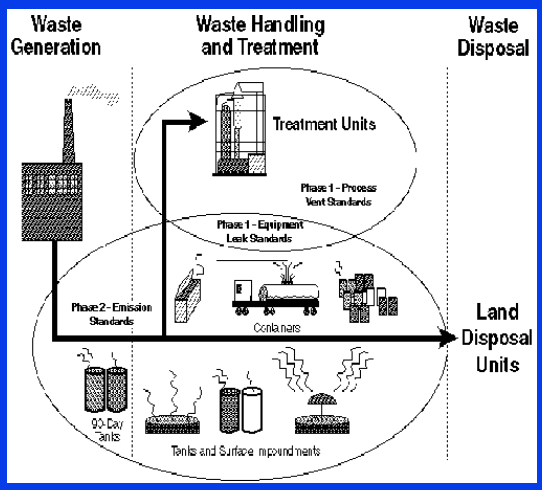
Subparts AA and BB - The Other RCRA Air Rules



Background

- Subpart AA - Process vents
- Subpart BB - Equipment leaks
- Subpart CC - Tanks, surface impoundments, containers. Also includes Subpart X units.

Subpart AA standards apply to units where heat or the boiling point of a waste is used to create separation.

Applicability Issues for Subparts AA and BB - Who is Covered?

- Facilities subject to 40 CFR Part 270
  - Permitted
  - Interim status
- Hazardous waste recycling units located at 90-day facilities, provided another unit at the facility has to obtain a RCRA permit (previously exempt)
- 90-day tanks and containers

  [40 CFR §264.1030(b)(1-3)]

On December 6, 1994, EPA modified §270.4 to require facilities that have already been issued a final RCRA permit (and whose permit does not address the Subpart AA and BB requirements) to comply with Subpart AA and BB standards. [62 FR 64657]

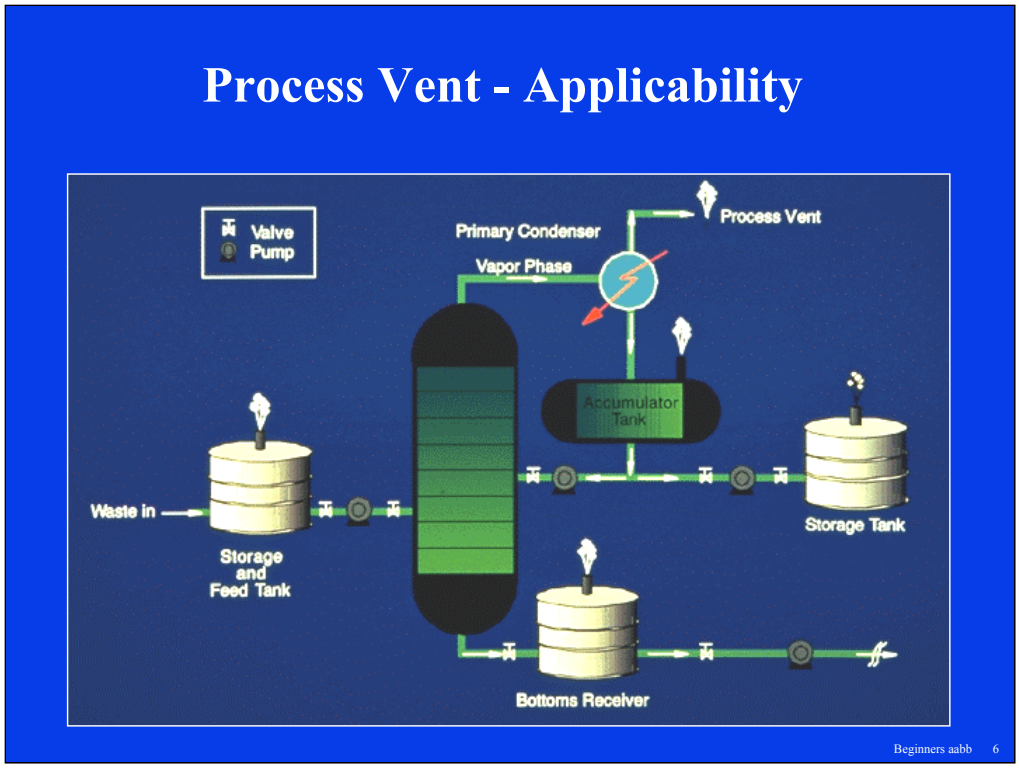
Subpart AA Regulates Process Vents

- Any open-ended pipe or stack that is vented to the atmosphere either directly, through a vacuum-producing system, or a tank associated with the regulated equipment described next

