Cooling Tower VOC Emissions

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Cooling Tower VOC Emissions

- Background
- VOC Emission Estimating Issues
- TCEQ Research
Cooling Tower VOC Emissions

Background

- Emission Estimating Workshop
  - TCEQ, EPA, Universities, Consultants, Environmental, Industry
- Question: Confidence in emission estimating protocols
  - Accuracy
  - Adequately supported by science or data
  - Opportunity to improve accuracy of emission estimates
Cooling Tower VOC Emissions - Issues

VOC Emission Estimating Issues

Available Methods

AP-42 Factors
- Based on very limited and old data
- Do not reflect actual cooling water system operation and maintenance

Calculation based on VOC in water measurement
- Reflect actual cooling water system operation and maintenance
- What is the accuracy and sensitivity of measurements?
Cooling Tower VOC Emissions
-Issues

- VOC Emission Estimating Issues
  - Generally AP-42 factors are used
  - Usually the controlled AP-42 factor is used
    - Uncontrolled: 6 lb/million gallon of cooling water
    - Controlled: 0.7 lb/million gallon of cooling water
  - AP-42 controlled factor is suppose to be used only if a control technology is used to minimize VOC leaks into the cooling water
  - Generally control technology used is a “Leak Detection and Repair Program” (LDAR)
    - A wide variety of indirect monitoring methods
    - Measurement of VOC in the water
      (NESHAPS FF and TCEQ Appendix P)
Cooling Tower VOC Emissions - Issues

- Do the current LDAR methods constitute a valid “control technology”? 
  - How sensitive are these monitoring methods? 
  - How effective (detection limits)? 
  - How much emission reduction really?

- TCEQ Field Office Testing
  In some cases for Cooling tower with a leak detection and repair program, measured emissions were significantly higher than AP-42 controlled emission factor
Cooling Tower VOC Emissions

- TCEQ Testing Research
  - VOC in water measurement method development and improvement

- Compounds of interest:
  - Ethylene, Propylene, 1,3-butadiene, butenes

- Accuracy and Sensitivity
  - Subpart FF VOA
  - TCEQ Appendix P (air stripping method)

- Results not yet available
Cooling Tower VOC Emissions

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