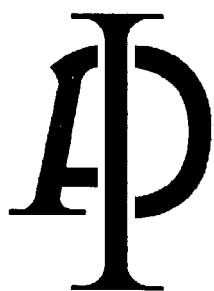


REFINERY MACT WORKSHOP



American Petroleum Institute • 1220 L Street, NW •
Washington, D.C. 20005



Refinery MACT Workshop

July 11-12, 1996

Health and Environmental Affairs Department
Publication Number 335
July 1996

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One of the most significant long-term trends affecting the future vitality of the petroleum industry is the public's concerns about the environment. Recognizing this trend, API member companies have developed a positive, forward-looking strategy called STEP: Strategies for Today's Environmental Partnership. This program aims to address public concerns by improving our industry's environmental, health and safety performance; documenting performance improvements; and communicating them to the public. The foundation of STEP is the API Environmental Mission and Guiding Environmental Principles.

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The members of the American Petroleum Institute are dedicated to continuous efforts to improve the compatibility of our operations with the environment while economically developing energy resources and supplying high quality products and services to consumers. The members recognize the importance of efficiently meeting society's needs and our responsibility to work with the public, the government, and others to develop and to use natural resources in an environmentally sound manner while protecting the health and safety of our employees and the public. To meet these responsibilities, API members pledge to manage our businesses according to these principles:

- ❖ To recognize and to respond to community concerns about our raw materials, products and operations.
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- ❖ To advise promptly, appropriate officials, employees, customers and the public of information on significant industry-related safety, health and environmental hazards, and to recommend protective measures.
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- ❖ To economically develop and produce natural resources and to conserve those resources by using energy efficiently.
- ❖ To extend knowledge by conducting or supporting research on the safety, health and environmental effects of our raw materials, products, processes and waste materials.
- ❖ To commit to reduce overall emission and waste generation.
- ❖ To work with others to resolve problems created by handling and disposal of hazardous substances from our operations.
- ❖ To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.
- ❖ To promote these principles and practices by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of similar raw materials, petroleum products and wastes.

Please Note:

This manual has been prepared to accompany the API Refinery MACT Workshop. It is intended as a general guide for planning the implementation of the Refinery MACT final Rule. Readers of the guide have an independent obligation to ascertain that their actions and practices are in accordance with the rule's requirements. The manual is necessarily general in nature and leaves dealing with site-specific circumstances to the users of this manual who have sources that are subject to this rule.

This manual cannot and does not attempt to be a complete summary of all the requirements. This manual cannot be used in place of the regulation and, thus, should not be relied upon for regulatory compliance purposes. Readers should refer to the regulation and consult with their company's regulatory experts, and others as appropriate, for any necessary interpretations and to understand any legal obligations.

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Refinery MACT Workshop

Presented by the
API Air Toxics Task Force
and by staff of the U.S. EPA
Emission Standards Division



Introduction Slide 1

Refinery MACT Workshop Topics

- | | |
|-------------------------------------|---------------------|
| ■ Morning of the First Day | |
| ■ <i>API Opening Comments</i> | Bill Beck |
| ■ <i>Introduction / Background</i> | Bill Beck |
| ■ <i>Refinery MACT Overview</i> | Jim Durham |
| ■ <i>Demo. Interactive Viewer</i> | Bob Andrew |
| ■ <i>Applicability & Timing</i> | Nancy Kralik |
| ■ <i>Refinery Storage Tanks</i> | Rob Ferry |
| ■ <i>Misc. Process Vents</i> | Allen Ellett |
| ■ <i>Q & A Panel Session</i> | Karin Ritter et al. |



Introduction Slide 2

Refinery MACT Workshop Topics

Afternoon of the First Day

- | | |
|---------------------------------------|---------------------|
| ■ <i>Leak Detection & Repair</i> | Miriam Lev-On |
| ■ <i>Refinery Wastewater</i> | Gary Furlong |
| ■ <i>Emissions Averaging</i> | Jan Meyer |
| ■ <i>Interaction with Other Rules</i> | Charlie Bennett |
| ■ <i>Q & A Panel Session</i> | Karin Ritter et al. |



Introduction Slide 3

Refinery MACT Workshop Topics

■ Morning of the Second Day

- | | |
|---------------------------------------|-------------------------|
| ■ <i>MACT General Provisions</i> | Jack McClure |
| ■ <i>Monitoring & Inspection</i> | Bob Hermanson |
| ■ <i>Recordkeeping Required</i> | Dave Emery |
| ■ <i>Reporting Requirements</i> | Arthur Lee |
| ■ <i>Q & A Panel Session</i> | Karin Ritter et al. |
| ■ <i>Next Steps for Refinery MACT</i> | Jim Durham
and Panel |
| ■ <i>Workshop Closing Remarks</i> | Bill Beck |



Introduction Slide 4

Introduction / Background

Refinery MACT Workshop

Bill Beck, Mobil Oil Corporation



Background Slide 1

Background

Clean Air Act Amendments 1990
Title III - Air Toxics
Section 112



Background Slide 2

Objective

Technology Based Standards

vs.

