
Volatile Organic Compounds (VOC) Measurement Issues



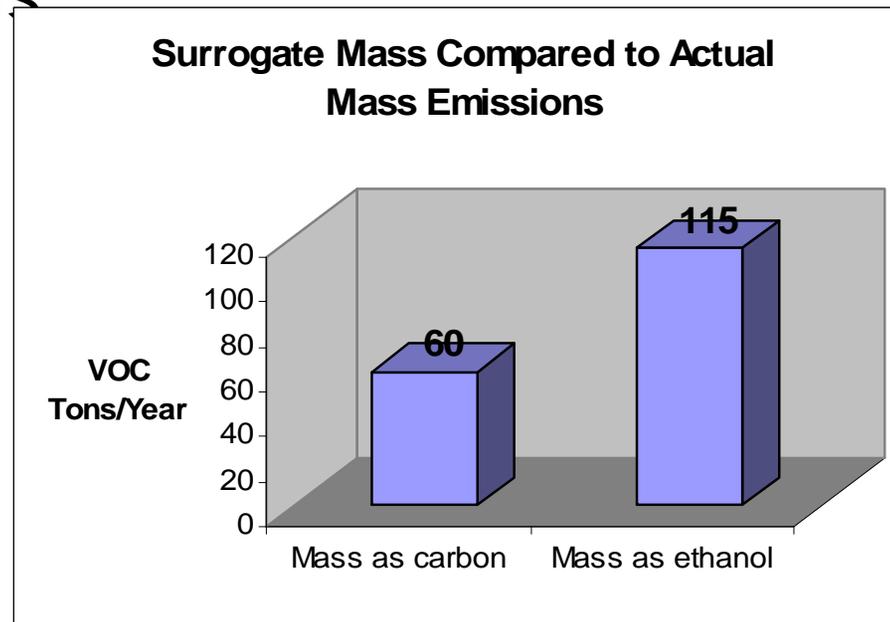
Reporting VOC Mass
Emissions

VOC Mass Emissions

- It is important to approximate the mass of VOC emissions for certain programs, such as New Source Review (NSR)
- EPA has stated in writing that VOC mass emissions should be based on the best approximation of actual VOC emitted and not based on a surrogate such as carbon

VOC Measurement Issues

- OECA and Regional Offices are requiring sources to report their VOC emissions on an actual mass basis rather than a surrogate mass basis



What Industry Categories Are Affected?

- Forest Products and Paper
- Ethanol Production
- Corn Refining (Wet Corn Milling)
- Sugar Beet Processing



How Do We Measure Actual Mass Emissions?

- EPA's Office of Enforcement and the Regional Offices developed a testing protocol using existing EPA test methods and new calculation procedures to calculate actual mass VOC emissions
- Called it the Midwest Scaling Protocol

Midwest Scaling Protocol (MSP)

What is it?

- Designed for application to the corn wet milling industry – may not be suitable for other industries
- Allows reporting of results from Methods 25 and 25A as the mass of emitted VOC without all of the necessary calibration standards
- Not the *only* way of measuring VOC mass emissions

MSP (cont.)

How does it work?

- Uses Method 18 to identify the kinds and relative amounts of VOC in the sample
- Based on this information, it calculates a weighted average molecular weight-per-carbon atom for the VOC

MSP (cont.)

How does it work?...cont.

- Uses Method 25 or Method 25A to measure the carbon content of the sample
- Then multiplies the carbon content by the weighted average molecular weight-per-carbon atom to get the VOC mass

Measured PPM C x Molecular Weight/Carbon x Flow = Tons/Year VOC

Where Molecular Weight/Carbon is the Scaling Factor

Industry Methods for VOC Mass Emissions

- Several industry trade associations have indicated that they would like to develop methods especially for their sources
- EPA believes this is beneficial and is willing to work with any group to develop better VOC measurement methods

Case Study:

The Corn Refiners Association

The issue:

- The Corn Refiners Association (CRA) wanted an alternative to the MSP

First step:

- A test plan was developed to evaluate their proposed method
- Met with EPA to get concurrence

Case Study: CRA (cont.)

Method Proposal:

- The CRA proposed to use Method 18 to measure all VOC
- The individual VOC masses would then be summed to produce a cumulative mass

Case Study: CRA (cont.)

CRA's Pre-Survey Procedure:

- A new pre-survey procedure was developed to use prior to each test
- Results from the pre-survey are used to design appropriate sampling and analytical conditions for Method 18
- The pre-survey procedure is the key to demonstrating that most of the VOC have been collected and measured

Case Study: CRA (cont.)

- After EPA concurred with the proposal, the CRA conducted two field tests of the method
- The CRA has submitted the test results to EPA for review

Case Study: CRA (cont)

Current Status:

- EPA Accepted the CRA method
 - Addressed the affect of the new data on existing air programs
 - Posted the method on the EMC in the Other Methods category

Next Steps:

- Developing a rulemaking package to place the method in 40 CFR Part 51, Appendix M
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Industry Methods

- Any method that measures VOC emissions on a mass basis would be acceptable, but EPA prefers those that measure individual VOC
- Because of the complexity of most VOC emission streams, "VOC Mass" does not imply measuring 100% of the organic compounds

Industry Methods (cont.)

- Will give EPA better data on which to base control decisions
 - More accurate emission factors
 - More accurate emission modeling
- Will allow EPA to consider photochemical reactivity in making control decisions

Industry Methods (cont.)

- Any new industry methods will be published in the Federal Register for public notice and comment
- After resolving any comments, the final methods will be incorporated in the Code of Federal Regulations