112(j) MACT

Similar Source & “Worst of the Best”

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October 24, 2008

CIBO Annual Meeting
Charleston, South Carolina

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Outline

- Case-by-case MACT overview
- Similar source
- Achieved in practice
- Variability

My Background

- Lifelong interest in air quality
- Native of Birmingham AL – red sky, dirty shirts
- BS ME, Vanderbilt
  - Studied then-new 1990 Clean Air Act Amendments
- MS EnvE, Illinois – air quality specialty
  - Thesis on visibility
- In 14th year with Trinity, 5th as ATL manager
- Focus on NSR and utilities
- Spent much of last six months on §112(g) for

Case-by-Case MACT Types

- Two separate citations, both applicable when there is no 112(d) standard
  - 112(g) – "construction permitting" (40CFR63.40)
  - 112(j) – MACT Hammer (40CFR63.50)
- While initiator is different, the requirements and process are essentially identical
- Read the rule – specific procedural requirements that must be followed

Step 1 – MACT Floor

- Must be met – cost not a factor
- An emission rate achieved in practice by a similar source (not a removal rate)
- Not necessarily achievable by all sources
- How rate is achieved is irrelevant
  - Could be “clean” source with low control
  - Could be “dirty” source with high control
- Existing sources – 112j – average of top 12%
- New sources – 112g – best source

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Step 2 – Beyond the Floor

- Once floor is determined, must consider options to further reduce emission limit
- Three factor test nearly identical to BACT
  - Cost analysis – $/mass removed
  - Energy requirements (due to control device)
  - Non-air impacts
    - Not <u>any</u> non-air impacts, but only direct by-products from the proposed control technology [*Sierra Club v. EPA* (02-1253)]
    - Consistent with 2-step MACT approach; 1st step is technology only, not risk

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Similar Source

- Key decision – determines universe of sources for comparison to MACT floor
- Section 112(d)(1) authorizes EPA to "distinguish among classes, types and sizes of sources within a category or subcategory"
- Four factors from EPA
  - Comparable emissions
  - Structurally similar in design
  - Structurally similar in size
  - Capable of control using the same control technology

Achieved in Practice

- Not defined in rule or statute, thus
- Many lawsuits on this definition
  - Sierra Club v. EPA (97-1686)
  - National Lime Association v. EPA (99-1325)
  - Cement Kiln Recycling Coalition v. EPA (99-1457)
  - Mossville Environmental Action Now v. EPA (02-1282)
  - Sierra Club v. EPA (03-1202)

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Achieved in Practice - Principles

- The floor must be set based on the best performing similar source(s)
  - Best for 112(g)
  - Average of best 12% for 112(j)
- Actual emissions data and/or permit limits may be used as long as they provide a reasonable means of estimating the performance.
- Variability of source emissions should be considered such that the best controlled source will meet the floor under the worst reasonably foreseeable circumstances.

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Sierra Club v. EPA (97-1686)

- *EPA would be justified in setting the floors at a level that is a reasonable estimate of the performance of the "best controlled similar u under the worst reasonably foreseeable circumstances*

Worst of the Best

- *It is reasonable to suppose that if an emissions standard is as stringent as "the emissions control that is achieved in practice" by a particular unit, then that particular unit will not violate the standard. This only results if "achieved in practice" is interpreted to mean "achieved under*

EPA Comments on Case-by-Case Analyses

- From recent EPA-issued PSD permit for Desert Rock, a coal-fired power boiler in the Navajo Nation
- For BACT, not MACT, but comments about nature of case-by-case analyses still highly relevant
  - *EPA disagrees with the premise that a lower emissions limit or a higher degree of reduction alone in another permit requires a different BACT determination. Unlike many of the CAA programs, the PSD program's BACT evaluation is case-by-case. The case-by-case analysis is far more complex than merely pointing to a lower emissions limit or higher control efficiency elsewhere in a permit or a permit application.*
  - *The BACT analysis, therefore, involves judgment and balancing.*

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Three Types of Variability

- Test variability
  - A question of test accuracy
    - Boiler tests the same Hg level on gas and coal?
- Raw material variability
  - Trace constituent levels can vary substantially
- Process control variability
  - The formation and removal of compounds across the boiler system

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NACAA's Approach

- All variability types grouped implicitly
- Did not separately address range of constituents in fuel type (or either of the two other variability types)
- Attempt to derive "total variability" factor
  - NACAA assumed same variability factor was applicable to all sources in a class
  - Did not consider typically higher variability at "best" performers
- Useful work and a good first step, but quality is not adequate for setting permit limits

Suggested Approach for Case-by-Case (1 of 3)