Health Based Standards



Background Slide 3

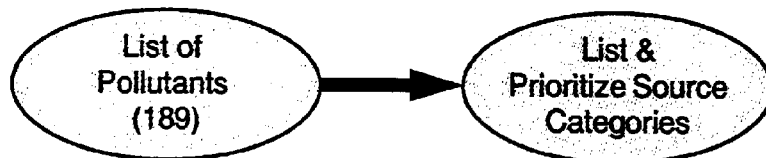
Regulatory Scheme

List of
Pollutants
(189)



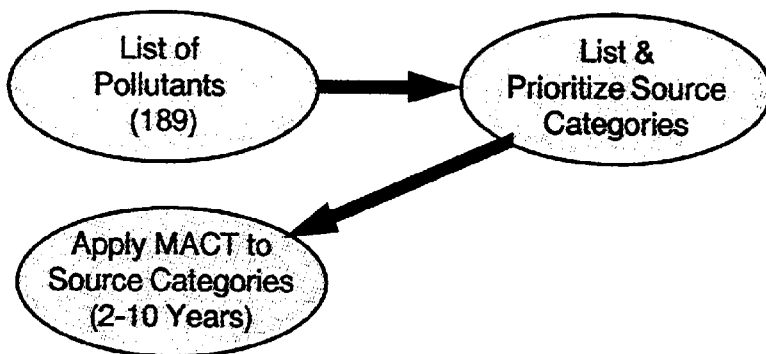
Background Slide 4

Regulatory Scheme



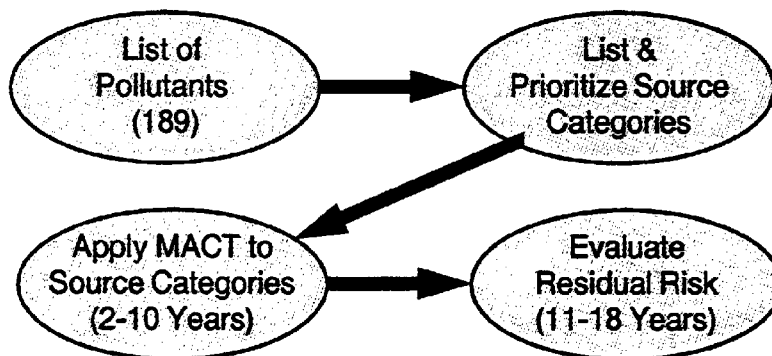
Background Slide 5

Regulatory Scheme



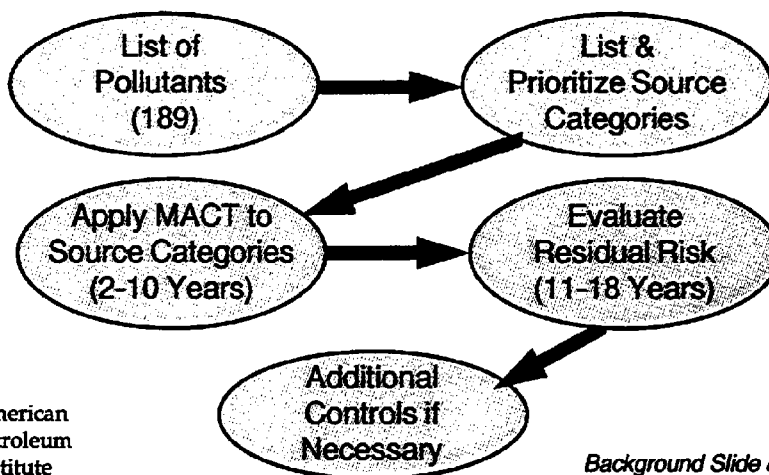
Background Slide 6

Regulatory Scheme



Background Slide 7

Regulatory Scheme



Background Slide 8

MACT

Maximum
Achievable
Control
Technology



Background Slide 9

Regulatory Timetable

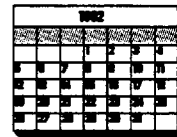
- | | |
|------------------------------------|-----------------------------|
| ■ List of Hazardous Air Pollutants | Title III - CAAA |
| ■ Source Category List | Dec 3, 1993
(58FR 63941) |
| ■ Schedule for MACT Standards | Dec 3, 1993
(58FR 63941) |



Background Slide 10

Clean Air Act Amendments 1990

MACT Standards



Source			Residual		
<u>Categories</u>	<u>Standards</u>	<u>Comply</u>	<u>Risk</u>	<u>Comply</u>	
40	2 yrs Nov '92	Nov 1995	2001	2003	
25% of Total	4 yrs Nov '94	Nov 1997	2002	2004	
50% of Total	7 yrs Nov '97	Nov 2000	2005	2007	
100% of Total	10 yrs Nov '00	Nov 2003	2008	2010	