Vented means “discharged through an opening, typically an open-ended pipe or stack, allowing the passage of a stream of liquids, gases, or fumes into the atmosphere. The passage of liquids, gases, or fumes is caused by mechanical means such as compressors or vacuum-producing systems or by process-related means such as evaporation produced by heating and not caused by tank loading or unloading (working losses) or by natural means such as diurnal temperature changes.” [§264.1031]

Applicability Issues for Subpart AA - What Types of Vents are Covered?

- Process vents associated with:
  - Distillation
  - Fractionation
  - Thin-film evaporation
  - Solvent extraction
  - Or air or steam stripping operations
- That manage hazardous wastes with organic concentrations of at least 10 parts per million by weight (ppmw)



Steam strippers are commonly used on relatively dilute aqueous type wastes. So the question might be "why is this a type of device where you would find equipment affected by these rules?" When the waste materials are stripped, the organic vapor phase passes overhead into an accumulator tank. When the organic material comes out of the accumulator tank and passes through the pumps and valves, the stripping systems at these points may be contacting waste materials with high enough organic content to be subject to these rules.

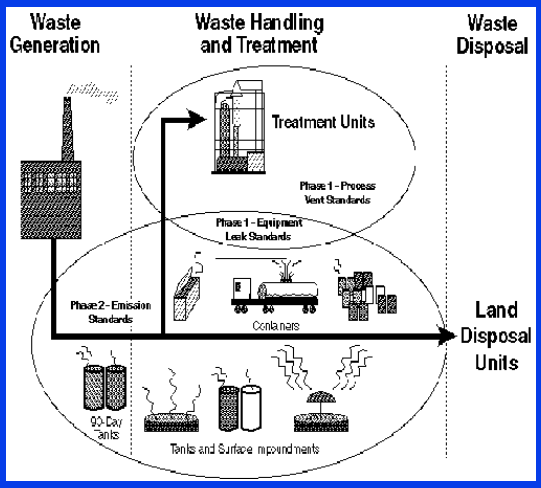
How do Subpart AA Regulations Work?

- Identify affected process vents
- Determine emissions rates
- Sum individual rates
- Compare to emission rate limits
- Reduce emissions below limits or 95 percent

Standards - Process Vents

- Total organic emissions from all affected process vents <1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr) or use of a control device to reduce the total organic emissions by 95 percent by weight
- Provisions exist for a closed-vent system and control device to meet the limits

Subpart BB - The Equipment Standards



Review of Regulatory Requirements Subpart BB

- What equipment is covered?
- Waste stream criteria
- Requirements for
  - Pumps
  - Compressors
  - Pressure relief devices
  - Sampling connecting systems
  - Open-ended valves or lines
  - Valves
  - Flanges and other connectors
- Repair requirements
- Recordkeeping requirements

Applicability Issues for Subparts AA and BB - Who is Covered?

- Facilities subject to 40 CFR Part 270
  - Permitted
  - Interim status
- Hazardous waste recycling units located at 90-day facilities, provided another unit at the facility has to obtain a RCRA permit (previously exempt)
- 90-day tanks and containers [40 CFR §264.1030]

Applicability Issues for Subpart BB - Some Exemptions Exist for:

- Equipment which contains or contacts hazardous waste < 300 hours per year
  [40 CFR §264.1064(g)(6), §265.1064(g)(6)]
- Equipment in vacuum service
  [40 CFR §264.1064(g)(5), §265.1064(g)(5)]

Which Hazardous Waste Streams?

- Hazardous waste streams with organic concentrations of at least 10 percent by weight
- Gas or liquid at operating conditions
- Liquid stream may be either a light or heavy liquid

Definitions - Hazardous Stream by Service

- Light liquid service
- Heavy liquid service
- Gas/vapor service

Determination of a Light/Heavy Liquid

- Light liquid:
  - Contains compound(s) with vapor pressure greater than 0.3 kPa at 20°C
  - Total concentration of pure components with vapor pressure greater than 0.3 kPa is 20 percent by weight,

  AND
  - Is a liquid at operating conditions
- Heavy liquid
  - NOT light liquid or gas/vapor

The definition of light liquid and heavy liquid is provided in 40 CFR §264.1031.

