Attachment D

Determination of Maximum Achievable Control Technology (MACT)

This document discusses the determination of Maximum Achievable Control Technology (MACT) as required under 40 CFR §63.40 through §63.44, also known as the Section 112(g) regulations. These regulations outline specific requirements for making a MACT determination. In addition, the Michigan Department of Environmental Quality, Air Quality Division (AQD), offers the following guidelines to assist a permit applicant in preparation of its analysis.

MACT is defined in §63.41 as "the emission limitation which is not less stringent that the emission limitation achieved in practice by the best controlled similar source, and which reflects the maximum degree of reduction in emissions that the permitting authority, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable by the constructed or reconstructed major source." It should be understood that this is the definition of MACT for "new" sources, or in the case of Section 112(g) definitions, "constructed or reconstructed major sources." This definition and this document should not be applied to existing, altered or modified sources.

I. General Requirements of Section 112(g)

A. The analysis must be emission unit specific with respect to the HAPS emitted.

B. The analysis must evaluate the entire range of demonstrated options, including alternatives that may be transferable from a similar source. Demonstrated options are those identified from the 'available information' defined in 40 CFR §63.41.

C. The level of detail in the control options analysis should vary with the relative magnitude of the emissions and the emissions reduction achievable.

D. The MACT emission limit(s) should be expressed on a mass per unit time basis (based on maximum capacity) and in terms of process unit variables. The mass per unit time limitation should use parameters and an averaging time appropriate to the process. The process unit variable limitation should use parameters such as (but not limited to) material processed, fuel consumed or pollutant concentration (e.g., lbs/10^6 BTU, lbs/gal of solids applied, g/dscm).

E. Emission limits and work practice standards must be federally enforceable. Permit conditions should specify appropriate stack testing, continuous emission monitoring, continuous process monitoring, recordkeeping, and any other parameters necessary to make the emission limitations federally enforceable. All monitoring shall be capable of demonstrating continuous compliance during the proposed averaging time(s) and reporting period(s). Although Section 112(g)-specific compliance monitoring guidance has not yet been developed, the federal Compliance Assurance Monitoring (CAM) regulations [40 CFR Part 64] and the periodic monitoring requirements of the federal Title V regulations [40 CFR Part 70] can be used as the basis for meeting the requirements of 40 CFR §63.43(g) and §63.43(l).

II. Specific Procedure (step-by-step)

A. Pollutant Applicability

MACT applies to the proposed source emitting HAPS, and considering all HAP emissions. While it is not required that each HAP emitted be considered independently, it is expected that different forms of emissions will be considered separately. For example, a proposed source that will emit both particulate HAPs and gaseous HAPs is expected to consider both particulate and gaseous emissions controls as part of the MACT determination.

B. Emission Unit Applicability

Determine all potential emission units and emission points, including fugitive units. Examples of emission points include each stack, relief valve, pump, storage pile or tank, conveyor, and valve.

C. Potentially Sensitive Concerns

Identify any potentially sensitive concerns involving energy, economic, and public health and environmental issues. All potentially sensitive air quality concerns, including the control of non-targeted pollutants, should be addressed. For example, limestone may have to be injected upstream of a baghouse to control hydrogen chloride even though arsenic compounds is the regulated hazardous air pollutant of concern in the analysis.

D. Initial Selection of MACT Control Technologies

1. Identify all alternative control strategies including (a) transferable and innovative control technologies, (b) process changes or alternative processes that inherently produce less pollution, and (c) various configurations of same technology which achieve different control efficiencies. All of the following sources of information should be investigated to ensure that all possible control strategies are identified:
   a) A relevant proposed regulation, including all supporting information.
   b) Background information documents for a draft or proposed regulation.
   c) Data and information available from the United States Environmental Protection Agency's (EPA's) Control Technology Center developed pursuant to Section 112 of the federal Clean Air Act.
   d) Data and information contained in EPA's Aerometric Informational Retrieval System (AIRS), including information in the MACT database.
   e) Per §63.41, definition of "available information", the following information that is considered by the AQD to be available:
      i. EPA's RACT/BACT/LAER Information Clearinghouse.
      ii. Literature.
      iii. Industrial surveys.
      iv. EPA/State/Local air pollution control agency surveys.
2. Rank all possible control technology alternatives in descending order based on overall control efficiency.

E. Selection of MACT final control strategy

MACT cannot be less stringent than the emission control which is achieved in practice by the best controlled similar source. MACT must also be the most efficient alternative which is not demonstrated to be infeasible. Normally the most efficient or stringent alternative should be chosen. If the most efficient alternative is not feasible because of energy, economic, or public health and environmental impacts or other costs, then continue evaluating the less efficient

technologies. The following are examples when energy, economic, or environmental impacts may make an alternative not feasible.

a) Energy: Natural gas for operating an afterburner is not available based on local regulations.

b) Economic:

i. The increased cost of the final product (e.g., automobile, cement, coke, etc.) would increase to a level that the project would no longer be feasible. This demonstration requires that the facility submit financial information to verify this claim.

ii. The increased and/or incremental cost is out of proportion to the environmental benefit. (e.g., The increased cost of going from 93% control to 94% control increases the capital cost from $2,000,000 to $4,000,000 and the operating costs from $500,000/year to $1,000,000/year and only reduces the emissions of nitrogen oxides by 50 tons per year.)

c) Environmental: A wet scrubber may create a by-product which cannot be disposed of without creating a more detrimental impact.

F. Establishment of MACT emission limit(s)

The MACT emission limits should be established with a reasonable margin of safety (e.g., 95% confidence level of available test data); and should be based on an appropriate averaging time. Additional requirements such as stack testing, continuous emission monitoring, recordkeeping, and reporting requirements that serve to make the emission limitation enforceable as a practical matter should also be established.

G. Alternative requirements

Specific design, equipment, work practice or operational standards may be proposed in lieu of control technology if it can be demonstrated to the satisfaction of the AQD that it is not feasible to establish or enforce an emission limitation. Establishment of alternative requirements is only applicable to fugitive and other sources where it is not practical to collect and control the emissions using standard methods.