

RACT Plus Rule Adoption

Industrial Stakeholders Group

May 1st, 2009

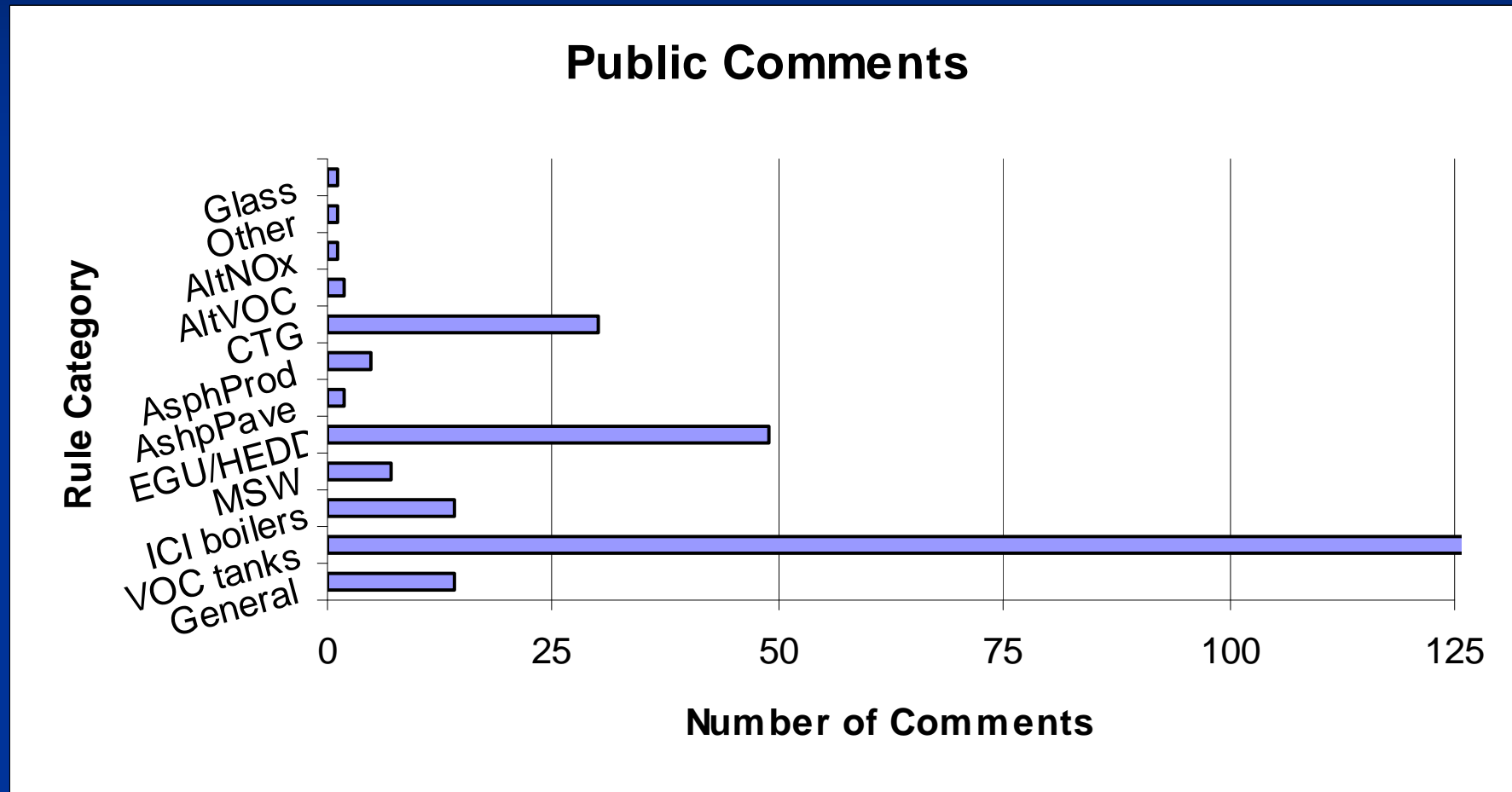
RACT Plus Rule Adoption

- Proposal appeared in NJ Register on Aug. 4, 2008
- Public hearing was held on Sept. 26, 2008
- Commissioner Signed Rule on March 20th, 2009
- Effective date of rule is May 19th, 2009

Affected Source Categories

1. Asphalt Used for Paving {Emulsified and Cutback Asphalt Paving} (VOC)
2. Asphalt Pavement Production Plants (NO_x)
3. Industrial/Commercial/Institutional Boilers & other Indirect Heat Exchangers (NO_x)
4. Boilers Serving Electric Generating Units (NO_x, SO₂ & PM)
5. High Electric Demand Day Units (NO_x)
6. Glass Manufacturing Furnaces (NO_x)
7. VOC Stationary Storage Tanks (VOC)
8. New Control Technique Guidelines (CTGs) for three source categories (VOC)
9. Facility Specific Emission Limits and Alternative Emission Limits (VOC & NO_x)
10. Municipal Solid Waste Incinerators (NO_x)
11. Sewage Sludge Incinerators (NO_x)

