids, and do not cover natural gas transmission. SIC code 4789 represents independently operated pipeline terminal facilities, but also “establishments primarily engaged in furnishing transportation or services incidental to transportation, not elsewhere classified” (3).

2.4 Compounding/Blending/Packaging Facilities

Some distribution facilities exist that compound and blend and distribute organic liquids with HAP content. The EPA project team is currently attempting to identify and locate facilities that fall under this broad category. Many of these facilities store HAP-containing liquids, which they blend and package into containers ranging from 600 gallons or more to less than 1 gallon. Blending and packaging operations may be carried out at separate (dedicated) facilities, or they may be collocated with a general distribution terminal operation. (In turn, the distribution terminal may be collocated with a petroleum refinery or a chemical production plant; see Section 2.2.)

Applicable SIC codes for this industry segment primarily include Major Group 51, SIC code 5169, “Chemicals and Allied Products, Not Elsewhere Classified.” These are “establishments primarily engaged in the wholesale distribution of chemicals and allied products” (3). Included in the SIC code listing are establishments that distribute solvents, aromatic chemicals, acids, and also facilities such as chemical bulk stations and terminals (see also Attachment 1, page 15).

To locate and identify stand-alone facilities, the EPA project team has contacted the National Association of Chemical Distributors (NACD) and has reviewed the organization’s member directory (4). Telephone interviews with and site visits to some of these facilities have been initiated and will be continued. The project team expects that the industry survey will provide information on the emissions and controls in this industry segment.

2.5 Affected Sources/Conclusions

The EPA project team has decided to retain the broad description of the organic liquids

distribution (OLD) source category at this point in the project so as not to inadvertently exclude some sources of HAP emissions. This description is expected to be improved as additional information is gathered on the industry. As a supplement to the general description, specific facility types and activities will be described in order to identify the affected sources. At this time, data are still being collected to identify and locate the stand-alone and collocated sources of interest. The team is not planning to include within the OLD rule emission sources regulated under the Marine Vessel Loading MACT or other existing MACT rules.

Several existing final (and one proposed) MACT rules have been examined to determine the sources that would potentially be affected by the OLD standards. For example, at chemical manufacturing plant sites storage vessels associated with a chemical process unit are generally already covered by existing regulations, such as 40 CFR Part 63, Subpart F (the Hazardous Organic NESHAP). However, certain tanks and loading racks used to distribute liquids into or out of the same plant site are typically not covered by any MACT standard. The OLD standards would likely apply to such unregulated tanks and transfer operations.

The focus of the project is on major sources at this time. These are defined under Section 112 of the Act as “any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.” The EPA’s listing of HAP source categories showed the OLD category as a major source category, but not as an area source category. Under §112(c)(3), standards may be warranted for area sources in the case of a finding of adverse effects to human health or the environment. The EPA plans to perform a finding for OLD area sources as required in the Act, to determine whether they present a threat of adverse effects.

3.0 EMISSION SOURCES

Information collected to date confirms the initial presumption of the EPA project team that emission sources at organic liquids distribution (non-gasoline) facilities are generally similar to emission sources in certain industries studied under previous NESHAP. Facilities with these similarities include petroleum refineries, chemical production plants, and bulk gasoline terminals. These facility types have the following emission sources in common:

1. Storage vessels;
2. Liquid transfer activities (loading racks);
3. Leaks from equipment components (pumps, valves, etc.);
4. Wastewater and waste collection and treatment; and
5. At some facilities, blending and packaging activities may also constitute a separate source of emissions.

In many cases, the source descriptions, emission estimation techniques, and control technology determinations made for these other standards may have applicability to OLD sources. This type of information is being studied for the other NESHAP industries with these emission sources and that may have collocated liquid distribution activities. The five categories of emission sources mentioned above presently are considered to be the principal OLD emission sources, and are described in the following sections. It should be stressed that only equipment and activities that are involved in the distribution of organic liquids are considered part of the category. At collocated chemical production plant sites, for example, equipment and tanks associated with a production process should already be regulated by existing MACT (such as the HON) and would therefore typically not be included as an OLD source.

3.1 Storage Vessels

The focus of this discussion is storage vessels that participate in liquid distribution, and not process tanks. Two basic categories of distribution storage vessels are found at OLD facilities:

1. Storage vessels at terminals or other distribution operations, and
2. Breakout tanks at pipeline stations.

At stand-alone or separate liquid terminals or at distribution operations collocated with a production plant site (chemical production plant or petroleum refinery), storage tanks receive incoming organic liquids and distribute them back out of the facility. Modes of transport include: inland waterway barges, tanker (oceangoing) vessels, tank trucks, railway tankcars, and pipelines.

Petroleum pipelines (discussed in Section 2.3) are used to transport crude oil and petroleum products after the point of custody transfer from oil production operations. At the pipeline pump stations, breakout tanks are used for surge capacity, sorting, measuring, rerouting,

and temporary storage. These breakout tanks receive liquid from the pipeline, and then reinject it for continued transportation by pipeline or to other terminals in the local area.

Storage tank emissions result from breathing and working losses. Flash losses from crude oil may also occur; however, industry has contended that flashing is unique to the crude oil extraction process, where the crude is “live” and releases entrained or dissolved gases while in storage (5).

3.2 Liquid Transfer Operations

Hazardous air pollutants may be emitted from delivery vessels being loaded at a facility as vapors present in the tank are displaced by the incoming liquid. These emissions may consist of vapors remaining from a previous cargo, or may be generated from the liquid being loaded, or a combination of both. In controlled systems, the vapors are routed to a fixed roof storage tank (vapor balance system) or to a vapor control device. Fugitive (vapor leakage) emissions at controlled loading racks can also occur due to leakage points in the transport tank or the facility’s vapor collection system.

3.3 Leaks from Equipment Components

The pumps, compressors, valves, and other equipment components in the lines that transport the liquids can develop liquid or vapor leaks from which HAP may be emitted. Emission factors have been developed for several types of facilities, and a number of Federal regulations address this emission source (see Section 5.2).

3.4 Wastewater and Other Wastes

Wastewater is generated due to tank and line cleanings, spills, liquid blending or packaging operations, rainwater drainage, or other sources. Wastewater is processed at some distribution facilities through several types of treatment systems, including clarification units and gravity separators. If such water is exposed to the atmosphere (in uncovered culverts, separators, sumps, or other collection devices), the HAP constituents in the water can be released as air emissions. The project team is continuing to investigate emission sources and potential controls, and expects to rely on the industry survey for data pertinent to this industry.

Other waste containing HAP (such as semi-solid sludge) may be generated from the same type of sources mentioned above for wastewater, as well as other sources. This waste is often stored in closed containers, and then shipped off site for treatment at a specialized off-site treatment facility. These wastes are also frequently regulated under existing hazardous waste regulations. Information is being collected on the types and amounts of semi-aqueous waste, and on whether it constitutes a significant air emission source while at the distribution facility.

3.5 Blending and Packaging Operations

Specific HAP emission points and emission rates in liquid blending and packaging operations are not presently known. Furthermore, only limited data and information are available on the products resulting from the mixing/blending operations. It is believed that the transfer of liquids between containers may constitute an emission source similar to the emissions discussed for cargo tanks in Section 3.2. Additional sources may involve the other sources previously described; i.e., storage tanks, leaks from piping and equipment components, wastewater, and other wastes. The project team is continuing to gather information on the details of these operations.

4.0 EMISSION CONTROLS

The emission sources discussed in Section 3 are subject to a variety of control measures, as mandated by existing Federal, State, and local air regulations. This section describes the principal emission controls that have been observed to be in use for OLD operations. Section 5 will discuss the levels of control required under existing regulations.

4.1 Storage Vessels

The populations of fixed-roof and floating roof type storage vessels used within the organic liquids distribution industry have not yet been established. Emissions from fixed-roof tanks can be reduced by using a vapor control system to capture hydrocarbons that escape as breathing or working losses. In these systems, vapors are routed through piping to a control device. Another common control approach is the installation of an internal or external floating roof that includes seals around the perimeter and sometimes other controls on fittings to minimize emissions. For high vapor pressure liquids, pressurized or refrigerated tanks are often used to contain the material and prevent emissions (see also Attachment 1, page 25).

4.2 Liquid Transfer Operations

Liquid transfer into tank trucks, railcars, or smaller containers can be controlled through the use of submerged filling, a vapor collection and control system, or by balancing the vapors back to the vessel that supplied the liquid (except pipelines). In these vapor collection systems, care must be exercised to ensure that vapors are not lost due to leakage. A requirement for vapor tightness maintenance and testing has been a component of most liquid transfer regulations. These provisions apply to both the facility equipment and the mobile cargo tank. They are intended to ensure that collected vapors are not lost through leaking connectors, valves, and piping (see also Attachment 1, page 25).

4.3 Equipment Components

The primary control options available for reducing emissions due to equipment leaks include modifying or replacing existing equipment with leakless equipment, and implementing a leak detection and repair (LDAR) program. An LDAR program typically consists of periodic inspection of components for leaks using a portable hydrocarbon detector. An alternative to instrument LDAR used by some companies and specified in some rules is a routine visual inspection program (see also Attachment 1, page 25).

4.4 Wastewater and Other Wastes

Control of HAP emissions from wastewater can be achieved by venting the clarifier (where used) to a vapor control system and enclosing the separator with a floating roof (liquid contact) or vapor-tight cover (non-contact). Other control methods include the use of closed

pipng (versus open trenches or viaducts) and drain controls, such as p-traps and water seals (see also Attachment 1, page 30).

For semi-aqueous waste (e.g., sludge), control would consist of limiting direct exposure to the atmosphere through storage of the waste in sealed containers, and limiting the time during handling that the waste is exposed.

5.0 CURRENT CONTROL LEVELS

The presumptive MACT (P-MACT) determinations are derived from a comprehensive review of the current Federal and State regulations applicable to emission points of concern for the Organic Liquids Distribution NESHAP. At the present time, limited source-specific information (derived from site visits) is available. More specific source information will be derived from responses to the recent industry survey. The determinations for existing sources in this P-MACT are based on an average of the top 12 percent of potentially affected facilities. To determine the percentage of affected facilities, the percentage of facilities within the States with the most stringent rules were added together. The facility percentages were derived from the distribution, by State, of the membership of the ILTA (2) and from two current publications, the Petroleum Terminal Encyclopedia (6) and Petroleum Supply Americas (7).

The P-MACT determinations presented in this section for new sources are based on the most stringent existing State, local, or Federal regulation requirements for similar emission sources. Section 112(d) of the Act states that standards for new sources must be derived from "the emission control that is achieved in practice by the best controlled similar source." As stated above, little current industry practice information is available at each source; therefore, this P-MACT has been derived from control levels found in Federal, State, and local regulations that apply to industries with similar emission sources.

5.1 Existing Levels of Control

5.1.1 Fixed Roof Storage Tanks

In general, the stringency of storage tank regulations varies depending on several factors, which include vapor pressure cutoffs, storage tank volume cutoffs, floating roof rim seal requirements, floating roof fittings seal requirements, and vapor control/reduction requirements.

5.1.1.1 Low Vapor Pressure (<11 psia) Organic Liquids Fixed Roof Storage

For storage vessels containing low vapor pressure organic liquids, P-MACT was derived from 51 State regulations, and augmented with provisions from the Hazardous Organic NESHAP (HON), the Benzene Emissions from Storage Vessels (Benzene Storage) NESHAP, and the Volatile Organic Liquid Storage Vessel NSPS (40 CFR 60, subpart Kb).