Background Slide 11

Source Categories

4 Yrs - 25% of Source Categories - Nov '94

- | | |
|--|---|
| ☐ Chromium Anodizing * | ☐ Asbestos (Revisions) * |
| ☐ Hard Chrome Electroplating * | ☐ Solid waste Treatment, Storage & Disposal Facilities |
| ☐ Decor. Chrome Electroplating * | ☒ Industrial Process Cooling Towers |
| ☐ Commercial Sterilization * | ☐ Aerospace Industries |
| ☒ Gasoline Distribut'n (Stage 1) | ☐ Printing / Publishing (surface coating) |
| ☐ Magnetic Tapes (surface coat) | ☐ Shipbuilding and Repair (surface coating) |
| ☐ Polymers & Resins I | ☐ Secondary Lead Smelting |
| ☐ Polymers & Resins II | ☒ Marine Loading |
| ☐ Wood Furniture (surface coat) | |
| ☐ Halogenated Solvent Cleaners | |
| ☒ Petroleum Refining | |

* includes Area Sources

Background Slide 12



MACT Standards Timetable

<u>Source Category</u>	<u>Proposal</u>	<u>Final</u>	<u>Compliance</u>
SOCMI HON	12/31/92	4/22/94 (59FR19402)	4/97
Industrial Process			
Cooling Towers (Cr)	8/12/93*	8/8/94 (59FR46339)	3/8/96
Gasoline Distribution	1/31/94*	12/14/94 (59FR 64303)	12/97
Marine Vapor Recovery	4/30/94*	9/19/95 (60FR48388)	RACT:9/98 MACT:9/99
Petroleum Refinery	6/30/94*	8/18/95 (60FR 43244)	8/98
Offsite Waste MACT	10/13/94	6/96	6/99
Refinery FCC, Reformer, Sulfur Process Vents		11/97	



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* Lawsuit Settlement Dates

Background Slide 13

MACT Standards Timetable

<u>Source Category</u>	<u>Proposal</u>	<u>Final</u>	<u>Compliance</u>
■ IC Engines*	1999	2000	
■ Process Heaters*	1999	2000	
■ Industrial Boilers*	1999	2000	
■ Gas Turbines*	1999	2000	
*Industrial Combustion Coordinated Rulemaking (ICCR)			
■ Organic Liquids Distribution		2000	



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1/97

11/97

11/00

Background Slide 14

API Involvement

- Over 4 years Continuous Interaction
- Updated Refinery/Terminal/E&P Fugitive Emission Correlation Equations
- Storage Tank Emissions Data
- Process Vent Data
- Section 114 Data Review



Background Slide 15

EPA Preamble Commitments

- Monitoring, Recordkeeping, Reporting
- Emissions Averaging



Background Slide 16

Overview of Petroleum Refinery NESHAP Standard

National Emission Standards for
Hazardous Air Pollutants from
Petroleum Refineries

Refinery MACT Workshop

Jim Durham, U.S. EPA
Emissions Standards Division



Overview Slide 1

40 CFR Part 63 subpart CC

- Effective date - August 18, 1995
(60 FR 43244)
- Compliance by August 18, 1998
- Covers existing refineries (SIC 2911)
 - ◆ If total HAP emissions > 25 tons/yr
 - ◆ If emissions of any one HAP > 10 tons/yr
- Regulates emissions of 28 HAPs



Overview Slide 2

Affected emission points

- Process vents
- Equipment leaks
- Storage tanks
- Wastewater collection and treatment
- Onsite marine vessel loading
- Onsite gasoline distribution in SIC 2911



Overview Slide 3

Emission Points Not Affected

- Catalytic cracking catalyst regen. vents
- Catalytic reforming catalyst regen. vents
- Sulfur recovery plant vents
- Others



Overview Slide 4

Compliance options

- Apply controls to all affected emission points
- Use emissions averaging to "undercontrol" or "overcontrol" certain emission points.



Overview Slide 5

Cross-Referenced Rules

- Refinery MACT Gen. Prov'ns - 40 CFR 63 subpart A
- NSPS: SO2MI equip. leaks - 40 CFR 60 subpart VV
- SO2MI HON equip. leaks - 40 CFR 63 subpart H
- SO2MI HON storage tank - 40 CFR 63 subpart G
- Benzene Waste NESHAP - 40 CFR 61 subpart FF
- Marine Vessel Loading NESHAP - 40 CFR 63 subpart Y
- Gasoline Distrib'tn NESHAP - 40 CFR 63 subpart R