Public Participation



Federal Clean Air Act (CAA)

- USEPA sets National Ambient Air Quality Standards (NAAQS) for criteria pollutants
 - ozone (O₃), sulfur dioxide (SO₂), particulate matter (PM₁₀), lead, oxides of nitrogen (NO_x), and carbon monoxide (CO)
- USEPA designates an area's attainment and classification
 - New Jersey is “moderate” nonattainment for 8-hour O₃
- Subpart 2 provisions
 - Reasonably Available Control Technology (RACT)

Ozone Health-based Standards

- 1-hour, 0.12 ppm ozone standard
 - promulgated in 1979, revoked in June 2005
 - 4th highest daily maximum hourly average concentration not to exceed 0.12 ppm over 3 consecutive years
 - EPA determined 1-hour standard not sufficiently protective of public health
- 8-hour, 0.08 ppm ozone standard
 - promulgated in 1997
 - 4th highest maximum 8-hour average concentration for 3 consecutive years not to exceed 0.08 ppm
- NEW 2008 8-hour ozone standard, 0.075 ppm

USEPA Guidance (for 1-hr ozone)

- Control Techniques Guideline (CTG) – control of volatile organic compounds (VOC) from stationary sources
- Alternate Control Techniques (ACT) – control of oxides of nitrogen (NO_x) and VOC from stationary sources

Existing NJ RACT Rules

■ VOC RACT

- Subchapter 16 – Control and Prohibition of Air Pollution by Volatile Organic Compounds
[N.J.A.C.7:27-16]

● NO_x RACT

- Subchapter 19 – Control and Prohibition of Air Pollution by Oxides of Nitrogen
[N.J.A.C.7:27-19]

1. Asphalt Used for Paving (Emulsified and Cutback Asphalt Paving)

- Application of Cutback and Emulsified Asphalts
- Amend existing State specific rule (N.J.A.C.7:27-16.19): bans use of cutback or emulsified asphalt during ozone season (April 16th to October 14th) with exceptions
- Must comply commencing May 19th, 2009
- Control measures
 - Establish ban on use of non-compliant cutback or emulsified asphalt during ozone season
 - Lower VOC content limits ($\leq 0.1\%$ by wt or ≤ 6.0 ml oil distillate)
 - Require proper storage of non-compliant product in ozone season

2. Asphalt Pavement Production Plants

- All asphalt pavement production plants
- Amend existing State specific rule (N.J.A.C. 7:27-19.9): 200 ppmvd @7% O₂ (batch or drum mix)
- Control measures: adopt more stringent NO_x limits based on fuel type and implement Best Management Practices

Fuel	ppmvd (@ 7% O ₂)	lb/ton	lb/ton* (comparison to OTC)
Natural Gas	75	0.025	0.020
#2 Fuel Oil	100	0.040	0.090 (batch) 0.040 (drum)
#4 FO & heavier, and on-spec used oil, or mixture	125	0.050	0.090 (batch) 0.040 (drum)

*Note: Addendum to OTC Resolution 06-02 Emission Guidelines

Asphalt Pavement Production Plants (continued)

- Sources greater than or equal to 100 MMBTU/Hour must comply
 - May 1, 2010 if no physical modification needed to comply
 - May 1, 2011 if physical modification needed to comply
- Sources less than 100 MMBTU/Hour must comply
 - May 1, 2011 if no physical modification needed to comply
 - May 1, 2012 if physical modification needed to comply

3. Industrial/Commercial/Institutional Boilers and other Indirect Heat Exchangers

- ICI boilers, $25 \geq$ and < 250 MMBtu/hr (medium to large) not including Refneries
- Amend existing State specific rules (N.J.A.C. 7:27-19.7)

Industrial/Commercial/Institutional Boilers and other Indirect Heat Exchangers (continued)

■ Control measures

- More stringent NO_x limits for ≥ 50 MMBtu/hr
(except other gaseous fuels and dual fuel burners
using fuel oil and natural gas)
 - May 1, 2010 if no physical modification needed to comply
 - May 1, 2011 if physical modification needed to comply
- New NO_x limits for ≥ 25 and < 50 MMBtu/hr
 - May 1, 2011 if no physical modification needed to comply
 - May 1, 2012 if physical modification needed to comply

Industrial/Commercial/Institutional Boilers and other Indirect Heat Exchangers (continued)

