



# Benzene Waste Operations

40 CFR Part 61, Subpart FF

# SOCMI Wastewater

40 CFR Part 60, Subpart YYY

# Old Rules Made New Again

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# Introduction

- Benzene Waste Operations  
40 CFR Part 61, Subpart FF
- SOCMW Wastewater  
40 CFR Part 60, Subpart YYY
- Long history of either tortured application or contentious development
- Old rules with new compliance burdens
- Review of rules and compliance plans for chemical plants

# Benzene Waste Operations

40 CFR Part 61, Subpart FF

- Benzene designated as a HAP under 40 CFR Part 61 on June 8, 1977
- The Benzene Waste Operations NESHAP (BWON) was promulgated on March 7, 1990
- Amendments published on November 12, 2002 and again on December 4, 2003
- EPA currently conducting review of the BWON with stakeholders

# Benzene Waste Operations, cont.

40 CFR Part 61, Subpart FF

- Applies to owners and operators of chemical manufacturing plants, coke byproduct recovery plants, and petroleum refineries
- Highly complex regulation
- Addressing air, water, and waste
- 17 years of enforcement initiatives and consent decrees focused almost exclusively on oil refineries

# Benzene Waste Operations, cont.

40 CFR Part 61, Subpart FF

- What about batch chemical plants?
- Rule potentially applies equally, but little focus compared to oil refinery applications
- Recent Pharmaceutical MACT and PAI MACT enforcement initiatives in Region 4 have given new birth to BWON concerns for batch chemical plants
- The calculation of total annual benzene (TAB) quantity in all aqueous waste streams is the crucial first step in determining applicability

# Benzene Waste Operations, cont.

40 CFR Part 61, Subpart FF

- A facility with a TAB above 10 Mg/yr is required to control each benzene waste stream at the facility or demonstrate that the waste stream is exempt
- A facility with a TAB below 10 Mg/yr is only subject to the rule's reporting and record keeping
- A facility with a TAB less than 1 Mg/yr is only subject to maintain documentation of the quantity of benzene in the waste

# Benzene Waste Operations, cont.

40 CFR Part 61, Subpart FF

- Oil refineries waste streams readily afford themselves to identification as potentially subject to the BWON
  - Continuous operation of similar process units
  - Dedicated day in, day out operation
  - 17 years of guidance via industry and agency initiatives
- Batch chemical plants share none of these attributes
  - Batch operations with variable process units
  - Reconfigured process units for varying campaigns
  - Little guidance
  - Most below 10 Mg/yr control trigger

# Benzene Waste Operations, cont.

40 CFR Part 61, Subpart FF

- A different and more indirect method must be employed to determine TAB for a batch chemical plant
- Do not use annual wastewater flow and benzene concentration at entrance to WWTP
  - Benzene is volatile
  - Point of Generation (POG)
- Batch chemical plant TAB overall approach and lessons learned

# Benzene Waste Operations, cont.

40 CFR Part 61, Subpart FF

- General chemistry principles dictate that benzene can exist in a particular batch process stream via three mechanisms:
  - Use as a raw material
  - Generation as a reaction byproduct
  - Presence as an impurity

# Benzene Waste Operations, cont.

40 CFR Part 61, Subpart FF

- Batch operations (benzene as a raw material or byproduct)
- All other batch operations (benzene present as a raw materials impurity)
- Miscellaneous operations (impurity)

# Benzene Waste Operations, cont.

40 CFR Part 61, Subpart FF

- For those batch processes for which benzene is a raw material or reaction byproduct, PFD and P&ID should be reviewed to develop a list of potential POG
  - Determine flow and benzene concentration
  - Absent better data, the streams should be assumed saturated with benzene

# Benzene Waste Operations, cont.

40 CFR Part 61, Subpart FF

- For all other batch operations for which benzene could only be present as a raw material impurity, the raw material purchases themselves were assumed to constitute aqueous streams subject to BWON regulation
- Addresses hundreds of products in a single approach
- The mass of benzene was calculated based on the total pounds of raw materials purchased and the mass percentage of benzene per the vendor's specification