Overview Slide 6

Applicability Criteria for Emission Points

- Process Vents
 - ◆ Organic HAP concentration > 20 ppmv
 - ◆ Total VOC emissions > 72 lb/day (33 kg/day)
- Equipment Leaks
 - ◆ Equipment containing or contacting fluid > 5% by weight HAP
- Storage Vessels
 - ◆ Capacity > 47,000 gallons (177 m³)
 - ◆ True vapor pressure > 1.5 psia (10.4 kPa)
 - ◆ HAP concentration > 4% by weight

Overview Slide 7



Applicability Criteria for Emission Points (Continued)

- Wastewater Streams
 - ◆ Subject to Benzene Waste NESHAP (40 CFR Part 61, Subpart FF)
 - Total benzene in waste streams > 10 Mg/yr
 - Benzene concentration > 10 ppmw
 - Flow rate > 0.02 liter/min
- Marine Tank Vessels
 - ◆ Comply with Marine Vessel MACT if
 - Vapor pressure of liquid loaded > 10.3 kPa
 - Emissions > 10 ton (9.1 Mg) of any HAP or > 25 ton (22.7 Mg) HAPs/yr

Overview Slide 8



Applicability Criteria for Emission Points (Continued)

■ Gasoline Distribution

- ◆ Storage tanks, equipment leaks comply with Refinery MACT if designated under SIC 2911
- ◆ Loading racks comply with Gasoline Distribution MACT (40 CFR 63 subpart R) if
 - Throughput > 20,100 gal/day (75,700 l/day)
 - Emits > 10 mg TOC/liter of gasoline loaded



Overview Slide 9

Control Requirements for Emission Points

■ Miscellaneous Process Vents

- ◆ Reduce organic HAPs by 98% or to 20 ppmv
- ◆ Use a flare

■ Equipment Leaks

- ◆ Select leak detection and repair (LDAR) program
 - NSPS (40 CFR 60 subpart VV)
 - Modified SOCMI HON (40 CFR 63 subpart H)



Overview Slide 10

Control Requirements for Emission Points (Continued)

- Storage Vessels
 - ◆ Floating roofs with double seals
 - ◆ Closed vent system with 95% control
- Wastewater Streams
 - ◆ Comply with Benzene Waste NESHAP (40 CFR 61, Subpart FF).
 - Reduce benzene emissions by 99%



Overview Slide 11

Control Requirements for Emission Points (Continued)

- Gasoline Loading Racks
 - ◆ Comply with Gasoline Distribution MACT (40 CFR 63 Subpart R)
 - Reduce TOC to 10 mg/l of gasoline loaded
 - Load only vapor tight cargo tanks



Overview Slide 12

Control Requirements for Emission Points (Continued)

- Marine Tank Vessels
 - ◆ Comply with Marine Terminal MACT (40 CFR 63 Subpart Y)
 - Collect vapors discharged during loading
 - Load only vapor tight vessels
 - Vapor balance or reduce collected HAP emissions by 97% by weight



Overview Slide 13

Overlap With Other Regulations

- Refinery MACT specifies which standard must be followed if an emission point is subject to Refinery MACT and a previous NSPS or NESHAP.
- The rule allows the State and local permitting authorities to consolidate the monitoring, recordkeeping, and reporting requirements of subpart CC with those required in other applicable requirements.
- In general, the source must comply with only the most stringent rule.



Overview Slide 14

Reporting Requirements

■ Periodic Reports

- ◆ Periods when process vent parameters outside established range
- ◆ Storage vessel maintenance plans and inspections or measurements that indicate problems
- ◆ Summary of LDAR results required by the NSPS or SOCMH HON
- ◆ Info. required by Marine Vessel NESHAP
- ◆ Info. required by Gasoline Distrib'n NESHAP



Overview Slide 15

Reporting Requirements (Continued)

■ Notification of Compliance Status

- ◆ 150 days after compliance date
- ◆ Performance test results
- ◆ Justify process vents parameters ranges

■ Other Reports

- ◆ Startup, shutdown, malfunction reports
- ◆ Notify internal storage tank inspections
- ◆ Application to monitor alternative parameters for process vents due 18 months before compliance date



Overview Slide 16

Modification & Reconstruction

- A new process unit constructed at an existing source is subject to new source requirements if the new units potential to emit > 10 tons/yr of 1 HAP or > 25 tons/yr of total HAPs. Otherwise, it is subject to existing source standards.
- A change to an existing source or an addition of an emission point is subject to existing source standards, unless it meets the criteria for a "reconstruction". Reconstructed sources are subject to new source standards.