■ Maximum Allowable NO_x Emission Rates

<u>Heat Input Rate</u> (MMBtu/hr)	<u>Fuel Type</u>	<u>Rate</u> (lb/MMBtu)
≥ 25 but <100	Natural gas only	0.05
	#2 fuel oil only	0.08
	Other liquid fuels	0.20
	Dual fuel using fuel oil and natural gas	0.12
≥ 100	Natural gas only	0.10
	#2 fuel oil only	0.10*
	Other liquid fuels	0.20
	Dual fuel using fuel oil and for natural gas	0.20

4. Boilers Serving Electric Generating Units

- All electric generating boilers
- Amend existing State specific rules (N.J.A.C. 7:27-4.2, N.J.A.C. 7:27-10 & N.J.A.C. 7:27-19.4)
- Control measures for coal-fired boilers effective December 15, 2012:
 - Adopt same PM (for existing sources) and SO₂ (30-day rolling average) emission limits as the multi-pollutant Mercury Rule at N.J.A.C. 7:27-27.7(d)
 - Particulate Matter, 0.0300 lb/MMBtu (all existing sources), or 0.0150 lb/MMBtu (new, or reconstructed particulate control devices)
 - SO₂, 0.150 lb/MMBtu (30-day rolling average) & 0.250 lb/MMBtu (24-hour daily)
 - NO_x, 1.50 lb/ MWh (24-hour daily)

Boilers Serving Electric Generating Units cont.

- Maximum Allowable NO_x Emission Rates (lb/MWh) for gas and oil-fired boilers effective May 1, 2015

<u>Boilers</u> EGUs and HEDD	<u>Type of fuel</u>	<u>Emission Rate</u> (24-hour daily)
	Natural Gas	1.00
	No. 2 Fuel Oil & lighter	1.00
	Heavier than No. 2 Fuel Oil	2.00

5. High Electric Demand Day Units

- Peaking Units (gas and oil-fired combustion turbines and boilers)
- Amend existing State specific rules (N.J.A.C. 7:27-19)
- Available control measures (as applicable)
 - Ultra Low NO_x Burners / SNCR
 - water injection
 - fuel switching
 - repowering & SCR (longer-term)
- Short-term (2009) – 28% reduction, flexible emission reduction plan
- Long-term (2015) –60% reduction, performance standards

High Electric Demand Day Units cont.

- 2015 Max. Allowable NO_x Emission Rates (lb/MWh)

<u>Type of Turbine*</u>	<u>Type of Fuel</u>	<u>Emission Rate</u> (24-hour daily)
Combined cycle or regenerative cycle	Gas	0.75
	Oil	1.20
Simple cycle	Gas	1.00
	Oil	1.60

*Note: NO_x emission rates for HEDD boilers are same as oil & gas-fired EGUs. (See previous slide 12).

Schedule for HEDD

- Submit 2009 Protocol no later than May 19th, 2009
 - Shows how emission reductions will be obtained and verified
 - Start implementing 2009 Protocol May 19th, 2009 through September 30, 2014
- Submit 2015 Plan for each HEDD unit by May 1, 2010
 - Detail how units will comply with 2015 standards

Reports for HEDD

- Annual report on obtaining 2009 plan reductions
 - Commence January 30, 2010 and continues through January 30, 2015
- Provide Annual Update on Progress to Meet 2015 Plan
 - First update January 30, 2011 and continue through January 30, 2015 for each non-compliant HEDD unit

6. Glass Manufacturing Furnaces

- Container (pressed and blown) and fiberglass furnaces
- Amend existing State specific rules (N.J.A.C. 7:27-19.10):
- Existing standards revised and two new categories added
- All standards apply May 1, 2010 but delay compliance until next rebuild

Glass Manufacturing Standards

Type of Glass	Existing Standards (NO _x /ton removed)	New Standards (NO _x /ton removed)
Container	5.5	4.0
Specialty	11.0	4.0
Fiberglass	N/A	4.0
Flat Glass	N/A	9.2

7. VOC Stationary Storage Tanks

- Floating roof tanks containing highly volatile VOC
- Amend existing State specific rules (N.J.A.C. 7:27-16.2)
- Control measures
 - tank inspections
 - degassing and cleaning emission control
 - slotted guide pole retrofits
 - deck fitting requirements for external floating roof tanks
 - control of roof landing losses
 - dome roof construction of external floating roof tanks
 - deck fitting requirements for internal floating roof tanks
 - seal requirements

Apply NSPS/SCAQMD Inspection Requirements to Existing Tanks

- Deck Fitting and Seal Inspections
 - Annually for external floating roof tanks (EFRTs)
 - Every 10 years, or each time tank is emptied and degassed for IFRTs
- Annual visual inspection (through the hatch) for internal floating roof tanks (IFRTs)
 - Includes checking space above the roof with a LEL meter.