The MACT standards for storage vessels in the HON and the Benzene Storage NESHAP require a floating roof or a closed vent system vented to a control device at 95 percent emission reduction for any storage tank >10,000 gallons. The HON requirements are for storage tanks associated with a process unit which hold any organic HAP liquid >1.9 psia stored in storage tanks >10,000 gallons, >1.5 psia stored in tanks >20,000 gallons, or >0.15 psia stored in tanks

>40,000 gallons. The Benzene Storage NESHAP standards are for the storage of benzene within a particular range of specific gravities.

New Sources

The HON is the most stringent regulation reviewed with respect to low vapor pressure organic liquids; therefore, P-MACT for *new sources* is equivalent to a floating roof tank or 95 percent emission reduction for organic HAP liquids >1.9 psia stored in storage tanks >10,000 gallons, >1.5 psia stored in tanks >20,000 gallons, or >0.15 psia stored in tanks >40,000 gallons.

Existing Sources

The most stringent of the reviewed State storage vessel regulations were seven California District rules, the Chicago-Area Illinois regulation, and the Colorado regulation. These rules are believed to affect at least 12 percent of the OLD industry; therefore, P-MACT for *existing sources* is as follows:

- >19,800 gallons and >1.5 psia; or
- > 39,630 gallons and > 0.5 psia:
- Must have a floating roof or vapor control at 95 percent by weight.

5.1.1.2 High Vapor Pressure (>11 psia) Organic Liquids Fixed Roof Storage

The P-MACT determination for high vapor pressure organic liquids storage is based on 20 State regulations, and augmented by the HON, the Benzene Storage NESHAP, and the Storage Vessel NSPS (subpart Kb). All of the regulations reviewed considered any organic liquid >11 psia to fit the definition of a “high vapor pressure” or “extremely volatile” liquid.

The requirements of subpart Kb and the HON are to operate a closed vent system routed to a control device to reduce emissions by 95 percent on any tank >20,000 gallons (NSPS) or >10,000 gallons (HON) used for the storage of any organic liquid >11 psia. Additionally, the MACT standards for storage vessels in the HON and the Benzene Storage NESHAP require that if a pressure vessel is used, it must have no detectable organic emissions.

New Sources

P-MACT for *new sources* is, however, set at a level based on two California district rules (El Dorado and Placer County), since these rules do not contain any tank size cutoffs. Any storage tank storing organic liquids >11 psia is required to operate a closed vent system routed to a control device to reduce emissions by 95 percent. If a tank used to store organic liquids >11 psia is a pressure tank, it must operate with no detectable emissions.

Existing Sources

In general, the most stringent State rules consist of California District rules, the Colorado rule, and the Texas rule. Based on these State and local regulations, P-MACT for *existing sources* applies to tanks >25,000 gallons used for the storage of organic liquids >11 psia. These tanks must be connected to a closed vent system routed to a control device that reduces emissions by 95 percent. It is important to note that P-MACT for existing sources is less stringent than the NSPS (subpart Kb).

5.1.1.3 Top Loaded Storage Vessels

The P-MACT level for top loaded storage vessels is derived from 15 State regulations. The most stringent State regulations consist of several California District (Placer County and Bay Area) rules, which form the basis for the new source P-MACT. The Louisiana regulation, the Oklahoma rule, the Kentucky rule, and one Federal rule, 40 CFR part 52, subpart O, which applies to several counties in Illinois, have similar standards for top loaded permanent storage tanks. These rules set the P-MACT level for existing sources. No other Federal regulations addressing top loaded storage tanks have been located for this analysis.

New Sources

P-MACT for *new sources* is bottom loading or a permanent submerged fill pipe for all stationary storage tanks <40,000 gallons used to store organic liquids with a vapor pressure >0.5 psia. Based on the two California District rules mentioned above, there is no lower size limit for the affected tanks.

Existing Sources

Based on the 15 State regulations and 1 Federal regulation reviewed, P-MACT for *existing sources* is a permanent submerged fill pipe installed in all top loaded stationary tanks >580 gallons that are used to store liquids with a vapor pressure >1.5 psia.

5.1.2 External Floating Roof Tanks

Within the 10 State and regional regulations that were reviewed for the purpose of determining P-MACT for external floating roof tanks, there are several categories of standards. The first category is the general standards for typical external floating roof tanks. Second are standards and exemptions for welded tanks. Finally, there are standards and exemptions that apply to tanks used to store produced crude oil and condensate prior to lease custody transfer.

5.1.2.1 General Standards

The stringency of the control requirements for external floating roof tank rim seals as listed below is the same among the Federal (HON and subpart Kb) and the State regulations. A summary of the external floating roof *seal requirements* in the Federal and State rules reviewed is

as follows:

For petroleum liquid storage:

1. Tank must be fitted with a continuous rim-mounted secondary seal extending from the floating roof to the tank wall;
2. All seal closure devices must have no visible tears or openings in the fabric and be intact and uniformly in place around the circumference of the floating roof;
3. For vapor-mounted primary seals, the accumulated area of individual gaps (>0.125 inch) between the secondary seal and the tank wall, must not exceed 1.0 square inch per foot of diameter;
4. Except during loading which begins when the tank is empty, the floating roof is to remain floating on the liquid at all times.¹

For non-petroleum organic liquid storage:

1. For tanks equipped with a mechanical shoe primary seal, the tank must be fitted with a continuous rim-mounted secondary seal extending from the floating roof to the tank wall;
2. For tanks equipped with a vapor-mounted primary seal, the tank must be fitted with a liquid-mounted primary seal and a continuous rim-mounted secondary seal extending from the floating roof to the tank wall;
3. All seal closure devices must have no visible tears or openings in the fabric and be intact and uniformly in place around the circumference of the floating roof;
4. For vapor-mounted primary seals, the accumulated area of individual gaps (>0.125 inch) between the secondary seal and the tank wall, must not exceed 1.0 square inch per foot of diameter;
5. Except during loading which begins when the tank is empty, the floating roof is to remain floating on the liquid at all times.¹

The external floating roof *fittings requirements* for organic liquid storage are:

1. Automatic bleeder vents are to be closed at all times except when the roof is floated off or landed on the roof supports;
2. Emergency roof drains are to be provided with slotted membrane fabric covers, or equivalent which cover at least 90 percent of the area of the opening; and
3. Each automatic bleeder vent (vacuum breaker vent) and rim space vent must be equipped with a gasket.

¹ Currently under consideration is allowance for the floating roof to sit down on its legs for relatively short periods with the addition of recordkeeping for those time periods.

New and Existing Sources

Based on the Federal, State, and local regulations reviewed, P-MACT for *new and existing sources* is the application of the above listed seal and fittings requirements to storage of organic HAP liquids in external floating roof storage tanks. The same tank size and vapor pressure cutoffs applicable to the low vapor pressure fixed roof storage tanks (Section 5.1.1.1) apply to these tanks.

5.1.2.2 Tanks of Welded Construction

The exemption of welded tanks from the requirement for a secondary seal on external floating roofs equipped with a liquid-mounted foam seal, liquid-mounted liquid-filled type seal, or metallic-type shoe seal was determined from a review of the Control Techniques Guidelines (CTG) for Petroleum Liquid Storage in External Floating Roof Tanks and six State regulations (Texas, Louisiana, Maryland, Washington, South Carolina, and Indiana). The CTG and each of these regulations has the same standard:

For all external floating roof tanks of welded construction containing petroleum liquids < 4 psia, no secondary seal is required if the primary seal is a liquid-mounted foam seal, liquid-mounted liquid-filled type seal, metallic-type shoe seal, or equivalent.

5.1.2.3 Produced Crude Oil and Condensate Storage

The CTG for Petroleum Liquid Storage in External Floating Roof Tanks, the Volatile Organic Liquid Storage Vessel NSPS (40 CFR 60, subpart Kb), 18 State rules, and 2 regional/urban regulations (Chicago Area and District of Columbia) allow an exemption from regulation for external floating roof tanks <420,000 gallons that store produced crude oil or condensate prior to lease custody transfer. The source category for the Organic Liquids Distribution NESHAP is likely to not include crude oil and condensate prior to lease custody transfer because these liquids are currently proposed to be controlled under the Oil and Gas MACT rule; therefore, no P-MACT exemption is needed for such tanks.

5.1.3 Liquid Transfer Operations

P-MACT was investigated for both of the emission sources under liquid transfer: loading rack vapor collection, and vapor leakage from cargo tanks and vapor collection equipment.

5.1.3.1 Loading Racks

The P-MACT determination for loading rack vapor collection was derived from the HON, Benzene Transfer Operations NESHAP (40 CFR 61, subpart BB), Gasoline Distribution NESHAP (40 CFR 63, subpart R), Marine Vessel Loading Operations NESHAP (40 CFR 63, subpart Y), and 30 State regulations.

Some of the existing standards are based on vapor emission control on the basis of percent reduction, while others are based on a mass emissions limitation in units of mg/liter (L) or lb/1,000 gallons loaded. The determination of relative stringency is complex, and varies depending on the uncontrolled emission factors for the liquids in question. This emission factor in turn is a function of the vapor pressure of the liquid. For transfer of higher vapor pressure liquids, an emission limit standard would be more stringent. For lower vapor pressure liquids transfer, emissions reduction on a weight percentage basis is more stringent. This issue will be investigated further for the principal liquids of interest in the OLD category.

Most Federal and State regulations have a 20,000 gallons per day (averaged over a continuous 30-day period) throughput cutoff. If the entire facility exceeds this limit, it must comply with the respective standard; if not, it is exempted from the standard.

The most stringent organic liquid transfer operation regulation identified is the California-Sacramento rule, for which the standard is an emission limit of 10 mg/L for any transfer operations for organic liquids with a vapor pressure >0.5 psia.

The HON standards for transfer operations of organic HAP with a vapor pressure >1.5 psia state that new sources must have a vapor recovery system that reduces emissions by at least 98 percent, and existing sources must reduce emissions by 97 percent. The Gasoline Distribution NESHAP and the Refinery NESHAP have the same emission limit, 10 mg/L for *gasoline* transfer operations. The Benzene Transfer Operations NESHAP requires 98 percent emission reduction for any organic liquid that is at least 70 percent benzene, by means of a vapor-tight vapor recovery system. The Marine Vessel NESHAP requires 98 and 97 percent emission reduction for new and existing sources, respectively, for transfer of any organic liquid with a vapor pressure >1.5 psia.

New Sources

P-MACT for *new sources* has three parts. First, it applies to any facility that transfers an average of $>20,000$ gallons per day over a continuous 30-day period. Next, for organic liquids >0.5 psia, the emission limit is 10 mg/L based on the California-Sacramento rule. Lastly, for organic liquids >1.5 psia, 98 percent emission reduction (the HON) or an emission limit of 10 mg/L (California-South Coast and San Joaquin) applies depending upon which is more stringent for the specific liquid transferred.

Existing Sources

P-MACT for *existing sources* is for facilities that transfer $>20,000$ gallons per day (averaged over a continuous 30-day period), and consists of an emission reduction of 90 percent for organic liquids with a vapor pressure >0.5 psia. This is based on the Texas and California (South Coast, San Joaquin, and Bay Area) regulations. Presently, there is not enough information to make a more stringent control level determination for organic liquids >1.5 psia. It is likely that the information obtained through the industry survey will provide the basis for a MACT floor

determination for organic liquids >1.5 psia to supplement the standard for organic liquids >0.5 psia.