Overview Slide 17

Applicability & Timing

Refinery MACT Workshop

Nancy Kralik, Marathon



Applicability Slide 1

63.640 Applicability

- Source
- Units and Emission Points
- Compliance Dates
- Additions and Changes
- Overlap with Other Regulations



Applicability Slide 2

Applicability

- Applies to Petroleum Processing Units and Related Emission Points at:
 - ◆ Major Source
 - ◆ Emit or have equipment containing/ contacting HAPS listed in Table 1



Applicability Slide 3

Petroleum Refining Process Unit

PRPU - Process unit primarily engaged in petroleum refining as Standard Industrial Classification SIC Code 2911

- (1) Producing transportation fuels
 - heating fuels
 - lubricants
- (2) Separating petroleum
- (3) Separating, cracking, reacting, or reforming intermediate petroleum streams



Applicability Slide 4

Example of Petroleum Refining Units

- petroleum-based solvent units
- alkylation units
- catalytic hydrotreating
- catalytic hydrorefining
- catalytic hydrocracking
- crude distillation
- lube oil processing
- hydrogen production
- isomerization
- polymerization
- thermal processes
- blending, sweetening, and treating
- sulfur plants



Applicability Slide 5

Major Source

- Stationary Source(s)
- Contiguous
- Common Control
- PTE > 10 TPY HAP
- PTE > 25 TPY HAPS



Applicability Slide 6

Potential to Emit

- Maximum capacity to emit
- Physical or operational design
- Federally Enforceable physical or operational limitations



Applicability Slide 7

Affected Source Emission Points

- (1) Miscellaneous process vents
- (2) Storage vessels
- (3) Wastewater streams and treatment operations
- (4) Equipment leaks
- (5) Gasoline loading racks (SIC 2911)
- (6) Marine vessel loading operations
- (7) Storage vessels and equipment leaks associated with a bulk terminal or pipeline breakout station



Applicability Slide 8

Flexible Unit Provisions

- Existing units - expected 5 year utilization after promulgation
- New units - expected 5 year utilization after startup
- Predominant use
 - ◆ greatest operating time
 - ◆ greatest annual mass production



Applicability Slide 9

Units Not Applicable

- Stormwater from segregated stormwater sewers
- Spills
- Equipment intended to operate less than 300 hours/year
- Catalytic cracking unit vents
- Catalytic reformer regeneration vent
- Sulfur plant vents



Applicability Slide 10

Storage Tank Applicability

- Exclusive Use
 - ◆ PRPU- Subpart CC applicable
- Multiple Use
 - ◆ Predominant volume input
 - ◆ On-Site PRPU
 - ◆ Use variations
- Other Factors
 - ◆ New source vs. existing sources
 - ◆ Capacity
 - ◆ Organic liquid vapor pressure
 - ◆ HAP Concentration



Applicability Slide 11

Misc. Process Vents Applicability

- Assignment
 - ◆ Predominant input
 - ◆ On-site distillation unit
 - ◆ Equally shared
 - ◆ Variable Use
- Applicable
 - ◆ Assignment to Subpart CC PRPU
 - ◆ Vent Stream HAP concentration > 20 ppmv



Applicability Slide 12

Processes Not Applicable

- Research & Development facilities
- Equipment, within a subject PRPU, not containing any HAPS listed in Table 1
- Units processing natural gas liquids
- Units specifically recycling discarded oil
- Shale oil extraction units
- Ethylene processes
- Process units and emission points subject to SOCMH HON



Applicability Slide 13

Compliance Dates

New Sources

- ◆ 8/18/95
- ◆ Initial startup

Existing Sources

- Process Vents
 - ◆ 8/18/98
- Storage Tanks
 - ◆ Group 1 Floating Roof
 - Within 10 years
 - Next degassing/cleaning (after 8/18/98)



Applicability Slide 14

Compliance Dates

Existing Sources (continued)

- Equipment Leaks:
 - ◆ Phase I 8/18/98
 - ◆ Phase II 8/18/99
 - ◆ Phase III 2/18/01
 - ◆ NSPS Provisions 8/18/98



Applicability Slide 15

Addition of a Petroleum Refining Process Unit

New Source requirements applicable if:

- Plant site is major
- Addition meeting the definition of construction in 63.2 of Subpart A
- Construction commenced after 7/14/94
- Potential to emit 10/25 tons per year HAPS



Applicability Slide 16

Changes to PRPU

New Source requirements applicable if:

- Change meets definition of reconstruction (General Provisions)
- Commenced after 7/14/94



Applicability Slide 17

Additions or Changes Determined to be New Source

Must comply:

- Upon initial startup
- Reporting and recordkeeping



Applicability Slide 18

Addition or Operational Process Changes

- Added/changed emission point must comply with:
- Existing source requirements
 - Compliance dates:
 - ◆ Added PRPU: later of initial startup or 8/18/98
 - ◆ Process change (Group 2 to Group 1): later of initial startup or 8/19/98
 - Reporting & recordkeeping requirements



Applicability Slide 19

Other Changes

- Changes not applicable under previous section
 - ◆ Change to PRPU
 - ◆ Group 2 to Group 1
- Existing Source requirements
 - ◆ Group1 emission point
 - ◆ Comply expeditiously as practicable (no later than 3 years after point becomes Group 1)
 - ◆ Submit compliance schedule
 - 180 days after change or information known
 - Approved or denied within 120 days