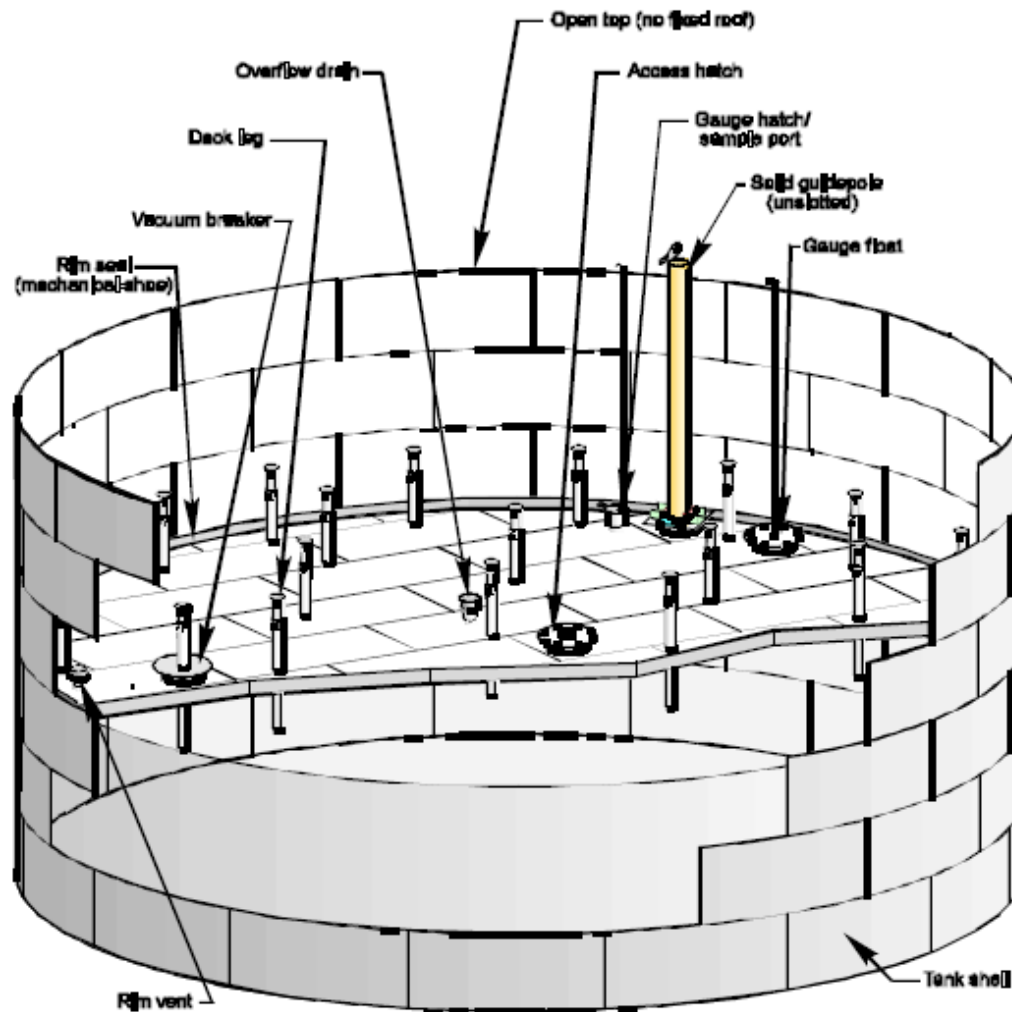
Tank Degassing and Cleaning

- 95% control of emissions during ozone season
- Portable control (incineration, carbon adsorption, condenser)
- Compliance date: 5/01/10