# Benzene Waste Operations, cont.

40 CFR Part 61, Subpart FF

- Finally, all other miscellaneous processes should be included in the TAB
  - Pump maintenance
  - Groundwater remediation activities
  - Heat exchanger leaks
  - Spills
  - Hazardous waste shipments
- Absent better data, the streams should be assumed saturated with benzene

# Benzene Waste Operations, cont.

40 CFR Part 61, Subpart FF

- This approach will produce a conservative, robust TAB
- Can better refine data if TAB is close to 1 Mg/yr or 10 Mg/yr
- Should develop historical TAB to reflect products no longer made
- Should track TAB to ensure future products do not trigger BWON requirements

# SOCMI Wastewater

40 CFR Part 60, Subpart YYY

- Originally proposed on September 12, 1994
- Technical amendments were issued on December 9, 1998
- Closely mirrors the wastewater provisions of the HON
  - Only new, reconstructed, or modified air pollution sources are subject
  - Regulates total VOC emissions

# SOCMI Wastewater, cont.

40 CFR Part 60, Subpart YYY

- New rule
- Wide applicability
- Focused on chemical plants
- Compliance overview

# SOCMI Wastewater, cont.

40 CFR Part 60, Subpart YYY

- CPU means the equipment assembled and connected by hard piping or ductwork to process raw materials and to manufacture a product
- The CPU is further evaluated to determine if it is a SOCMI CPU, which means it produces at least one of the over 720 SOCMI products listed in Table 1 of Subpart YYY
- The SOCMI list of chemicals goes beyond any of the preceding NSPS or MACT regulations

## SOCMI Wastewater, cont.

40 CFR Part 60, Subpart YYY

- If a facility meets all of the above criteria, it is considered an affected facility which began or begins construction, reconstruction or modification after September 12, 1994
- Essentially a 13 year rewind on potential applicability
- EPA impact review in 1994 projected that 68 percent of all SOCMI CPU would require control
- Likely higher percentage now

## SOCMI Wastewater, cont.

40 CFR Part 60, Subpart YYY

- Subpart YYY and requires control of OWC emissions from Group 1 wastewater streams
- A Group 1 wastewater stream has an annual average concentration of OWC greater than or equal to 10,000 ppmw at any flow rate, or an annual average concentration of OWC greater than or equal to 500 ppmw and a flow rate greater than or equal to 1 liter per minute
- Wastewater streams that do not meet the criteria for Group 1 status are classified as Group 2 streams

# SOCMI Wastewater, cont.

40 CFR Part 60, Subpart YYY

- Wastewater tanks, surface impoundments, containers, individual drain systems and oil-water separators
- Control of organic wastewater compound for treatment processes and the test methods and procedures
- Control devices, leak inspection and delay of repair provisions
- Monitoring, recordkeeping and reporting

# SOCMI Wastewater, cont.

40 CFR Part 60, Subpart YYY

- The following wastewater streams are exempt from regulation under Subpart YYY
  - Storm water managed in segregated sewers
  - Water from fire-fighting and deluge systems managed in segregated sewers;
  - Spills
  - Water from safety showers
  - Water from testing of deluge systems
  - Water from testing of fire fighting systems

# SOCMI Wastewater, cont.

40 CFR Part 60, Subpart YYY

- Compliance action plan

- Are any of the facility's products listed on Table 1 of this subpart?
- Is the CPU a SOCMI CPU?
- Does the process generate wastewater? If so, classify wastewater into Group 1 or Group 2.
  - Group classification may require sampling and lead time so be certain to allow time to properly assess the wastewater streams.
- Has the CPU been constructed, reconstructed or modified since September 12, 1994?

# Conclusions

- Benzene Waste Operations  
40 CFR Part 61, Subpart FF
- SOCFI Wastewater  
40 CFR Part 60, Subpart YYY
- Long history of either tortured application or contentious development
- Old rules with new compliance burdens
- What is your compliance status?