Applicability Slide 20

Overlap with Other Regulations

- Storage Tank requirements
 - ◆ NSPS
- Wastewater requirements
 - ◆ NSPS
 - ◆ HON
 - ◆ NESHAPS
- Equipment leaks requirements
 - ◆ NSPS
 - ◆ NESHAPS
- State and Local requirements



Applicability Slide 21

Gasoline Distribution MACT - Effects from Refinery MACT

- If loading rack contiguous and SIC 2911
 - ◆ Rack, Tanks & Equipment Leaks become part of Refinery Source Category
 - ◆ Rack Compliance Date extended to 8/18/98
 - ◆ Tank Compliance Date extended to 8/18/05

BUT Eq. Leaks LDAR per Refinery MACT

AND Can Include Rack in Emissions Average



Applicability Slide 22

Marine Loading Rack - Effects from Refinery MACT

- If Docks Contiguous with Refinery
 - ◆ Docks now part of Refinery Source Category
- AND** Can Include Docks in Emissions Averaging



Applicability Slide 23

Refinery Storage Tanks

Refinery MACT Workshop

Rob Ferry, TGB Partnership



Storage Tanks Slide 1

Outline

- Types of Storage Tanks
- Points of Emissions
- Description of Control Options
- Requirements of Refinery MACT



Storage Tanks Slide 2

Types of Storage Tanks

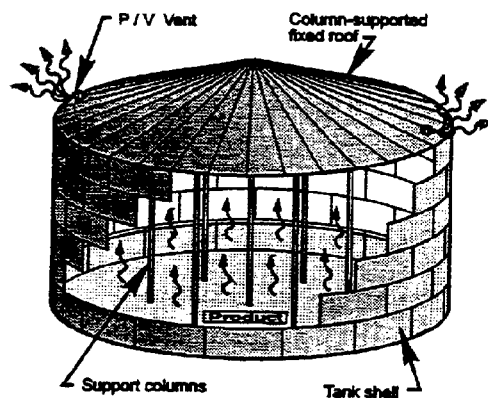
- Fixed-Roof Tank
- Internal Floating-Roof Tank
- External Floating-Roof Tank
- Covered Floating-Roof Tank