Requirements for Pumps in Light Liquid Service

- Monitored monthly to detect leaks
- Checked weekly for indication of liquids dripping from pump seal
- Instrument reading of 10,000 ppm or greater indicates a leak
- Indications of liquids dripping from pump seal indicates a leak

Requirements for Compressors

- Equipped with a seal system with a barrier fluid system, except:
  - Equipped with a closed-vent system
  - Designed as no detectable emissions (<500 ppm above background)
- Barrier fluid must not be a hazardous waste with organic concentration of 10 percent by weight or greater
- Sensor to detect failure of seal system, barrier fluid system, or both
- Daily/monthly check of sensor and leak repair requirements

Requirements for Pressure Release Devices in Gas/Vapor Service

- Operated with no detectable emissions (<500 ppm above background) except during pressure releases
- Returned to no detectable emissions (to be monitored and confirmed within five days) after each pressure release
- Repair requirements when a leak is detected

Requirements for Sampling Connecting Systems

- Must be equipped with a closed-purge, closed-loop, or closed-vent system
- System must do one of the following:
  - Return purged fluid to process line
  - Collect and recycle the purged fluid
  - Capture and transport all of the purged fluid to a waste management unit or control device
- In-situ sampling systems are exempt

Requirements for Sampling Connecting Systems (cont'd)

- Gases displaced when filling the sample container are not required to be collected or captured

  [40 CFR §264.1055(a), §265.1055(a)]

Requirements for Open-ended Valves or Lines

- Must be equipped with a cap, blind flange, plug or second valve, which seals open end at all times, except during required operations
- Second valve provision
- Double block and bleed provision

Requirements for Valves in Gas/Vapor or Light Liquid Service

- Each shall be monitored monthly to detect leaks except:
  - Designated as no detectable emissions and no external actuator
  - Unsafe-to-monitor valve(s)
  - Difficult-to-monitor valve(s)
- Instrument reading of 10,000 ppm or greater indicates a leak
- If no leak is detected for two successive months - quarterly monitoring
- Repair requirements

Requirements for Valves in Gas/Vapor or Light Liquid Service (cont'd)

- Alternative standards
  - Percent allowed to leak
  - Skip period detection and repair

Requirements for Pumps and Valves in Heavy Liquid Service, Pressure Release Devices in Light or Heavy Liquid Service, and Flanges and Other Connectors

- Monitored within 5 days if leak found by visual, audible, olfactory or other determination
- Instrument reading of 10,000 ppm or greater indicates a leak
- Repair requirements

Repair Requirements

- Leak must be repaired as soon as practicable, but no later than 15 calendar days after detected
- First attempt at a repair shall be made no later than 5 calendar days after detected
- Delays in repair [40 CFR §264.1059, §265.1059]

Recordkeeping Requirements

- Equipment identification numbers
- Hazardous waste management unit identification numbers
- Approximate location of equipment
- Type of equipment
- Waste state and percent-by-weight total organics in waste stream at equipment
- Method of compliance with standard

Recordkeeping Requirements (cont'd)

- When a leak is detected:
  - Equipment shall be identified with a weatherproof visible ID tag
  - Record shall be entered into inspection log including:
    - Instrument, operator, and equipment identification number
    - Hazardous waste state
    - Dates and method of compliance

Reporting Requirements

- Semi-annual report for
  - Valve, pump, or compressor leak not repaired as required
  - Dates of HWMU shutdowns
  - Control device exceedance(s)

EPA Method 21 overview

- Identifies leaks, does not quantify emissions
- Instrument must respond to specific compounds
  - Scale readable to 2.5% of leak concentration
  - Sample gas flow rate between 0.1 and 3.0 l/min
- Types of portable organic analyzers:
  - Flame ionization (FID)
  - Catalytic combustion
  - Photoionization (PID)
  - Infra-red

Method 21 is outlined in 40 CFR Part 60.

Summary - The RCRA Air Rules

- Subpart AA - Process vents
  - Applies to specific treatment equipment
- Subpart BB - Equipment leaks
  - aka, the leak detection and repair program
- Subpart CC - Tanks, surface impoundments, containers
  - Close, capture and control