5.1.3.2 Vapor Leakage

Control requirements for vapor leakage from controlled liquid transfer operations have been specified in several State rules, the Tank Truck CTG, the Bulk Gasoline Terminal NSPS, and the Gasoline Distribution NESHAP. These standards and guidance consist of an annual vapor tightness test for cargo tanks and leak testing in the field using a combustible gas detector. The vapor tightness requirements by the States and the EPA have primarily addressed gasoline transfer operations, and typically apply to tank trucks. The applicability of this type of emission control to non-gasoline liquids, and to railcars handling any type of liquid, is variable. The Gasoline Distribution NESHAP does apply to railcars loading gasoline at affected facilities. Industry has stated that vapor collection and control is rarely applied to the transfer of chemicals, but it is required under some circumstances in parts of California, Texas, and possibly other States.

The Department of Transportation (DOT) requires a periodic hydrostatic or pneumatic pressure test for cargo tanks. In general, the DOT cargo tank requirements are safety related and apply to the prevention of liquid losses, rather than vapor emissions. The current industry practice for cargo tanks equipped to perform vapor recovery or vapor balancing is to perform the EPA Method 27 test to certify the tank for vapor tightness. Method 27 would only be performed on tanks that are equipped and required to perform vapor recovery or vapor balancing, which in turn would be determined by the loading rack (transfer) requirements. Industry has stated that Method 27 is considered to be an acceptable substitute for the DOT testing.

At this time, the applicability of the current vapor tightness control levels to general organic liquids distribution is uncertain. The project team will be collecting additional information, and then performing analyses of floor control levels and emission reduction potential from these measures.

5.1.4 Wastewater Treatment

The determination related to air emissions from wastewater during collection and treatment is based on a review of seven current statewide wastewater regulations. In general, the State wastewater regulations are case-specific and industry-specific. Thus, they may not be applicable to distribution facilities in the OLD source category. In order to develop appropriate MACT standards for wastewater, the project team intends to collect additional information with respect to current industry wastewater processes and control measures.

The HON and the Benzene Waste Operations and Oil-Water Separator NESHAP offer some guidance for evaluating the best current control performance in wastewater treatment operations. The HON standards for wastewater storage, drain systems (junction box or drains),

treatment systems, and oil-water separators are based upon wastewater that meets the following requirements for new and existing sources:

1. Contains >10 ppmw total volatile organic HAPs (listed in Table 8 of subpart F) and has a flow rate >0.02 liters/minute (new sources); or
2. Contains >1,000 ppmw total volatile organic HAPs (listed in Table 9 of subpart F) and has a flow rate >10 liters/minute (new and existing sources); or
3. Contains >10,000 ppmw total volatile organic HAPs (listed in Table 9 of subpart F) at any flow rate.

New Sources

The wastewater operations of the facilities in the organic liquids distribution source category are likely to have similarities to those at a HON-regulated production facility or a refinery; therefore, P-MACT for *new sources* includes standards for four categories: wastewater storage tanks, individual drain systems, treatment systems, and oil-water separators.

The first wastewater storage tank requirement is a fixed roof for any tank >20,000 gallons used to store wastewater, as defined above. The second is a fixed roof and closed vent system routed to a control device at 95 percent emission reduction for tanks >20,000 which store wastewater >1.9 psia. The third requirement level is a fixed roof and closed vent system routed to a control device at 95 percent emission reduction for tanks >40,000 which store wastewater >0.75 psia. Individual drain systems are required to be designed to minimize vapor emissions while also minimizing the potential for explosion. Oil-water separators must have either a fixed roof with a closed vent system routed to a control device to reduce emissions by 95 percent or a floating roof.

Existing Sources

Currently, the practices of the source category are not known in sufficient detail to develop P-MACT for wastewater treatment for *existing sources*. The industry survey results are expected to provide the detailed information needed to determine the appropriate control levels.

5.1.5 Equipment Leaks

The equipment (pumps, valves, flanges, etc.) at facilities in the organic liquids distribution source category is assumed to be similar to certain equipment at a chemical production, refinery, or gasoline distribution facility. Facilities regulated under the HON and the Refinery NESHAP (with higher-emitting equipment) have full instrument LDAR requirements, while facilities under the Gasoline Distribution NESHAP (with lower-emitting equipment) have a visual (sight, sound, and smell) leak check standard.

The project team has not determined which type of leak detection program requirement

(or whether any requirement) is appropriate for the equipment at OLD sources. Data and information on the emission rates from this equipment and the current practices within the source category are needed. Information on current leak detection practices is expected to be collected in the industry survey. The EPA will work with industry to determine leakage and emission rates from this equipment.

5.1.6 Blending and Packaging

Specific rules affecting blending and packaging activities directly have not been identified; therefore, no P-MACT determination for this emission source has been made. The team plans to collect additional information through site visits, other contacts with industry and trade groups, and the industry survey of individual facilities. Analyses of floor levels of control and potential emissions reduction will be performed using this information.

5.2 Federal Regulations

Below are brief summaries of several existing or proposed Federal air rules that may apply or have similar control levels and technologies to the distribution facilities in this source category.

5.2.1 Hazardous Organic NESHAP (HON) (subparts F, G, H, I)

The HON applies to chemical manufacturing process units that are: (1) part of a major source as defined in section 112 of the Act; (2) produce as a primary product a SOCOMI chemical listed in Table 1 of subpart F; and (3) use as a reactant or manufacture as a product or by-product or co-product one or more of the organic HAPs listed Table 2 of subpart F. Among other things the HON sets control requirements for storage vessels and transfer operations.

The storage vessel provisions do not apply to the following: (1) pressure vessels designed to operate in excess of 204.9 kPa (29.7 psia); (2) vessels with capacities smaller than 38 m³ (10,000 gallons); (3) wastewater tanks; and (4) vessels storing liquids that contain organic HAPs only as impurities. The storage provisions require that one of the following control systems be applied: (1) an internal floating roof with proper seals and fittings; (2) an external floating roof with proper seals and fittings; (3) an external floating roof converted to an internal floating roof with proper seals and fittings; or (4) a closed-vent system that vents to a 95 percent efficient control device or that transports gases back into the process.

Transfer operations are defined as the loading of liquid products that are on the list of organic HAPs from a transfer rack into a tank truck or railcar. The transfer provisions do not apply to the loading of liquid organic HAPs at an operating pressure in excess of 204.9 kPa (29.7 psia); loading of marine vessels; racks loading liquid organic HAPs only as impurities; or racks loading liquid organic HAPs if emissions are returned to a storage vessel in a vapor balancing system. The transfer provisions require control of transfer racks to achieve 98 percent organic

HAP reduction or an outlet concentration of 20 ppmv. Combustion devices or product recovery devices may be used to comply with this requirement. Alternatively, vapor balancing systems may be used.

5.2.2 Petroleum Refinery NESHAP (subpart CC)

The Petroleum Refinery NESHAP applies to petroleum refining units, all gasoline loading racks classified under Standard Industrial Classification (SIC) code 2911, all marine vessels loading operations located at petroleum refinery, and all storage vessels and equipment leaks associated with a bulk gasoline terminal or pipeline breakout station under SIC code 2911 located within a contiguous area and under common control with a refinery.

New storage tanks are required to have floating roofs with primary and secondary seals if the tank fits either of the two following scenarios: (1) tank capacity >40,000 gallons, true vapor pressure (TVP) >0.5 psia, and HAP liquid concentration >2%; or (2) tank capacity >20,000 gallons and <40,000 gallons, TVP >11.1 psia, and HAP liquid concentration >2%.

For gasoline loading racks, if the SIC code is 2911, or the loading rack is contiguous and under common control, then the facility must comply with the Gasoline Distribution NESHAP (subpart R). Loading operations into marine vessels at refinery facilities must comply with the Marine Vessel Loading NESHAP (subpart Y).

5.2.3 Proposed Oil/Natural Gas Distrib./Transmission NESHAP (subparts HH, HHH)

Examples of facilities include, but are not limited to, well sites, satellite tank batteries, central tank batteries, graded pad sites, and natural gas processing plants. A facility typically is (1) a natural gas compressor station that receives natural gas via pipeline from an underground natural gas storage operation, from a condensate tank battery, or from a natural gas processing plant; or (2) an underground natural gas storage operation.

The EPA is describing the organic liquids distribution (non-gasoline) source category as including those facilities that distribute hydrocarbon liquids after the point of custody transfer. From the language in these proposed rules and preamble, the organic liquids distribution category will have to account for some of the facilities that have a relationship to the operations covered by subparts HH and HHH.

5.2.4 Gasoline Distribution NESHAP (subpart R)

Subpart R applies to bulk gasoline terminals and pipeline breakout stations that are part of a major source as defined in section 112 of the Act. A bulk gasoline terminal or pipeline breakout station with SIC code 2911 is subject to this rule.

The emissions to the atmosphere from the vapor collection and processing systems due to

the loading of gasoline cargo tanks must not exceed a 10 mg/L emission limit. The storage vessel requirements are similar to 40 CFR 60, subpart Kb requirements.

5.2.5 Benzene Emissions from Storage Vessels NESHAP (subpart Y)

40 CFR 61, subpart Y applies to storage vessels that store benzene having a specific gravity within a specified range. A designated source is subject this rule as well as to the provisions of 40 CFR 60, subpart Kb. The provisions of this rule specify that a designated source with a storage capacity greater than 10,000 gallons must have an internal floating roof, an external floating roof, or a closed vent system with a control device. If a storage vessel is equipped with a closed vent system and a control device, the control device must reduce inlet benzene emissions by at least 95 percent.

5.2.6 Marine Vessel Loading NESHAP (subpart Y)

40 CFR 63, subpart Y applies to marine vessel loading operations that are part of a major source as defined in section 112 of the Act. The provisions apply to commodities with a true vapor pressure >1.5 psia, and specify that there must be ship-to-shore compatibility, vapor tight connections, and a vapor collection system. New and existing facilities must reduce HAP emissions after vapor collection by 98 and 97 percent by weight, respectively.

5.2.7 Benzene Waste Operations NESHAP (subpart FF)

The provisions of this NESHAP apply to chemical manufacturing plants, coke by-product recovery plants and petroleum refineries at which the total annual benzene quantity from the facility waste is greater than 10 megagrams per year. Each tank in which the waste stream of water content less than 10 percent is placed must maintain a fixed-roof, closed-vent system and a control device with emission reduction at 95 percent.

5.2.8 Benzene Transfer Operations NESHAP (subpart BB)

The affected facility to which this subpart applies is the total of all loading racks at which benzene any liquid containing 70 percent benzene is loaded into tank trucks, railcars, or marine vessels at each benzene production facility and each bulk terminal. Dedicated loading racks at which benzene-laden waste, gasoline, crude oil, natural gas, or petroleum distillates are loaded are exempt. Each loading rack must be equipped with a vapor collection system from which the collected vapors are routed to a control device to reduce the emission by 98 percent by weight.