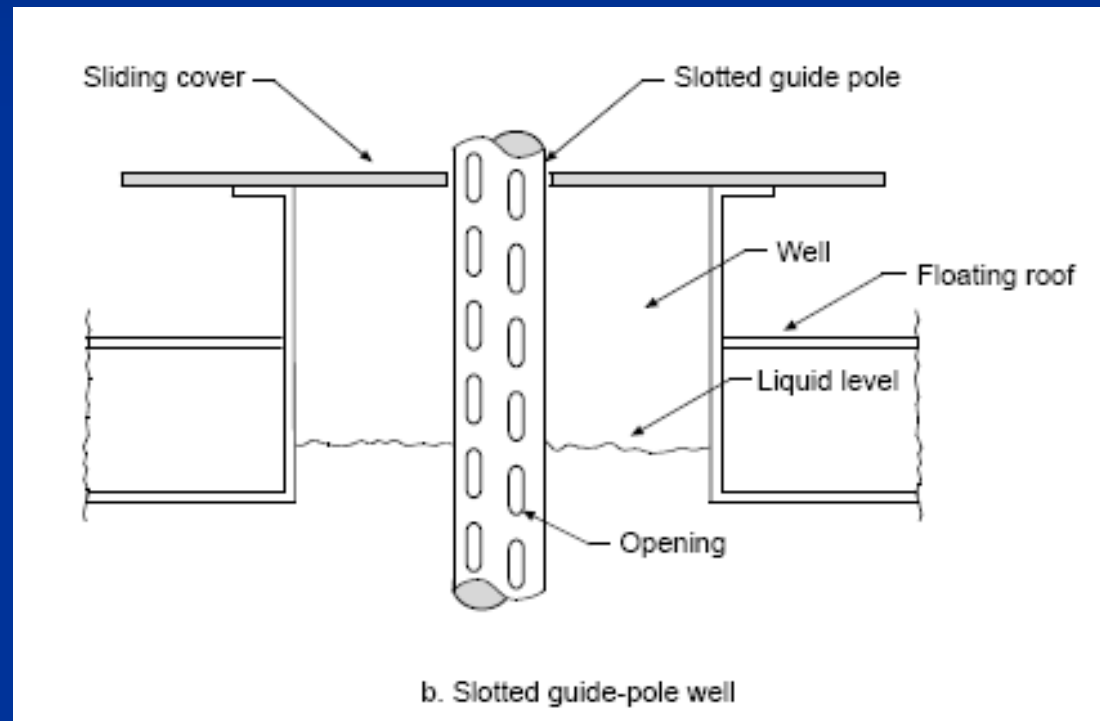
Portable Tank Degassing Control



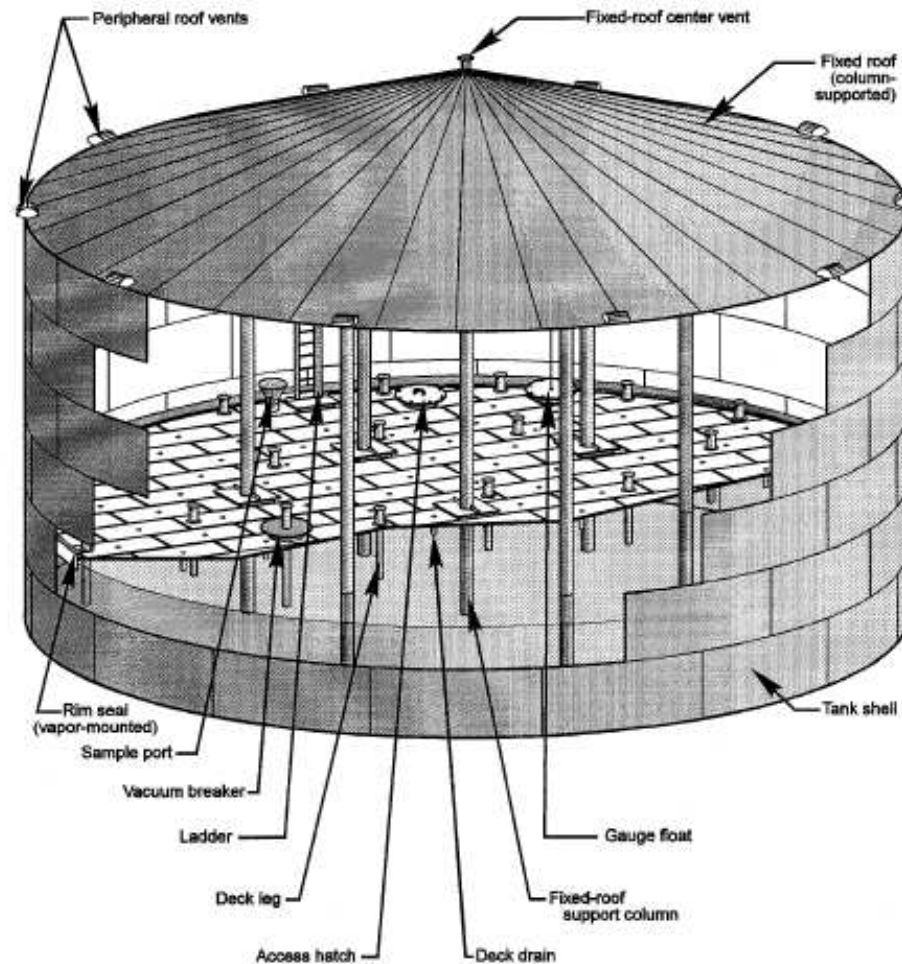
EFRTs-gasket deck fittings by September 16th, 2009



Slotted Guidepole-Retrofit with gasket, wipers, and pole sleeves by September 16th, 2009



