CHAPTER 115 VENT GAS FLARES/COOLING TOWERS REVISIONS

RECENT HISTORY OF CHAPTER 115 VOLATILE ORGANIC COMPOUND (VOC) RULES FOR HOUSTON/GALVESTON (HGA)

- Various VOC control requirements have been in effect in the HGA area since the 1970s
- December 2000 attainment demonstration for HGA contained, among other measures, rules requiring 90% overall NO_x control from stationary sources
- The 90% NO_x reduction requirement was challenged in 2001 by BCCA-Appeal Group and several regulated companies
- Under a consent order, TCEQ agreed to perform an analysis of the causes of rapid ozone formation events and identify additional control measures

RESULTS OF SCIENTIFIC STUDIES BY TCEQ

- NO_x emissions from industrial sources were generally correctly accounted for
- Industrial VOC emissions were significantly understated in earlier emissions inventories
- Commission staff focused on substituting industrial VOC controls for some of the last 10% of reductions required by NO_x rules, resulting in a NO_x control level of 80%
- Targeting highly reactive VOCs (HRVOC) was identified as an effective alternative control strategy

OVERVIEW OF HRVOC RULES

- HRVOC in Harris County defined as ethylene, propylene, 1-3,butadiene, and butenes
- HRVOC in seven HGA counties surrounding Harris defined as ethylene and propylene
- Rules target vent gas streams, flares, cooling towers
- Rules require compliance with a site-wide cap, calculated on a 24-hour rolling average
- Emission credits cannot be used to demonstrate compliance

VENT GAS/FLARES

- Applicability
    - Any vent gas stream in HGA area which includes HRVOC
    - Any flare in HGA area which emits or has the potential to emit HRVOC
- Exemptions
    - Exempt from site-wide cap
        - For any gas stream routed to a flare: exempt if contains < 5.0% by weight HRVOC (in the total stream) at any time (but still subject to recordkeeping requirements)
        - For any gas stream not routed to a flare: exempt if contains ≤ 100 ppmv HRVOC (in the total stream) at any time
        - Emissions from scheduled maintenance, startups, or shutdowns, if reported in advance and approved by the TCEQ regional office, or properly reported emissions events
    - Exempt from monitoring requirements (flares only; still subject to recordkeeping requirements)
        - Any flare which at no time receives a gas stream containing ≥ 5.0% by weight HRVOC
        - This gas stream is treated as a vent gas stream under the site-wide cap

- Monitoring/Testing

    - Each vent gas stream must either be tested or continuously monitored
    - Flares:
        - Continuously measure flow rate
        - Measure speciated HRVOC concentrations every 15 minutes
        - Calculate net heating value and actual exit velocity every 15 minutes
        - Assume 98% destruction efficiency (93% if flare is not meeting 40 CFR §18 (NSPS) heating value and exit velocity requirements)
        - Calculate the HRVOC hourly emission rate
        - Flares used solely for control of transport vessel loading operations are exempt from monitoring requirements, provided certain recordkeeping is performed to calculate the flare emission rate

- Recordkeeping and Reporting

    - Submit test/QA plan for meeting testing/monitoring requirements to agency by April 30, 2004 for approval
    - Maintain records documenting VOC and HRVOC emission rates, monitoring and testing results, corrective actions, criteria for exemption status, and the 24-hour rolling average HRVOC emission rate, for at least 5 years

- Compliance Dates

    - Vent gas: testing by June 30, 2004; all other requirements by April 1, 2006
    - Flares: all requirements besides site-wide cap by December 31, 2004; site-wide cap by April 1, 2006

<u>COOLING TOWERS</u>

- Applicability

    - Any cooling tower in HGA area which emits or has the potential to emit HRVOC

- Exemptions

    - Exempt from Division (but still subject to recordkeeping requirements):
        - If minimum pressure on the cooling water side is at least 5 psig greater than the maximum pressure on the process side
        - If no individual heat exchanger has HRVOC in the process side fluid
    - Exempt from site-wide cap (but still subject to all other requirements):
        - If any stream directed to a cooling tower heat exchange system contains $\leq$ 5.0% by weight HRVOC
        - Emissions from properly reported emissions events

- Monitoring/Testing

    - Submit test/QA plan for meeting testing/monitoring requirements to agency by April 30, 2004

for approval
  - Design circulation capacity ≥ 8,000 gpm cooling water:
    - Continuously measure flow rate at each cooling tower inlet
    - Continuously measure total strippable VOC concentration at each cooling tower inlet
    - Determine concentration of speciated strippable VOC at least once per month
    - If concentration of total strippable VOC ≥ 50 ppbw, collect a sample at least once per day for strippable VOC analysis from each affected cooling tower inlet
    - Continue daily speciated strippable VOC sampling until total strippable VOC concentration < 50 ppbw
  - Design circulation capacity < 8,000 gpm cooling water:
    - Continuously measure flow rate at each cooling tower inlet
    - Determine concentration of total strippable VOC by collecting samples from each inlet of each cooling tower at least twice per week
    - Determine concentration of speciated strippable VOC at least once per month
    - If concentration of total strippable VOC ≥ 50 ppbw, collect a sample at least once per day for strippable VOC analysis from each affected cooling tower inlet
    - Continue daily speciated strippable VOC sampling until total strippable VOC concentration < 50 ppbw
  - Use air-stripping method given in TCEQ Sampling Procedures Manual, Appendix P
  - Use EPA Test Method 18 or Method TO-14A to analyze samples

- Recordkeeping and Reporting

  - Establish and maintain process diagram of the cooling tower heat exchange system, including the locations at which the system will be monitored and sampled
  - Maintain records documenting VOC and HRVOC emission rates, monitoring and testing results, corrective actions, criteria for exemption status, and the 24-hour rolling average HRVOC emission rate, for at least 5 years

- Compliance Dates

  - All requirements besides site-wide cap by December 31, 2004; site-wide cap by April 1, 2006