5.2.9 Miscellaneous Organic NESHAP (MON) [pre-proposal]

With the promulgation of the Miscellaneous Organic NESHAP by the year 2000, the EPA intends to propose a single set of emission standards that will apply to more than 20 listed source categories of HAP. Industries with SIC code 28 will be affected by this regulation, as will organic

chemical processes described by SIC codes 282, 284, 285, 286, 287, 289, and 386. The rule will affect facilities that use batch organic processes.

The MON is expected to cover source categories including: chlorinated paraffins production, carbonyl sulfide production, explosives production, hydrazine production, photographic chemicals production, and rubber chemicals production. It will also cover process vents for batch reactors used in producing organic chemicals listed in Table 1 of 40 CFR Part 63, subpart F (Hazardous Organic NESHAP), and HAP emissions from synthetic organic chemical manufacturing industry (SOCMI) processes using HAP only as a solvent. Furthermore, the MON will cover the production of pesticide intermediates not covered by the Agricultural Chemicals NESHAP, and production of by-products, co-products and intermediates not considered primary products under the NESHAP for Group I and Group IV polymers and resins. In addition, the MON will cover those product processes identified by the EPA based upon information gathered which includes alcohols, oil additives, etc., and other product processes not identified by any other MACT standard.

5.3 State/Local Regulations

The list of State and local regulations that apply to emission sources that occur in the organic liquids distribution industry was discussed earlier and is discussed in more detail in Attachment 2--Summary of State/Local Regulations.

6.0 SUMMARY OF ISSUES AND NEXT STEPS

6.1 Issues in the NESHAP Development

The EPA project team and the Work Team have identified several issues that need to be addressed during the standards development process. The most significant issues center around the definition of the OLD industry, and the specific facilities, operations, and liquids that need to be covered by the standards. Some of the key issues are discussed below (see also Attachment 1, pages 29 and 30). The remainder of this section briefly addresses the next steps in the regulatory process.

Industry description. The current description of this source category is focused primarily on stand-alone or separate distribution operations (i.e., not collocated with a chemical manufacturer or a petroleum refinery), which may consist either of a bulk liquid terminal or a pipeline facility. In contrast to terminals, pipeline facilities exist along a pipeline, receiving product and returning it for continued transportation by pipeline.

The issue concerns the extent of the collocated distribution operations that should be included in this source category, and whether there are additional types of facilities or operations

not already considered that should be included in the category. These additional facilities may be either stand-alone or collocated with a facility whose primary function is not liquid distribution. Another issue concerns whether liquids consumed at the distribution facility (e.g., fuels) should be included in the regulatory coverage. Additionally, members of the Roundtable team requested further refinement or definitions of the terms “distribution” and “custody transfer.”

Impact of existing rules. Several Federal NESHAP standards have been promulgated or are under development (see Section 5.1) that affect the manufacture and handling of HAP-containing organic liquids. A continued focus is to investigate liquid distribution activities not already regulated or planned for regulation under these other standards. Conversely, the team wishes to avoid duplicating any MACT requirements already in effect or planned for sources in this or similar industries. Examples are distribution storage and related liquid handling operations at refineries and chemical plants.

Major/area source determination. A determination of the number of major sources in the category has not been made. Due to the apparent large number of area sources, the project team will need to investigate how to define out of the rule as many area sources as possible to lessen the need for permitting of area sources. Also, area sources will have to be analyzed and a regulatory determination will have to be made, since §112(c)(3) of the Act requires that area sources be regulated if they present “a threat of adverse effects to human health or the environment.”

Additional data gathering. Data gathering for the P-MACT development and for the eventual development of the NESHAP has produced useful information, but additional data are needed to fully define the industry and perform the analyses to support emission standards. These analyses will include options for industry subcategorization, model plant development, baseline emissions estimates, MACT control levels determination, and control technology assessments. The project team expects results from the industry survey and continued contacts with the Work Team to be useful in providing this information.

Technical issues that were identified for future resolution include: 1) the equipment necessary to properly collect vapors displaced from tank trucks and other containers needs to be identified and analyzed; 2) the emission rates from controlled and uncontrolled equipment leaks from pumps and valves specifically for this source category need to be quantified; 3) the difference between setting mass versus percent reduction limits for displacement losses from transfer operations needs to be analyzed; 4) the level of control for leakage from cargo tanks and containers needs to be identified and quantified, including the difference between DOT and EPA (Method 27) standards; and 5) multi-HAP content data for petroleum products and chemical blends are needed.

6.2 Next Steps

Review of existing regulations, plant visits, and Roundtable meetings with industry and State representatives will be used to better define the source category and its affected sources, and to address other regulatory and technical issues.

Results from the industry survey will be analyzed for the purpose of performing the analyses needed to develop and support MACT standards for this category. The EPA project team will continue to collect data and information in order to refine the industry profile and define the facility types and emission sources that need to be included under the MACT standards. Additional site visits will be made with the purpose of gathering further information and understanding the range of facility types. The project team will be meeting with the industry and regulatory stakeholders as necessary to discuss issues in this rule development.

A major project milestone and work effort will be the analysis and summary of responses to the industry survey. This analysis is expected to occur in the summer and fall of 1998. The development of MACT floors and drafting of a rule proposal will follow this analysis effort.

7.0 REFERENCES

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**PRESUMPTIVE MACT FOR
ORGANIC LIQUIDS (NON-GASOLINE)
DISTRIBUTION FACILITIES**

**JUNE 1998 REVISED
EPA PRESENTATION
FROM FIRST ROUNDTABLE MEETING**

**Waste and Chemical Processes Group
Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency
Research Triangle Park, NC**

OVERVIEW

- **Standards Development Process**
 - **Presumptive MACT**
 - **MACT**
 - **Project Schedule**

- **Affected Sources**
 - **Definition of Source Category**
 - **Industry Profile**
 - **Model Plants/Facilities**

- **Emissions and Controls**
 - **HAP Emissions**
 - **Emission Controls**
 - **Current Control Levels (MACT Floors)**

- **Issues/Questions**

STANDARDS DEVELOPMENT PROCESS

PRESUMPTIVE MACT IS ...

[MACT = maximum achievable control technology]

- **An estimate of what MACT would be, based on a review of currently available information**
- **Assists State and local agencies in making case-by-case MACT determinations**
- **Not a regulation - offered only for guidance and information**
- **A starting point for the MACT standard development process**

STATUTORY REQUIREMENTS

- **Promulgation of national emission standards for hazardous air pollutants (NESHAP) for listed source categories is required under §112(d) of the Clean Air Act**
- **Organic Liquids Distribution (Non-Gasoline) is a listed major source category under §112(c) [Federal Register, 57 FR 31576, July 16, 1992]**
- **Promulgation of standards is required by November 2000**

STATUTORY REQUIREMENTS

(2)

- **“Major Source” means any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit, considering controls, in the aggregate, 10 tons per year of any hazardous air pollutant (HAP) or 25 tons per year of any combination of HAP**
- **“Area Source” means any stationary HAP source that is not a major source**
- **“New Source” means a stationary source, the construction or reconstruction of which is commenced after the Administrator first proposes regulations under §112 establishing an emission standard applicable to such source**
- **“Existing Source” means any stationary source other than a new source**

STATUTORY REQUIREMENTS

(3)

- **Minimum level of standards (“MACT floor”)**
 - **For *existing sources*, the standard shall be at least as stringent as the average emission limitation achieved by the best performing 12 percent of existing sources, or, in the case of categories with less than 30 sources, the average emission limitation achieved by the best performing 5 sources**
 - **For *new sources*, the standard shall be at least as stringent as the emission control achieved in practice by the best controlled similar source**

CURRENT PROJECT SCHEDULE

<u>Event</u>	<u>Date</u>
● Kickoff Meetings	September 24-25, 1997
● Plant Visits	Dec. 1997 - Apr. 1998
● Initial Roundtable (Work Team)	January 21, 1998
● Second Roundtable (discuss draft P-MACT)	March 24, 1998
● Issue P-MACT Report	June 1998
● Continue on Standards Development Process	July 1998
● Rule Proposal	September 1999
● Rule Promulgation	November 2000

AFFECTED SOURCES

HOW IS THE SOURCE CATEGORY DEFINED?

- **Initial Source Category Description:**

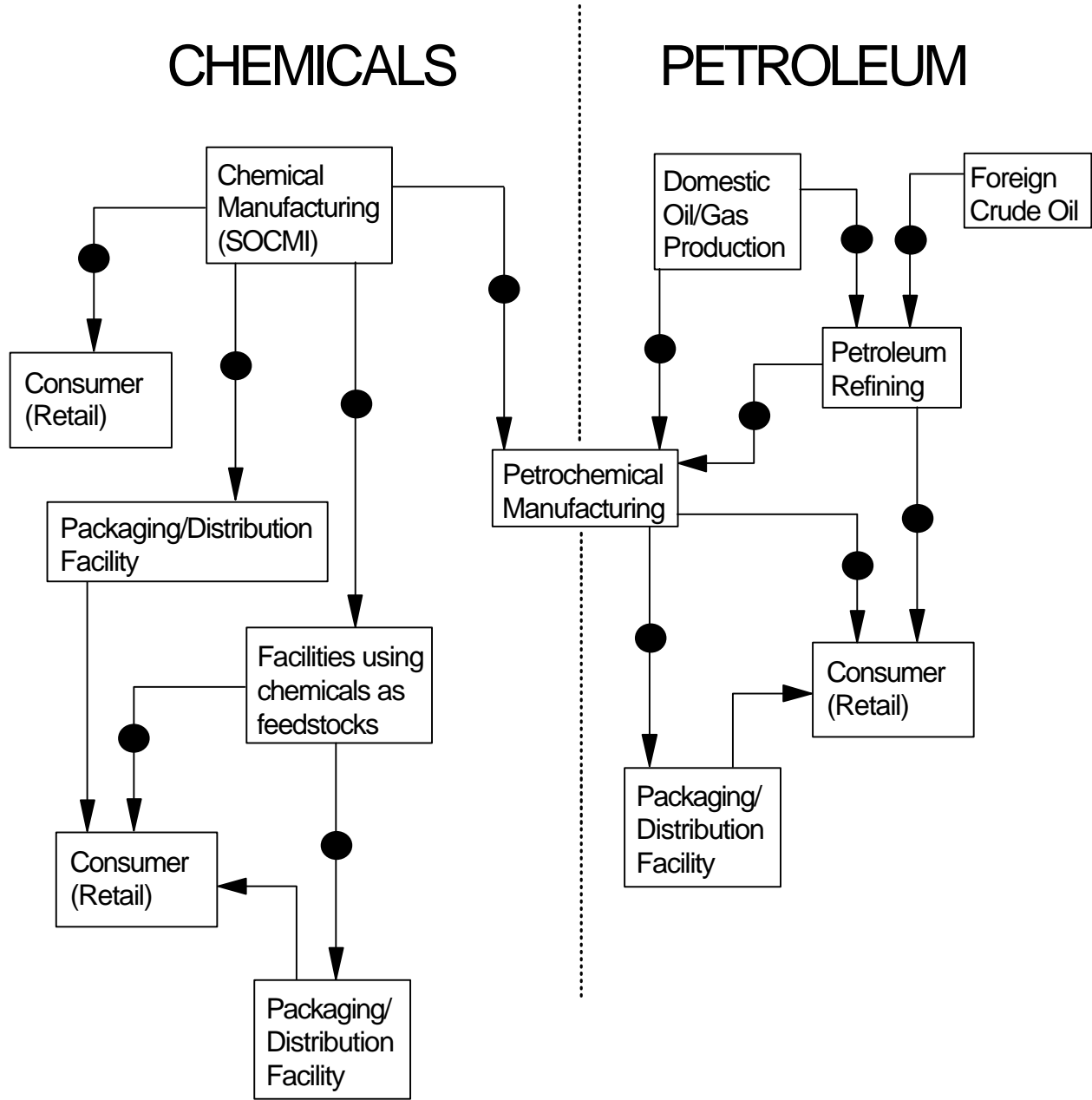
Activities associated with the storage and distribution of non-gasoline organic liquids with HAP content, at sites that serve as distribution points from which organic liquids may be obtained for further use and processing.