Storage Tanks Slide 3

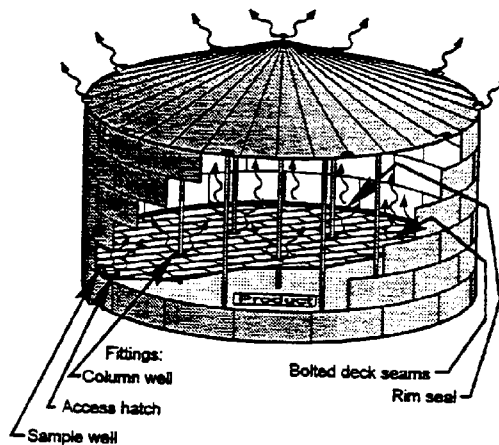
Fixed Roof Tank

Storage Tanks
Section 63.646



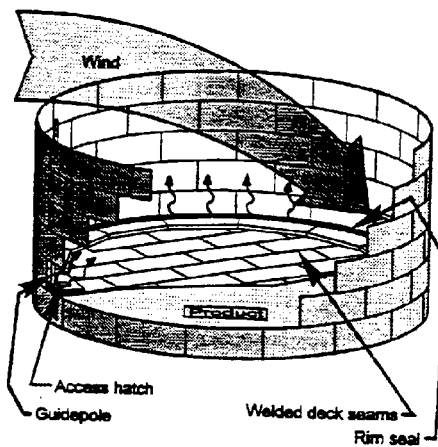
Storage Tanks Slide 4

Internal Floating-Roof Tank



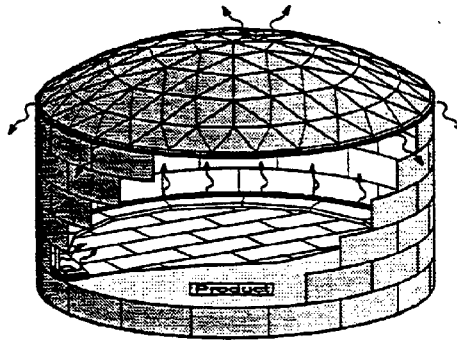
Storage Tanks Slide 5

External Floating-Roof Tank



Storage Tanks Slide 6

Covered Floating-Roof Tank



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Storage Tanks Slide 7

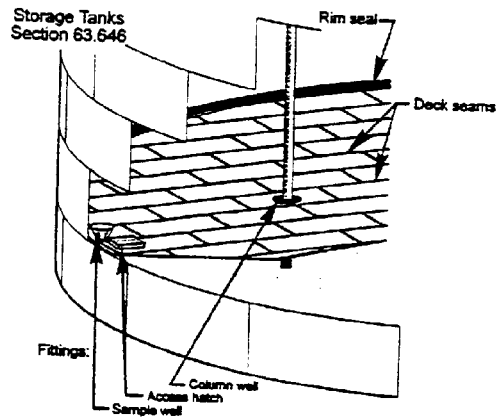
Points of Emissions

- Bolted Deck Seams
- Deck Fittings
- Rim Seals

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Storage Tanks Slide 8

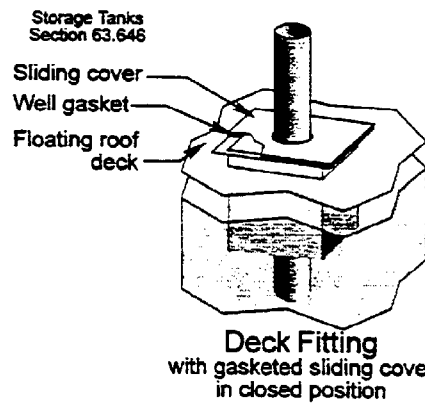
IFRT Details



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Storage Tanks Slide 9

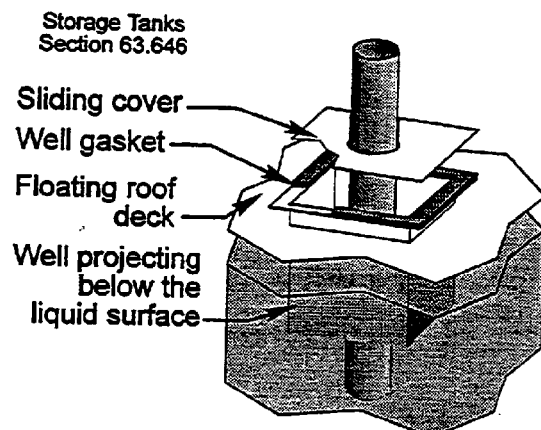
Deck Fitting with gasketed sliding cover in Open Position



API American Petroleum Institute

Storage Tanks Slide 10

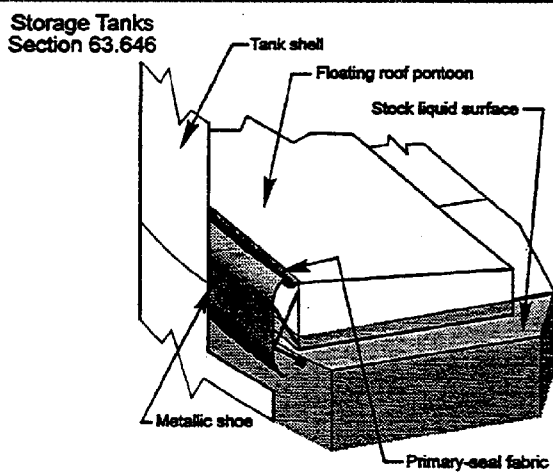
Deck Fitting with gasketed sliding cover in Closed Position



Storage Tanks Slide 11

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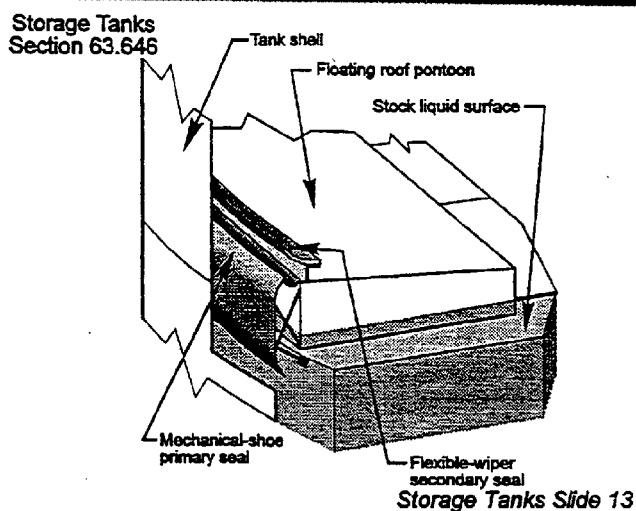
Rim Seal - mechanical shoe primary only



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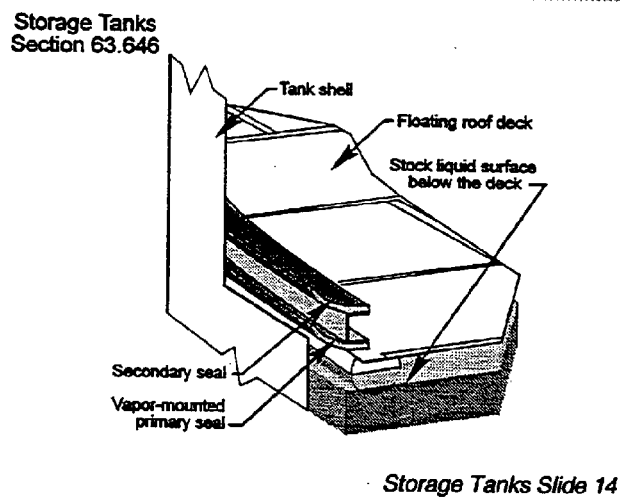
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Rim Seal - mechanical shoe seal with secondary