- Test Variability
  - Best to use data from the same test method at all similar sources
    - Typically requires costly ICR
    - More data not always better (e.g., CEMS)
  - Otherwise, should define relative accuracy between test methods (e.g., using RATA)

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Suggested Approach for Case-by-Case (2 of 3)

- Raw Material Variability
  - HAP constituents can vary within fuel subcategory
  - Correlate fuel analysis to emission rates
    - Large influence on resulting emissions
    - Identify and address independently for better understanding of performance
  - Identify potential range of HAP in fuel

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Suggested Approach for Case-by-Case (3 of 3)

- Process Control Variability
  - Can removal rate be correlated to a dependent factor?
    - E.g., Chlorine effect to oxidize Mercury
  - If not, can you apply a reasonable statistical evaluation to determine “worst foreseeable”?
    - NACAA used a version of a z-statistic confidence interval

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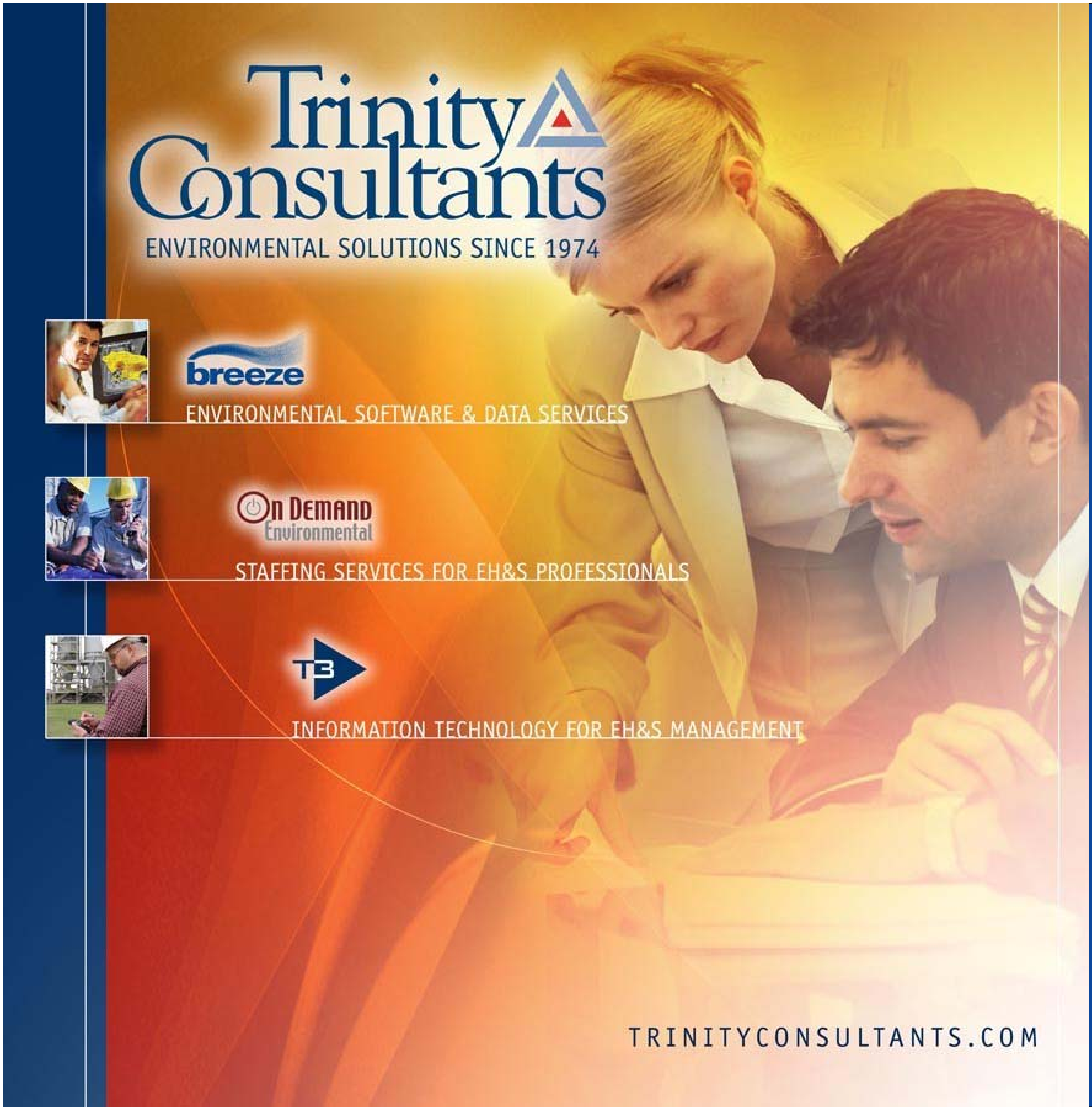
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