From the Oil and Gas Production MACT rule proposal, includes petroleum pipeline facilities that handle and distribute hydrocarbon liquids after the point of custody transfer.

- **Facility Types Include:**

- **Stand-alone or separate distribution terminals**
- **Collocated distribution activities (i.e., associated with refineries or chemical plants)**
- **Compounding/blending/packaging plants**
 - **separate facilities [not covered under Miscellaneous Organic NESHAP (MON)]**
 - **collocated with stand-alone or collocated distribution activities**
- **Pipeline facilities (non-gasoline HAP liquids)**

Organic Liquids Distribution Facilities Industry



● - Intermediate Distribution Facility

HOW IS THE SOURCE CATEGORY DEFINED?

(2)

- **Which processes and equipment are covered?**
 - **All HAP emission sources at distribution facilities**
 - **Possible distribution sources:**
 - **Storage tanks**
 - **Liquid transfer**
 - **truck**
 - **railcar**
 - **pipeline**
 - **Equipment leaks**
 - **Wastewater collection and treatment (air emission aspects)**

- **Which liquids?**
 - **Synthetic organic HAP chemicals**
 - **Petrochemicals**
 - **Crude oil or other unrefined petroleum liquids**
 - **Refined petroleum (non-gasoline)**
 - **Other liquids with volatile HAP content (e.g., wastes and wastewater)**

INDUSTRY PROFILE--BASED ON SIC CODES

Major Group	Industry Group Number	SIC Code ^a	NAICS Code	Facility Type ^a	Total No. of Establishments ^b	Size Distribution by No. of Employees ^b		
						<50	>50	>100
PIPELINES								
46				Pipelines, Except Natural Gas				
	<i>4610</i>			<i>Pipelines, Except Natural Gas</i>	<i>838</i>	<i>93%</i>	<i>4%</i>	<i>3%</i>
		4612	48611	Crude Petroleum Pipelines				
		4613	48691	Refined Petroleum Pipelines				
		4619	48699	Pipelines, Not Elsewhere Classified	<i>59</i>	<i>100%</i>		
47				Transportation Services				
	<i>4780</i>			<i>Miscellaneous Services Incidental to Transportation</i>	<i>2,349</i>	<i>92%</i>	<i>5%</i>	<i>3%</i>
		4789	488999	Transp. Services, Not Elsewhere Classified				

INDUSTRY PROFILE--BASED ON SIC CODES (CONTINUED)

Major Group	Industry Group Number	SIC Code ^a	NAICS Code	Facility Type ^a	Total No. of Establishments ^b	Size Distribution by No. of Employees ^b		
						<50	>50	>100
STAND-ALONE TERMINALS								
42				Motor Freight Transportation and Warehousing				
	<i>4220</i>			<i>Public Warehousing and Storage</i>				
		4226	49319	Special Warehousing and Storage, Not Elsewhere Classified	1,479	93%	4%	3%
44				Water Transportation				
	<i>4490</i>			<i>Services Incidental to Water Transportation</i>	6,742	95%	2%	3%
		4491	48831/2	Marine Cargo Handling	854	78%	10%	12%
51				Wholesale Trade--Nondurable Goods				
	<i>5160</i>			<i>Chemicals and Allied Products</i>	14,436	97%	2%	1%
		5169	42269	Chemicals and Allied Products, Not Elsewhere Classified	10,695	97%	2%	1%
	<i>5170</i>			<i>Petroleum and Petroleum Products</i>	14,636	97%	2%	1%
		5171	454311	Petroleum Bulk Stations and Terminals	10,562	97%	3%	<1%
		5172	42272	Petroleum & Petroleum Products Wholesalers, except Bulk Stations and Terminals	3,864	97%	2%	1%

INDUSTRY PROFILE--BASED ON SIC CODES (CONTINUED)

Major Group	Industry Group Number	SIC Code ^a	NAICS Code	Facility Type ^a	Total No. of Establishments ^b	Size Distribution by No. of Employees ^b		
						<50	>50	>100
COMPOUNDING AND PACKAGING FACILITIES								
51				Wholesale Trade--Nondurable Goods				
	<i>5160</i>			<i>Chemicals and Allied Products</i>	<i>14,436</i>	<i>97%</i>	<i>2%</i>	<i>1%</i>
		5169	42269	Chemicals and Allied Products, Not Elsewhere Classified	10,695	97%	2%	1%
	<i>5170</i>			<i>Petroleum and Petroleum Products</i>	<i>14,636</i>	<i>97%</i>	<i>2%</i>	<i>1%</i>
		5171	454311	Petroleum Bulk Stations and Terminals	10,562	97%	3%	<1%
		5172	42272	Petroleum & Petroleum Products Wholesalers, except Bulk Stations and Terminals	3,864	97%	2%	1%
47				Transportation Services				
	<i>4780</i>			<i>Miscellaneous Services Incidental to Transportation</i>	<i>2,349</i>	<i>92%</i>	<i>5%</i>	<i>2%</i>
		4783	488991	Packing and Crating				

INDUSTRY PROFILE--BASED ON SIC CODES (CONCLUDED)

Major Group	Industry Group Number	SIC Code ^a	NAICS Code	Facility Type ^a	Total No. of Establishments ^b	Size Distribution by No. of Employees ^b		
						<50	>50	>100
COLLOCATED DISTRIBUTION FACILITIES (e.g., with chemical or petrochemical facilities)*								
51				Wholesale Trade--Nondurable Goods				
	5160			Chemicals and Allied Products	14,436	97%	2%	1%
		5169	42269	Chemicals and Allied Products, Not Elsewhere Classified	10,695	97%	2%	1%

^a*Standard Industrial Classification Manual, 1987 (Office of Management and Budget)*

^b*County Business Patterns, 1995 (Bureau of the Census)*

Note: This table is not yet complete; the project team is still evaluating these facilities. Depending upon the outcome of these evaluations, some SIC codes may be added to or deleted from this table at a later point in time.

INDUSTRY PROFILE

(2)

Model Industry

- **Stand-Alone Organic Liquid Facilities²**

- **Primary SIC codes: 4226, 5169, 5171**

- **Primary States by Total Storage Capacity:**

<u>State</u>	<u>Capacity (barrels)</u>	<u>Percent of Total</u>
Texas	55,582,440	21%
Louisiana	29,383,594	11%
New Jersey	29,252,303	11%
California	24,329,888	9%
Illinois	9,881,577	4%

- **Range in number of storage tanks:**

1 to 420 +

- **Range in total storage capacity of individual facilities:**

2,700 to 12,500,000 barrels

- **Modes of transportation**

- marine vessel (tanker ship, barge)
- tank truck
- railcar
- pipeline

²Based on membership listing for the Independent Liquid Terminals Association (ILTA).

INDUSTRY PROFILE

(3)

- **Collocated Organic Liquid Facilities (e.g., associated with petroleum refineries or chemical plants)**
 - **SIC codes probably not similar to stand-alone facilities**
 - **Model plant data still being collected**

- **Pipeline Facilities**
 - **Primary SIC codes: 4612, 4613**
 - **Model plant data still being collected**

- **Blending/Compounding/Packaging Facilities**
 - **Primary SIC codes: 5169, 5171, 5172**
 - **Probably exist as part of liquid terminal operations**
 - **Stand-alone facilities may not be major sources**
 - **Some major source facilities and collocated sites may be covered under the Miscellaneous Organic NESHAP (MON)**
 - **Model plant data still being collected**

EMISSIONS AND CONTROLS

EMISSION FACTORS

- **Emissions Calculations**
 - HAP content
 - Models/methods for estimating emissions
 - Parameters: volume, loading method, vapor pressure, etc.)
- **HAP Content**
 - Pure compound (100% HAP)
 - Mixtures (partial HAP content)
 - petroleum liquids
 - diluted pure HAP chemicals
 - properties of several HAP liquids are shown in the following table

EXAMPLE ORGANIC LIQUIDS WITH HAP CONTENT

Stored Liquid	True Vapor Pressure	Temp. °F	Annual Volume	HAP Concentration in Vapors (g/m ³)		Number of Data Points
				Range	Average	
Mixtures Containing HAP^{a,c}						
Asphalt	0.002	280	?	?	31.72	14
Aviation Gasoline	3.50	66.8	?	?	15.51	16
Alkylate	4.92	76	?	?	115.77	28
Crude Oil	3.42	86	2.64x10 ¹¹ gal/yr	?	52.09	74
Diesel/Distillate	0.07	72	7.13x10 ¹⁰ gal/yr	?	11.55	74
Gasoline	6.47	69	1.18x10 ¹¹ gal/yr	?	130.66	137
Heavy Gas Oil	0.08	104	?	?	24.75	38
Jet Fuel (JP-4)	1.22	68	?	?	73.20	24
Jet Kerosene	0.07	74	7.60x10 ⁸ gal/yr	?	8.5	45
Naphtha	3.19	72	?	?	92.50	70
Reformates	3.48	72	?	?	91.16	53
Residual Fuel Oil	0.07	144	1.65x10 ¹⁰ gal/yr	?	110	37
Recovered Slop Oil	1.46	145	?	?	52.75	40

See end of table for footnotes.

EXAMPLE ORGANIC LIQUIDS WITH HAP CONTENT (Continued)

Stored Liquid	True Vapor Pressure	Temp. °F	Annual Volume	HAP Concentration in Vapors (g/m ³)		Number of Data Points
				Range	Average	
Selected Pure HAP Liquids^b						
Acrylonitrile	1.71	70	3,300x10 ⁶ lb/yr	?	?	n/a ^d
Aniline	0.02	95	1,305x10 ⁶ lb/yr	?	?	n/a
Benzene	1.54	70	1,740x10 ⁶ lb/yr	?	?	n/a
Bisphenol-A	n/a	n/a	1,600x10 ⁶ lb/yr	?	?	n/a
Bis (2-ethylhexyl) phthalate	?	?	257x10 ⁶ lb/yr	?	?	n/a
1,3 Butadiene	36.05	70	3,700x10 ⁶ lb/yr	?	?	n/a
Caprolactam	0.97	356	1,800x10 ⁶ lb/yr	?	?	n/a
Chloroform	0.19	50	935x10 ⁶ lb/yr	?	?	n/a
Cumene	0.27	70	5,240x10 ⁶ lb/yr	?	?	n/a
Ethylbenzene	0.19	79	13,040x10 ⁶ lb/yr	?	?	n/a
Ethylene glycol	0.00	70	5,600x10 ⁶ lb/yr	?	?	n/a
Ethylene dichloride	1.25	70	19,600x10 ⁶ lb/yr	?	?	n/a
Ethylene oxide	14.7	51	6,500x10 ⁶ lb/yr	?	?	n/a
Formaldehyde 37%	?	?	7,900x10 ⁶ lb/yr	?	?	n/a
Isophorone	0.07	70	?	?	?	n/a
Maleic anhydride	0.77	53	490x10 ⁶ lb/yr	?	?	n/a

See end of table for footnotes.