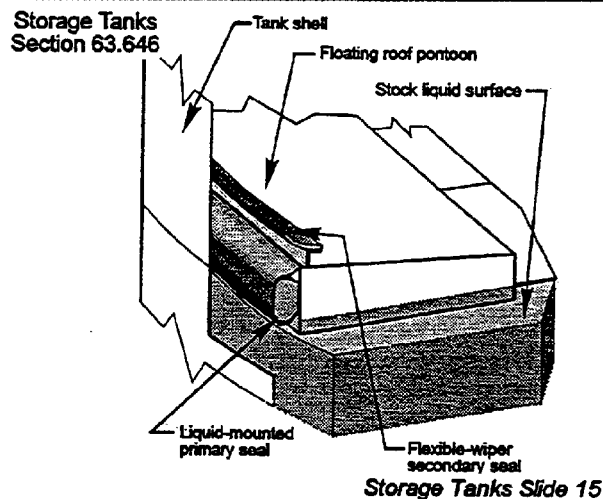
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Rim Seal - vapor-mounted primary with secondary



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Rim Seal - liquid-mounted seal with secondary



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Description of Control Options

- Bolted Deck Seams
 - ◆ Gasketed or Welded Seams
- Deck Fittings
 - ◆ Gasketed Covers
 - ◆ Floats in Slotted Guidepoles
- Rim Seals
 - ◆ Secondary Seals
 - ◆ Restrictions on vapor-mounted primary seals

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Requirements of Refinery MACT

The Storage Tank Requirements are summarized on the Flow Diagrams in the Refinery MACT Workshop Manual, covering:

- ◆ Applicability
- ◆ Compliance Schedule
- ◆ Control technology & inspection/monitoring
- ◆ Recordkeeping and reporting



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Applicability

- Is this tank:
 - ◆ Assigned to an affected unit?
 - ◆ In HAP service?
 - ◆ Within the definition of storage vessel?
- If so, is it:
 - ◆ Group 1 or Group 2?
 - ◆ Subject to MACT or NSPS?



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Group 1 Determination

Existing Sources

- This tank is Group 1 if:
 - ◆ Capacity > 47,000 gallons (177 m³)
 - ◆ TVP > 1.5 psia (10.4 kPa)
 - ◆ HAP liquid content > 4%



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Compliance Schedule

- Fixed Roof Tank - Group 1
 - ◆ Achieve compliance by 8/18/98
 - ◆ Document compliance by 1/15/99
- Floating-Roof Tank - Group 1
 - ◆ Achieve compliance at next degassing after 8/18/98, but not later than 8/18/05
 - ◆ Document compliance within 150 days thereafter



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Control Technology Requirements

- Cross-Referenced to the HON
- Floating roof option:
 - ◆ Deck seams - not controlled
 - ◆ Rim seals - controls required
 - ◆ Deck fittings - gaskets only required at new sources
- Closed vent system w/control devices
 - ◆ 90% eff. may be grandfathered
 - ◆ otherwise 95% efficiency



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Demonstrate Compliance

- Floating Roof Option
 - ◆ Verify that required controls are installed
 - ◆ Perform required inspections
- Fixed Roof Option
 - ◆ Control Device - design evaluation or performance tests
 - ◆ Closed Vent system - inspect for leaks



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Inspection/Monitoring: Floating Roofs

- Annual Inspections
 - ◆ EFR seal gaps
 - ◆ IFR tank top
- Internal inspections
 - ◆ EFR - each tank cleaning
 - ◆ IFR - each tank clean; at least every 10 years
(5 year option w/no annual, w/secondary seal)



- Notification

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Inspection/Monitoring: Fixed Roofs

- Control Devices
 - ◆ Monitor selected parameters
- Closed Vent System
 - ◆ Annually inspected for leaks



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Reporting to Demonstrate Compliance

- Determination of applicability:
 - ◆ Tanks in varying-use service
- Notification of Compliance Status:
 - ◆ Group determinations
 - ◆ Description of controls
 - ◆ Determination of monitoring parameters



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Reporting after Initial Compliance

- Inspection notification for floating roof tanks
- Semi-annual Periodic Reports
 - ◆ Exceedances
 - ◆ Repairs
 - ◆ Control device maintenance



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Recordkeeping

- Tank capacity
- Record of all reports
- Record of all inspections
- Record of all monitoring data



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