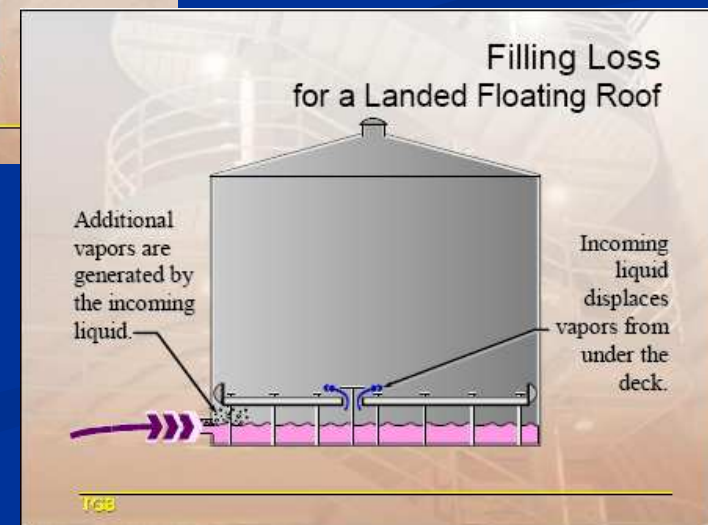
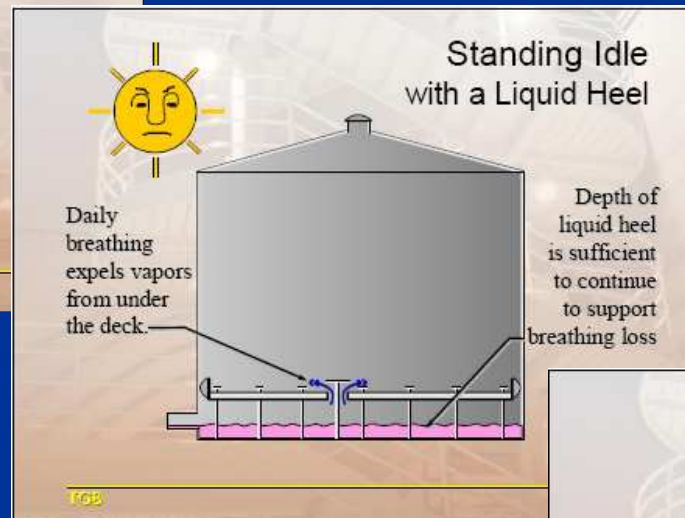
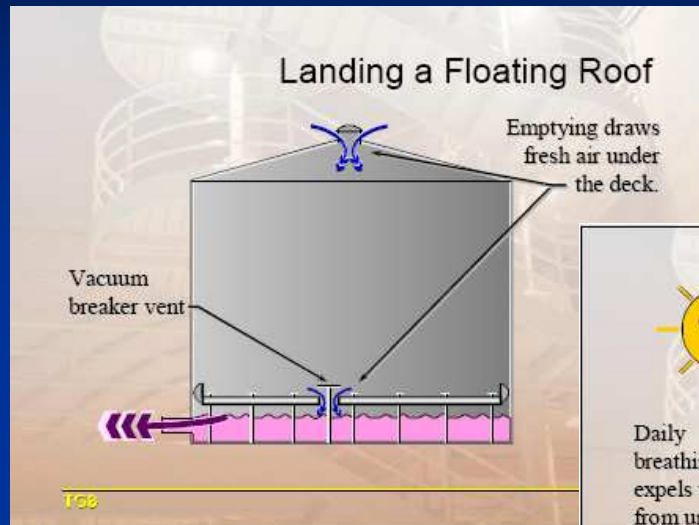
IFRTs-gasket fittings when tank returns to service (no later than 2020)



Retrofit EFRTs with domes when tanks are returned to service (no later than 2020) if vapor pressure is 3 psia or greater