EXAMPLE ORGANIC LIQUIDS WITH HAP CONTENT (Concluded)

Stored Liquid	True Vapor Pressure	Temp. °F	Annual Volume	HAP Concentration in Vapors (g/m ³)		Number of Data Points
				Range	Average	
MTBE	4.74	70	8,140x10 ⁶ lb/yr	?	?	n/a
Methanol	1.93	70	11,100x10 ⁶ lb/yr	?	?	n/a
Methylchloroform	1.9	68	335x10 ⁶ lb/yr	?	?	n/a
Methylene chloride	7.39	70	375x10 ⁶ lb/yr	?	?	n/a
Methyl methacrylate	0.62	75	1,372x10 ⁶ lb/yr	?	?	n/a
Methyl ethyl ketone	1.46	70	584x10 ⁶ lb/yr	?	?	n/a
Methyl isobutyl ketone	0.04	70	?	?	?	n/a
Perchloroethylene	0.36	77	4,100x10 ⁶ lb/yr	?	?	n/a
Phenol	0.01	70	4,100x10 ⁶ lb/yr	?	?	n/a
Phthalic anhydride	0.19	50	820x10 ⁶ lb/yr	?	?	n/a
Styrene	0.19	93	7,622x10 ⁶ lb/yr	?	?	n/a
Toluene	0.45	70	698x10 ⁶ lb/yr	?	?	n/a
Vinyl acetate	1.87	70	2,112x10 ⁶ lb/yr	?	?	n/a
Vinyl chloride	14.7	6.8	9,463x10 ⁶ lb/yr	?	?	n/a
o-xylene	0.10	70	675x10 ⁶ lb/yr	?	?	n/a
p-xylene	0.14	70	4,779x10 ⁶ lb/yr	?	?	n/a

^aIndustry survey results for the Petroleum Refineries NESHAP, prepared by Radian Corporation, August 10, 1993.

^bChemical and Engineering News, June 1996, and Chemyclopedia 1996; all annual volumes are based upon 1995 data. Methylene chloride and methylchloroform annual volumes are based upon 1994 data.

^cNational Petroleum News, Mid-June 1995.

^dn/a stands for not applicable.

EMISSION FACTORS

(2)

- **Models and Methods**
 - **Storage tanks**
 - **AP-42, Section 7.1 (TANKS3 software)**

 - **Liquid transfer**
 - **AP-42, Section 5.2**

 - **Equipment leaks**
 - **emission factors available for chemical production facilities**
 - **factors for petroleum refineries**
 - **factors for gasoline marketing operations**

 - **Wastewater air emissions**
 - **collection and treatment system model (Water 8)**

- **Facility Parameters (established as part of the model industry)**

EMISSION CONTROLS

- **Storage Vessels**
 - **Route vapors to control device**
 - oxidizer (thermal or catalytic) <98% control>
 - carbon adsorption <95% control>
 - flare <98% control>
 - condenser <95% control>
 - scrubber <95% control>
 - **Floating roof (internal or external)**
 - rim seal types and fitting controls
 - **Pressurized or refrigerated tanks**

- **Liquid Transfer/Loading**
 - **Route vapors to control device**
 - devices similar to storage vessel controls
 - **Vapor-tight vessels (trucks, railcars)**
 - **Vapor balancing**

- **Equipment Leaks**
 - **Modify or replace existing equipment**
 - **Leak detection and repair (LDAR) program (instrument or visual program)**

- **Wastewater**
 - **Vent to a control device**
 - **Floating roof or vapor-tight cover**
 - **Closed piping**
 - **Drain controls (p-traps, water seals, etc.)**

CURRENT CONTROL LEVELS

Information on potential levels of control is being obtained from:

- **Federal NESHAP (40 CFR Parts 61 and 63)**
 - **Petroleum Refinery NESHAP (subpart CC)**
 - **Gasoline Distribution NESHAP (subpart R)**
 - **Oil & Natural Gas Production/Natural Gas Transmission & Storage NESHAP (subparts HH, HHH) [proposed]**
 - **Marine Vessel Loading NESHAP (subpart Y)**
 - **Hazardous Organic NESHAP (HON) (subparts F, G, H, I)**
 - **Miscellaneous Organic NESHAP (MON) [pre-proposal]**
 - **Storage Vessel NESHAP (subpart WW) [pre-proposal]**
 - **Oil-Water Separators (subpart VV)**
 - **Benzene Storage Vessel NESHAP (40 CFR 61, subpart Y)**
 - **Benzene Waste Operations NESHAP (40 CFR 61, subpart FF)**
 - **Off-Site Hazardous Waste NESHAP (subpart DD)**
 - **Benzene Transfer Operations NESHAP (40 CFR 61, subpart BB)**

- **Federal NSPS Rules (40 CFR Part 60)**
 - **Storage Vessels (subpart Kb, etc.)**
 - **Bulk Gasoline Terminals (subpart XX)**

CURRENT CONTROL LEVELS

(2)

- **Industry Data**
 - **Plant visits**
 - several visits were made in December 1997 and April 1998, and more are planned
 - **Survey responses**
 - detailed survey:
 - sent to a limited number of facilities
 - specific facility types
 - specific types of liquids (cutoffs for vapor pressure and HAP content)
 - operations not covered by other MACT rules
 - facility size $\leq 50\%$ of 10/25 tpy HAP criteria

CURRENT CONTROL LEVELS

(3)

- **State/Local Rules (Examples)**
 - **Storage Vessels - California and Illinois rules among the most stringent**
 - tanks > 10,000 gallons, > 1.9 psia, or
 - tanks > 19,800 gallons, > 1.5 psia, or
 - tanks > 39,630 gallons, > 0.5 psia:
floating roof or vapor control at 95% by weight

 - any capacity, > 11 psia:
pressure tank with no detectable organic emissions
or vapor control at 95% by weight
 - **Transfer Operations -Texas and California rules among the most stringent**
 - > 0.5 psia: vapor control at 90% (Texas-Houston)
 - **Wastewater Operations - The HON, Connecticut, Virginia, and Hawaii rules among the most stringent**
 - tanks > 20,000 gallons: Fixed Roof
 - tanks > 20,000 gallons, > 1.5 psia, or
 - tanks > 40,000 gallons, > 0.5 psia:
floating roof or vapor control at 95% by weight
 - Individual Drain Systems: Vapor Suppression

ISSUES/QUESTIONS

- **Which facilities/emission sources should be included in the source category?**
- **Are there significant emission sources at compounding and packaging operations?**
- **Impact of the other Federal air rules**
 - **Do these rules adequately cover (or will they cover) collocated distribution emission sources?**
 - **Which emission sources in categories that are regulated (or will be regulated under other rules) should be considered for regulation under the OLD standards?**
- **Impact on or from other media standards**
 - **Water (Benzene Waste NSPS?)**
 - **Solid waste**
 - **Other standards?**
 - **Investigation of these rules is continuing**

ISSUES/QUESTIONS

(2)

- **Major/Area Sources**
 - **Some owners and operators are small businesses**
- investigating these numbers
 - **Must regulate area sources if they present**
“a threat of adverse effects to human health
or the environment” (§112(c)(3))
 - **Looking into simple mechanisms to distinguish area**
sources from major sources (throughput,
equipment size, etc.)
 - **How does the potential to emit (PTE) concept apply**
to these operations?
- **Need additional information to define industry**
and complete industry profile
 - **Industry survey**
 - **Completion of data collection for MACT floor**
determination
 - **HAP content of mixtures**

MEMORANDUM

TO: Steve Shedd
U. S. Environmental Protection Agency, ESD/WCPG

FROM: Jay Helms
Pacific Environmental Services, Inc. (PES)

DATE: April 24, 1998
P:\N812

SUBJECT: Organic Liquids Distribution NESHAP: State Rules Summary

The following tables summarize the State and local regulations reviewed by PES. The summary is organized in terms of stringency of regulation. The dashed lines separate individual rules, while the solid lines separate groups of rules by stringency level.

STATE REGULATIONS SUMMARIES, STORAGE VESSELS

State	Regulation	Applicability	Process/Products	Standards/Requirements
California, South Coast	463	Storage vessels; > 19,815 gallons; > 39,630 gallons	Organic Liquids; > 1.5 psia; > 0.5 psia	External floating roof, internal floating-type cover, or vapor recovery system (95% by weight)
California, Bay Area	8-5-300	Storage vessels; > 39,626 gallons (150m3)	Organic liquids; > 0.5 psia	Vapor loss control device-95% by weight efficiency
California, Ventura County	71.2	Storage vessels; >40,000 gallons	Organic liquids; >0.5 psia	External or internal floating roof or vapor recovery system (95% by weight)
Illinois (Chicago)	218.119-120, Subpart B	Storage vessels; >40,000 gallons	VOL; >0.75 psia >1.5 psia VPL:	VOL: IFR, EFR, or approved control device (95% VOC reduction or greater--90% if installed before 1993). VPL: Floating roof or control system at 85%
California, San Diego	61	Storage vessels; > 40,000 gallons; Plants > 5,000,000 gal/yr	Organic liquids (VOC); > 3.0 psia	RVP Floating roof or vapor control system--95%
California, Ventura County	71.2	Storage vessels; > 10,000 gallons, < 20,000 gallons	Organic liquids; >1.5 psia	Permanent submerged fill pipe; pressure relief valve (90%); external or internal floating roof or vapor recovery system (95% by weight)
California, Ventura County	71.2	Storage vessels; > 20,000 gallons, < 40,000 gallons	Organic liquids; >1.5 psia	Permanent submerged fill pipe; external or internal floating roof or vapor recovery system (95% by weight)
California, Bay Area	8-5-300	Storage vessels; >19,813 gallons (75m3), < 39,626 gallons (150m3)	Organic liquids; > 1.5 psia	Vapor loss control device-95% by weight efficiency
California, San Joaquin	4623	Storage vessels; > 19,800 gallons	Organic Liquids (including crude oil & petroleum distillates); >1.5 psia	Floating roof tank, or vapor control system--95%
Colorado	5CCR 1001-9 Reg # 7	Storage vessels; >40,000 gallons	Petroleum liquids; >0.65 psia	Floating roof, vapor recovery system, or equivalent
Indiana	326 IAC 8-9	Storage vessels; >39,000 gallons	Organic liquids; >0.75 psia, <11.1 psia	Various fixed roof requirements
New York	Section 229	Storage vessels; >40,000 gallons	Organic liquids; >1.0 psia	Floating roof and vapor control system
Virginia	9 VAC 5-40-1390	Storage vessels; >40,000 gallons	Petroleum liquids; >1.5 psia	40 CFR 60, Subpart Kb

STATE REGULATIONS SUMMARIES, STORAGE VESSELS (Continued)