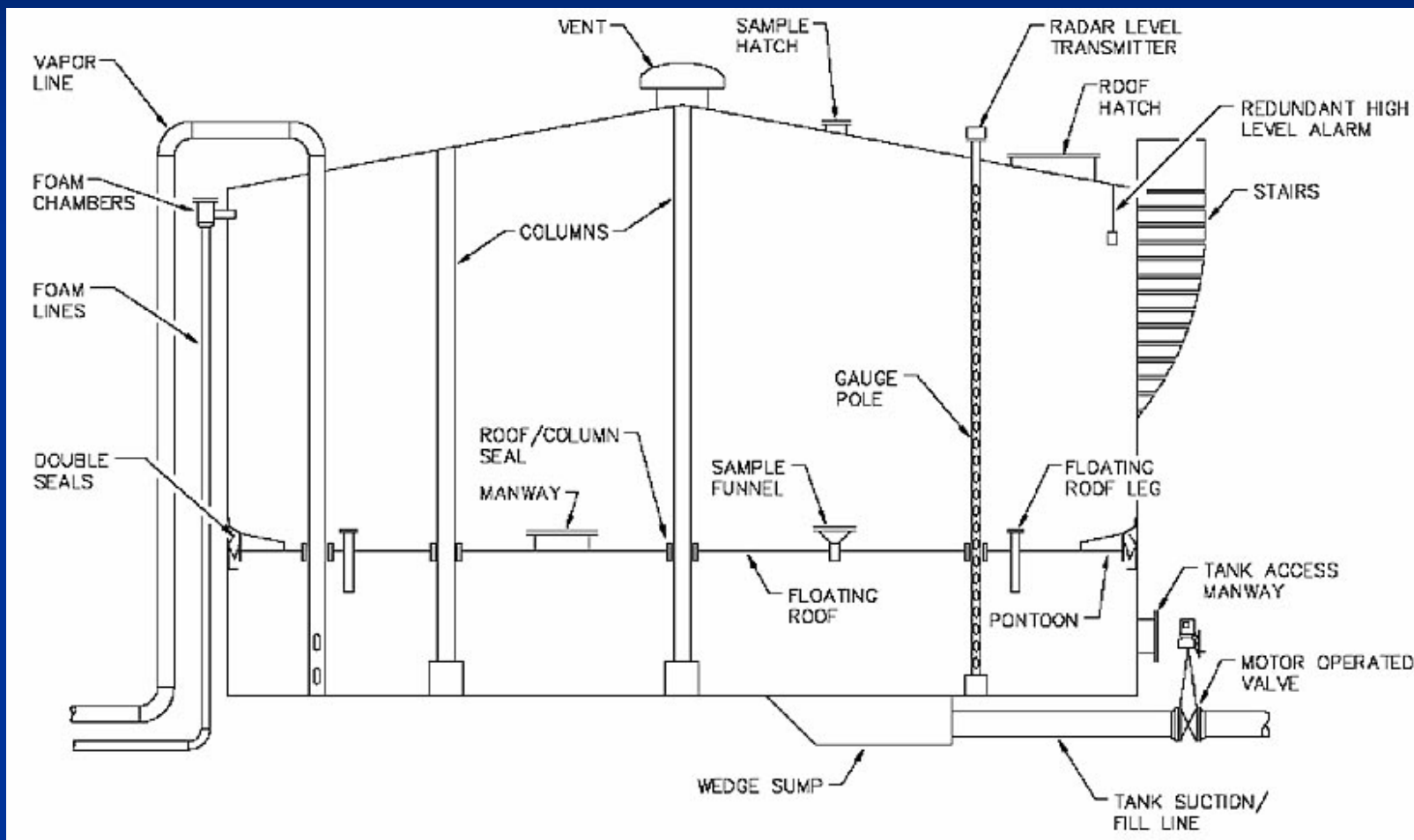
Roof Landing Emissions



Roof Landing Emissions (Cont'd)

- Roof height at lowest setting (EFRTs by September 16th, 2009, IFRTs upon return to service after being emptied and degassed)
- Facilities to submit plan to reduce roof height by modifying tanks, or have controls for landings, or equivalent measures, or
- Operate Range III gasoline storage tanks so that emissions average less than 5 tons per tank from 2011 through 2013, 4 tons per tank from 2014 through 2016, 3 tons per tank from 2017 through 2019, and 2 tons per tank from 2020 onward.
- Tanks with Federally enforceable limit on roof landings of less than 5 tons per year may be exempted.

Tank with vapor control for roof landings



VOC Stationary Storage Tanks Schedule

- Tank inspections
 - Annually commencing May 19th, 2009
- Degassing and cleaning emission control
 - May 1 through September 30 commencing May 1, 2010
- Slotted guide pole retrofits
 - Commencing September 16th, 2009
- Deck fitting requirements for external floating roof tanks
 - Commencing September 16th, 2009

VOC Stationary Storage Tanks Schedule (continued)

- Control of roof landing losses
 - Develop schedule to retrofit tanks as tanks are removed from service
 - Implement retrofit schedule completing all retrofits no later than 10 years after adoption
- Dome roof construction of external floating roof tanks
 - Retrofit tanks with domes when tanks are removed from service, completing no later than May 1, 2020
- Deck fitting requirements for internal floating roof tanks
 - Retrofit deck fittings when tanks are removed from service, completing no later than May 1, 2020
- Seal requirements
 - Retrofit tank seals when tanks are removed from service, completing no later than May 1, 2020