State	Regulation	Applicability	Process/Products	Standards/Requirements
S. Dakota	74:36:07:14	Storage vessels	Organic liquids	40 CFR 60, Subpart Kb
Kentucky	401 KAR 59:485	Storage vessels; >40,000 gallons	Organic liquids	40 CFR 60, Subpart Kb
Arkansas	19.10.5.1	Storage vessels; >39,000 gallons	Petroleum liquids; >1.52 psia	40 CFR 60.110 - NSPS for Storage vessels for Petroleum liquids; or floating roof or cover
Maine	Chapter 111	Storage vessels; >39,000 gallons	Petroleum liquids; >1.52 psia	Vessels w/ fixed roof; 40 CFR, part 60, Subparts K, Ka, & Kb
Nebraska		Storage vessels	Organic liquids	Subparts K, Ka
Oregon	340-22-160	Storage vessels; >39,000 gallons	Organic liquids; >1.52 psia	Floating roof; subparts K, Ka
Connecticut	Section 22a-174-20	Storage vessels; >40,000 gallons	Organic liquids; >1.5 psia	Vapor recovery system (95% by weight); permanent submerged fill pipe
Kentucky	401 KAR 59:050	Storage vessels; >40,000 gallons	Petroleum liquids; >1.5 psia, <11.1 psia	External floating roof (w/specific seals); fixed roof internal floating roof; vapor recovery system (95% by weight VOC); or an equivalent system
Connecticut	Section 22a-174-20	Storage vessels; >40,000 gallons	Organic liquids; >1.5 psia, <11.0 psia	Fixed roof & floating roof, or vapor recovery system (95% by weight); permanent submerged fill pipe
Rhode Island	11.2	Storage vessels; >40,000 gallons	Petroleum liquids; >1.52 psia	Vessels w/ fixed roof; VOC reduced by 95% using a vapor recovery system
Mass.	310 CMR 7.24	Storage vessels; >40,000 gallons	Organic liquids; >1.5 psia	Submerged fill pipe required; and an external floating roof or both a pressure tank system & a vapor recovery system (95% emission reduction)

**STATE REGULATIONS SUMMARIES, STORAGE VESSELS
(Continued)**

State	Regulation	Applicability	Process/Products	Standards/Requirements
Kansas	28-19-65	Storage vessels; >40,000 gallons	Organic liquids; >1.5 psia	Floating roof (< 11.1 psia) or vapor control system--90%, or equivalent; Pressure tank sealed or vented to a vapor control system (> 11.1 psia)
District of Columbia	701	Storage vessels; >40,000 gallons	Petroleum liquids; >1.5 psia	Pressure tank or vapor loss control devices
Michigan	R 336.1604	Storage vessels; >40,000 gallons	Organic liquids; >1.52 psia, < 11 psia	Pressure tank, floating cover or roof, vapor recovery system (90% by weight)
Texas	Section 115.112: Subchapter A	Storage vessels; >40,000 gallons	Organic liquids; > 1.5 psia	Floating roof or vapor recovery system--90%
Florida	62-296.508	Storage vessels; >42,000 gallons	Petroleum liquids; >1.5 psia	Floating roof
Washington	WAC 173-490-040	Storage vessels; >40,000 gallons	Petroleum liquids; >1.5 psia	Floating roof or equivalent
North Carolina	.0925	Storage vessels; >39,000 gallons	Petroleum liquids; >1.52 psia	Floating roof
Wisconsin	NR 419.05	Storage vessels; >40,000 gallons	Organic liquids; >1.52 psia	Floating roof, vapor condensation system, vapor holding tanks, or equivalent
Kentucky	401 KAR 59:050	Storage vessels; >40,000 gallons	Petroleum liquids; >1.5 psia, <11.1 psia	Floating roof or vapor recovery system, or their equivalents
Maryland	26-11-13.03	Storage vessels; >40,000 gallons	Organic liquids; >1.5 psia, <11.1 psia	Floating roof, vapor control system, pressure tank, or equivalent
Vermont	5-253.1	Storage vessels; >40,000 gallons	Petroleum liquids; >1.52 psia	Vessels w/ fixed roof must be equipped with an internal floating roof
Nevada	445B.395	Storage vessels; >40,000 gallons	Organic liquids; >1.5 psia	Floating roof (<11 psia) or equivalent; Submerged fill pipe

STATE REGULATIONS SUMMARIES, STORAGE VESSELS (Continued)

State	Regulation	Applicability	Process/Products	Standards/Requirements
South Carolina	62.5, part O	Storage vessels; >40,000 gallons	Petroleum liquids; >1.5 psia	Floating roof or equivalent
New Mexico	NMAC 2.37.205	Storage vessels; > 250,000 (65,000-- new)gallons	Organic liquids; > 3.0 (1.5-- new) psia, <11.0 psia	Floating roof; vapor recovery system
West Virginia	45-21-27	Storage vessels; >40,000 gallons	Petroleum liquids; >1.5 psia	External floating roof tanks have seal requirements; fixed roof tanks must have internal floating roof or equivalent
Wisconsin	NR 420.03	Storage vessels; >40,000 gallons	Petroleum liquids; >1.52 psia, < 11.1 psia	Floating roof, vapor recovery system, or equivalent
Hawaii	11-60.1-39	Storage vessels; >40,000 gallons	VOCs; > 1.5 psia	Floating roof or a vapor recovery & disposal system
Arizona	R18-2-710	Storage vessels; >40,000 gallons	Petroleum liquids; >1.5 psia	Floating roof or equivalent (if liquid>12 psia)
Missouri	10 CSR 10-2.260	Storage vessels; >40,000 gallons	Petroleum liquids; >1.5 psia	Floating roof, vapor recovery system, or equivalent
Utah	R307-14-2	Storage vessels; >40,000 gallons	Petroleum liquids; >1.52 psia	Floating roof
Indiana	326 IAC 8-4-3	Storage vessels; >39,000 gallons	Petroleum liquids; >1.52 psia;	Floating roof
Illinois	218.121, Subpart B	Storage vessels; >40,000 gallons	Petroleum liquids; >1.5 psia, <12.5 psia	Floating roof
New Jersey	7:27-16.2	Storage vessels	Organic liquids	Miscellaneous; See Table 2A
Oklahoma	252:100-37-15	Storage vessels; >40,000 gallons	Organic liquids	Pressure tank, floating roof, vapor recovery system, or equivalent
North Carolina	.0518	Storage vessels; >50,000 gallons	Organic liquids; >1.5 psia	Pressure tank, floating roof, vapor recovery system, or equivalent
Penns.	129.56-57	Storage vessels; >40,000 gallons	VOCs: >1.5 psia	Floating roof or vapor recovery system--80%

STATE REGULATIONS SUMMARIES, STORAGE VESSELS (Continued)

State	Regulation	Applicability	Process/Products	Standards/Requirements
New Hampshire	Env-A 1204.20	Storage vessels; >40,000 gallons	Organic liquids; >1.52 psia; fixed roofs	Various seal & vent requirements; RACT.
Illinois	215.121, Subpart B	Storage vessels; >40,000 gallons	Organic liquids >2.5 psia	<12.5 psia-floating roof, >12.5 psia-vapor recovery system consisting of vapor disposal system (85%)
Montana	17.8.324	Storage vessels; >65,000 gallons	Petroleum liquids or Crude; >2.5 psia	Pressure tank, floating roof (<13 psia), vapor recovery system, or equivalent
New Jersey	7:27-16.4	Storage vessels; > 2,000 gallons	Organic liquids	> 1000 Lb VOC/year: vapor control (90%), floating roof, or vapor balance system
Minnesota	7011.1505	Storage vessels; > 2,000 gallons & < 40,000 gallons	Petroleum liquids; >1.5 psia, < 11.1 psia	Permanent submerged fill pipe; floating roof, vapor recovery system, or equivalent
Alaska	18 AAC 50.085	Storage vessels; >378,000 gallons	Volatile liquids	Internal floating roof, closed vent system & vapor control--95%
California, San Diego	61	Storage vessels	Organic liquids; > 11 psia	BACT
Colorado	5CCR 1001-9 Reg # 7	Storage vessels	Organic Liquids; > 11 psia	Pressure tank
New Mexico	NMAC 2.37.205	Storage vessels; > 250,000 gallons	Organic liquids; >11.0 psia	Pressure vessel
California, Ventura County	71.2	Storage vessels	Organic liquids; > 11 psia	Pressure tank; vapor recovery system, or equivalent (95% by weight)
Indiana	326 IAC 8-9	Storage vessels; >39,000 gallons	Organic liquids >11.1 psia	Closed vent system (<500 ppm) and an approved control device (95% VOC reduction or greater)
Kentucky	401 KAR 59:050	Storage vessels; >40,000 gallons	Petroleum liquids; >11.1 psia	Vapor recovery system--95% by weight

STATE REGULATIONS SUMMARIES, STORAGE VESSELS (Continued)

State	Regulation	Applicability	Process/Products	Standards/Requirements
Michigan	R 336.1605	Storage vessels; >40,000 gallons	Organic liquids; >11 psia	Pressure tank, vapor recovery system--90%, or equivalent
Texas	Section 115.112: Subchapter A	Storage vessels; >25,000 gallons	Organic liquids; > 11 psia	Submerged fill pipe and vapor recovery system--90%
Wisconsin	NR 420.03	Storage vessels; >40,000 gallons	Petroleum liquids; >11.1 psia	Vapor recovery system or equivalent
New Jersey	7:27-16.2	Storage vessels; >1,000 gallons	Organic liquids; > 13.0 psia	Vapor control system at 90% by weight
Illinois	218.121, Subpart B	Storage vessels; >40,000 gallons	Petroleum liquids; >12.5 psia	Vapor recovery system consisting of vapor disposal system (85%)
Minnesota	7011.1505	Storage vessels; > 2,000 gallons & < 40,000 gallons	Petroleum liquids; >11.1 psia	Permanent submerged fill pipe; vapor recovery system, or equivalent
Wyoming		Storage vessels; >65,000 gallons	Petroleum liquids; RVP>5 lbs	Pressure tank
New York	Section 229	Storage vessels; >20,000 gallons	Organic liquids; >4.0 psia	Various seal & vent requirements
South Carolina	62.5, part P	Storage vessels; >39,600 gallons	External Floaters	Various seal requirements
Washington	WAC 173-490- 201	Storage vessels; >40,000 gallons	External Floaters	Various seal requirements
Michigan	R 336.1623	Storage vessels; >40,000 gallons	Petroleum liquids; >1.0 psia, but < 11 psia	External floating roof tanks: various seal requirements
Illinois	215.124, Subpart B	Storage vessels	Petroleum liquids	External floating roof tanks: various seal requirements
Illinois	215.122 & 218.122, Subpart B	Storage vessels; > 250 gal	Organic material	Permanent submerged fill pipe
Oklahoma	252:100-39-48	Storage vessels; <40,000 gallons	Organic liquids	> 400 gallons--submerged pipe or bottom fill; >2000 gallons--vapor control system (90% by weight)
Kentucky	401 KAR 59:050	Storage vessels; >580 gallons	Petroleum liquids; >1.5 psia	Permanent submerged fill pipe

STATE REGULATIONS SUMMARIES, STORAGE VESSELS (Continued)

State	Regulation	Applicability	Process/Products	Standards/Requirements
North Dakota	33-15-07-01	Storage vessels; >1,000 gallons	Organic liquids	Permanent submerged fill pipe
Arizona	R18-2-905	Storage vessels; <40,000 gallons	Petroleum liquids	Submerged filling device
California, Bay Area	8-5-300	Storage vessels; <39,626 gallons (150 m3)	Organic liquids; >0.5 psia	Permanent submerged fill pipe
New Jersey	7:27-16.4	Storage vessels; > 2,000 gallons	Organic liquids	Permanent submerged fill pipe
Wisconsin	NR 419.05	Storage vessels; > 1000 gallons	Organic liquids; >1.52 psia	Permanent submerged fill pipe
Georgia	VV	Storage vessels; >4,000 gallons	Organic liquids	Permanent submerged fill pipe
Florida	62-296.508	Storage vessels; <422,400 gallons	Produced crude oil & condensate prior to custody transfer	Exempt
Illinois	215.123, Subpart B	Storage vessels; <422,400 gallons	Produced crude oil & condensate prior to custody transfer	Exempt
Kansas	28-19-65	Storage vessels; <422,400 gallons	Produced crude oil & condensate prior to custody transfer	Exempt
Indiana	326 IAC 8-4-3	Storage vessels; <420,000 gallons	Crude & condensate prior to lease custody transfer	Exempt
Washington	WAC 173-490- 201	Storage vessels; <420,000 gallons	Produced crude oil & condensate prior to custody transfer	Exempt
Virginia	9 VAC 5-40- 1390	Storage vessels; <420,000 gallons	Produced crude oil & condensate prior to custody transfer	Exempt
North Carolina	.0925	Storage vessels; <416,000 gallons	Produced crude oil & condensate prior to custody transfer	Exempt
Illinois	215.123, Subpart B	Storage vessels; <378,000 gallons	Produced oil or condensate in crude oil gathering	Exempt

**STATE REGULATIONS SUMMARIES, STORAGE VESSELS
(Concluded)**

State	Regulation	Applicability	Process/Products	Standards/Requirements
Indiana	326 IAC 8-4-3	Storage vessels	Petroleum liquids; < 4.0 psia	Vessel of welded construction, having proper closure device
South Carolina	62.5, part P	Storage vessels	Petroleum liquids; >1.5 psia, <4 psia	If the tank is a welded tank, no other control is necessary
Washington	WAC 173-490-201	Storage vessels	Petroleum liquids; >1.5 psia, <4 psia	If the tank is a welded tank, no other control is necessary
Maryland	26-11-13.02	Storage vessels	Petroleum liquids; >1.5 psia, <4 psia	If the tank is a welded tank, no other control is necessary

STATE REGULATIONS SUMMARIES, TRANSFER OPERATIONS

State	Regulation	Applicability	Process/Products	Standards/Requirements
California, South Coast	462	TT/railcar transfer operations; > 20,000 gallons/day	Organic liquids; > 1.5 psia	Vapor recovery and/or disposal system = 0.29 lb VOC/1,000 gallons organic liquid transferred; after Feb. 1998-0.08 lb VOC/1,000 gallons organic liquid transferred
California, San Joaquin	4624	TT/railcars: Class 1 (>20k gal/day). Class 2 (4k-20k gal/day)	Organic liquids; > 1.5 psia	Class 1: 0.08 lb/1,000 gal. Class 2: 95% by weight
Alaska	18 AAC 50.090	Transfer operations; > 15 million gallons/year	Volatile liquids	10mg/L emission limit
California, Bay Area	8-6-300	Transfer operations	Organic liquids	21 mg/L emission limit
Texas	Section 115.211-- : Subchapter C	Transfer operations	Organic liquids; > 0.5 psia	Vapor recovery system (90%) or vapor balance system
Oklahoma	252:100-39-48	Transfer operations	Organic liquids	ab(d)sorption system--90% by weight; vapor handling system--disposal efficiency of 95%.
New Jersey	7:27-16.5	Transfer operations; 6,000,000 gallons/year thruput	Organic liquids	95% by weight VOC emission reduction
California, San Joaquin	4624	Transfer operations; > 20,000 gallons/day	Organic liquids; > 1.5 psia	95% by weight efficient reduction of VOCs
Louisiana	33:III:2107	Transfer operations; > 20,000 gallons/day	Organic liquids; > 1.5 psia	Vapor collection system--90%
Oklahoma	252:100-37-16	Transfer operations; > 40,000 gallons/day	Organic liquids	Vapor collection system or bottom loading with closed hatches; Disposal--90% by weight by means of a vapor liquid absorber system.
California, Ventura County	71.3	Transfer Operations >20,000 gallons/day; >150,000 gallons/year	Organic liquids; > 1.5 psia	Bottom loaded vapor recovery system including a vapor return/condensation system or a vapor disposal system at 90% by weight
Connecticut	Section 22a-174-20	Transfer operations; > 10,000 gallons/day	Organic liquids; >1.5 psia	Vapor collection adaptor; vapor tight seal
Wisconsin	NR 419.05	Transfer operations; >40,000 gallons/day	Organic liquids; >1.52 psia	Vapor collection & disposal system

STATE REGULATIONS SUMMARIES, TRANSFER OPERATIONS (Continued)

State	Regulation	Applicability	Process/Products	Standards/Requirements
Texas	Section 115.211-- : Subchapter C	Transfer operations	Organic liquids; > 1.5 psia	Vapor-tight vapor recovery system
Michigan	R 336.1609	Transfer operations; >5,000,000 gallons/year throughput	Organic liquids; >1.5 psia	Vapor recovery system; 0.7 lb/1000 gallons emission limit
Massachusetts	310 CMR 7.24	Transfer Operations; CM, MB, MV, PV, SM Bulk Plants	Organic material > 1.5 psia	Vapor balance system required; transfer must take place through a submerged fill pipe
New Mexico	NMAC 2.37.205	Transfer operations	Organic liquids; >1.5 psia	Loading arm with a vapor collection adapter; a means to prevent organic compound drainage from loading device
Massachusetts	310 CMR 7.24	Transfer Operations; U Bulk Terminals	Organic liquids; > 1.5 psia	Vapor collection & disposal system required; 80 mg/liter emission limit
California, Ventura County	71.3	Transfer operations	Organic liquids; > 0.5 psia	Submerged fill pipe, or bottom loading
Illinois (Chicago)	218.122, Subpart B	TT/railcar transfer operations; >40,000 gallons/day	Organic liquids; >2.5 psia if no odor nuisance	Emission limit of 8 lbs/hr, submerged loading, or equivalent
North Dakota	33-15-07-01	Transfer operations; > 20,000 gal/day	Organic liquids	Submerged filling arm or other vapor emission control system
North Carolina	.0948	Transfer operations; > 20,000 gal/day	Organic liquids; > 1.5 psia	Submerged loading through bottom loaders or equivalent
Colorado	5CCR 1001-9 Reg # 7	Transfer operations; >56 gallons	VOCs	Submerged or bottom loading; top- fill pipe to within 6 inches of the bottom of the tank
Wisconsin	NR 419.05	Transfer operations; < 40,000 gal/day	Organic liquids; >1.52 psia	Submerged fill pipe extending to within 6 inches of the tank (vessel) bottom
California, Ventura County	71.3	Transfer Operations >20,000 gallons/day; >150,000 gallons/year	Organic liquids; > 0.5 psia	Overfill protection system
New Mexico	NMAC 11.65.II.6	Transfer operations	Organic liquids; >15.0 psia	Emission limit--2.2lbs/6,000 gallons loaded; same for >1.5 psia & < 15.0 psia, if >1,000 gallons/month (unless there is a vapor emission control system)
Louisiana	33:III:2107	Transfer operations; Marine vessels	Organic liquids; >1.5 psia; >100 tons/yr uncontrolled emissions	Vapor collection system--90%; Barge-Crude=30mg/L; Ship- crude=12mg/L

**STATE REGULATIONS SUMMARIES, TRANSFER
OPERATIONS (Concluded)**

State	Regulation	Applicability	Process/Products	Standards/Requirements
Massachusetts	310 CMR 7.24(8)	Transfer operations	Marine vessel previous cargo-organic liquid	95% emission reduction by recovery device or 98% by weight by combustion device; and 2 lb/1,000 bbls emission limit
Rhode Island	32.2	Transfer operations	Marine vessel previous cargo-organic liquid	VOC reduced by 95% by weight; 98% by weight if a control device is used
Maine	Chapter 600	Transfer operations	Petroleum liquids	Miscellaneous minor requirements
New Jersey	7:1E-3	Transfer operations	Pipelines	Conform to 49 CFR 195, "Transportation of Liquids by Pipeline"
California, San Diego	61	Transfer Operations; Both mobile transport and stationary storage tank > 550 gallons	Organic liquids	Equipped with a submerged fill pipe; 95% by weight VOC
California, San Diego	61	Transfer operations; mobile transport tank > 550 gallons	Organic liquids	90% by weight of VOC; 0.29 lb VOC/1,000 gallons loaded; pressure may not exceed 18 inches of water
Oklahoma	252:100-37-16	Transfer operations; < 40,000 gal/day	Trucks (vessels); > 200 gallons	Aggregate loading pipes equipped to fill--97% submergence must be maintained
Michigan	R 336.1706	Transfer operations; >5,000,000 gallons/year throughput	Crude Oil >1.5 psia	Vapor recovery system; 0.7 lb/1000 gallons emission limit; or submerged fill pipe

STATE REGULATIONS SUMMARIES, WASTEWATER OPERATIONS

State	Regulation	Applicability	Process/Products	Standards/Requirements
Virginia	9 VAC 5-40-1390	Wastewater Separators		Vapor control system--95%
Washington	WAC 173-490-040	Wastewater Separators		Floating roof or fixed & sealed solid cover
Montana	17.8.324	Wastewater Separators; >200 gal/day	Any petroleum liquid => kerosene in volatility	Floating roof or a vapor recovery & disposal system
North Dakota	33-15-07-01	Wastewater Separators; >200 gal/day	Any volatile organic liquid	Floating roof, a vapor recovery & vapor disposal system, or equivalent
Hawaii	11-60.1-40	Wastewater Separators; >200 gal/day	VOCs; > 0.5 psia	Floating roof or a vapor recovery & vapor disposal system
Maryland	26-11-13.06	Wastewater Separators; >200 gal/day	VOC; >1.5 psia	Floating roof, a vapor recovery system, or equivalent
Louisiana	Section 2153: Subchapter M	SIC Codes: 28--21, 23, 24, 33, 34, 36, 65, 69, 79 & 49--52, 53, 59.	VOC Wastewater -- storage, handling, transfer, or treatment.	Reduce the VOC content of the stream by 90 percent (85 percent-- for biotreatment units) & reduce the VOC content to less than 100 ppm by weight. Also, various requirements for WW storage tanks.
California, Ventura County	71.3	Delivery Vessels	Organic liquids	Vapor recovery system; pressure-vacuum relief device; secondary overflow protection; loading connector/adaptor
California, Bay Area	8-5-328	Wastewater; Tank Cleaning	Organic liquids; >0.5 psia	Liquid balancing; 90% by weight efficiency
Maryland	26-11-13.06	Waste	VOC	Cannot discharge >200 lbs unless the discharge is reduced by 85%
North Carolina	.0518	Waste	Photochemically reactive VOC	Cannot discharge >40 lbs unless the discharge is reduced by 85%
New Jersey	7:1E-2	Storage, transfer, equipment leaks		See the rule
New Jersey	7:1E-4	Storage, transfer, equipment leaks		Submit a DPCC plan, demonstrating compliance with 7:1E-2
South Carolina	62.5, part O	Equipment leaks	Tanks	Monthly inspection through the roof hatch; complete inspection of cover & seal whenever tank is emptied or non-operational for a year
Arizona	R18-2-905	Pumps & compressors	VOC	Mechanical seals or equivalent