8. New Control Techniques Guidelines

- New CTGs effective October 5, 2006
 - Flexible Packaging Printing Materials
 - Lithographic and Letterpress Printing Materials
 - Flat Wood Paneling Coatings
- Amend existing State rules (N.J.A.C. 7:27-16.7)
- Implement Control Measures specified in CTG
 - Implement recommended control and capture efficiencies no later than May 1, 2010
 - Set maximum allowable VOC content standards effective May 19th, 2009
 - Require Best Management Practices effective May 19th, 2009

9. Alternative and Facility-specific VOC & NO_x Emission Limits

- Facility-specific Emission Limits (FSELs) and Alternative Emission Limits (AELs)
- Amend existing State specific rules (N.J.A.C. 7:27-16.17 & N.J.A.C. 7:27-19.13)
- Control measures
 - adopt a 10-yr approval authorization period (AELs)
 - reevaluate the existing AEL (NO_x & VOC) and FSEL (VOC) approvals

Alternative and Facility-specific VOC & NO_x Emission Limits (continued)

- All existing FSEL & AEL approvals must be resubmitted to Department by August 17th, 2009 for evaluation by Department
- During review applicant will continue to operate under existing approval
- Within 6 months of receipt Department will:
 - Approve
 - Modify
 - Disapprove

10. Municipal Solid Waste Incinerators

- Municipal solid waste (MSW) incinerators
- Adopt new rule
- Control measure: implement NO_x limit, 150 ppmvd @ 7% oxygen
- Must comply with limit by July 18th, 2009 unless construction is necessary to comply
- If construction is necessary to comply then must comply by May 1, 2011

11. Sewage Sludge Incinerators

- Sewage sludge incinerators
- Adopt new rule
- Control measure: implement NO_x limits
 - 7.0 lbs NO_x/dry ton sludge, multiple hearth
 - 2.5 lbs NO_x/dry ton sludge, fluidized bed
- Rule will require compliance by May 19th, 2009 (All existing sources currently comply with new rule)

NJ Estimated Emission Reductions

(from new and revised rules to be published in April 20, 2009, New Jersey Register)

<u>Source Category</u>	<u>Year</u>	<u>Pollutant (tpdO₃/tpy)</u>		
		NO _x	VOC	SO ₂
1. Asphalt used for paving	2009	----	3.6/ 420	----
2. Asphalt production plants	2010	0.21 / 43	----	----
	2011	0.42 / 86		
	2012	0.64 /132		
3. ICI boilers & other indirect heat exchangers	2010	2.2 / 740	----	----
	2011	2.9 / 970		
4. Boilers serving EGUs	2013	2.16/ 788	----	7.04/ 2,571
5. HEDD units	2009	19.8t/HEDD	----	----
	2015	63.7t/HEDD		
6. Glass mfg. furnaces	2012	3.2 / 1,170	----	----
7. VOC stationary storage tanks	2010	----	2.25/ 464	----
	2011		2.73/ 637	
	2013		3.68/ 984	
	2016		5.10/1,504	
	2019		6.53/2,024	

NJ Estimated Emission Reductions continued

<u>Source Category</u>	<u>Year</u>	<u>Pollutant</u> (tpdO ₃ /tpy)		
		NO _x	VOC	SO ₂
8. CTG: flat wood paneling*	2009	----	-- 0 --	----
9. CTG: flexible package printing	2009 2010→	----	0.08/ 19 -- / 35.3 (+) BMP**	----
10. CTG: offset lithographic printing and letterpress printing	2009 2010→	----	0.43/104.6 -- /157 (+) BMP**	----
11. FSEL	2009	----	TBD	----
12. AEL	2009	TBD	TBD	----
13. Municipal Solid Waste Incinerators	2009 2011	0.27/ 67 > 100 tpy	-----	----
14. Sewage sludge incinerators	2009	-- 0 --	----	----

*no sources

**Best Management Practices will result in additional emission reductions

Rule Leads by Source Category

- Rule Managers
Allan Willinger: 3-1120
Kevin Greener: 4-3696

- Asphalt Used for Paving
Stella Oluwaseun-Apo: 7-0430
- Asphalt Pavement Production
Yaso Sivaganesh: 4-6349
- ICI Boilers & MSWs
Sunila Agrawal: 2-9202
- EGUs w/ Boilers & HEDD Units
Mike Hogan: 3-1124
Tonalee Key: 4-2036
- Glass Manufacturing Furnaces
Subhash Shah: 3-8224

- VOC Stationary Storage Tanks
Bennett Yalartai: 3-8253
Dave Owen: 3-1129
- FSEs/AELs & Sewage Sludge Incinerators
Yogesh Doshi: 3-7249
- New CTGs
Sharon Wallace: 3-8239
Joel Leon: 4-3019

Questions?

- For further information regarding current and recent rule proposals, visit the following web site:
- www.nj.gov/dep/aqm/curformp.htm