Michigan Department of Environmental Quality - Air Quality Division

GUIDELINES FOR CONDUCTING A 112(g) ANALYSIS

Section 112(g) of the federal Clean Air Act (CAA) requires any constructed or reconstructed major source of Hazardous Air Pollutant (HAP) emissions be equipped with Maximum Achievable Control Technology (MACT) to control the emissions of HAPs. A major source of HAPs emits or has the potential to emit 10 tons per year of any single HAP or 25 tons per year of any combination of HAPs. Section 112(g) requirements are specified in 40 CFR §63.40 through §63.44. These requirements do not apply to a major source of HAPs which is specifically regulated or exempted from regulation under a standard issued pursuant to Section 112(d), Section 112(h) or Section 112(j) of the federal CAA. That is, the Section 112(g) analysis is required only when HAP emissions are not otherwise regulated. The following guidelines may assist a permit applicant in the preparation of a Section 112(g) MACT analysis.

Operational Memorandum No. 15 describes the procedure for processing a PTI application for a source subject to Section 112(g).

Any PTI application submitted for the construction or reconstruction of a major source of HAPs that is subject to Section 112(g) will be processed in accordance with Michigan's PTI application review process. Documents describing this process are available on the Air Quality Division (AQD) Permit Web Page at http://www.deq.state.mi.us/aps, or by contacting the AQD Permit Section at 517-373-7074. Michigan's PTI application review process will adequately meet the timelines required in the Section 112(g) regulation. In addition, all permits that include a MACT determination will include a public notice and hearing, if requested, and the AQD will not approve any request for a waiver pursuant to Rule 202.

General Requirements

A. MACT is defined in §63.41 as the emission limitation which is not less stringent than 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.

B. The analysis must be specific to the process or production unit with respect to the HAPS emitted.

C. The analysis must evaluate all control technology options with appropriate emission limitations which have been achieved in practice by the best controlled similar source. Control technology options that may be transferable from a similar source should be included when appropriate. A source is considered similar if: (1) it has similar emission types and can be controlled with the same type of control technology and (2) It uses similar raw materials in a similar manner such that the same work practice or pollution prevention techniques can be used to reduce emissions.

D. The MACT emission limitation should be expressed on a mass per unit time basis (based on maximum capacity) and/or 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 limitations and work practice standards must be federally enforceable. Permit conditions shall specify appropriate stack testing, emission monitoring, process monitoring, recordkeeping, and any other parameters necessary to make the emission limitations federally enforceable. All monitoring shall be capable of demonstrating compliance during the applicable reporting periods based on the averaging time of the limit or standard.

Procedure

1. Pollutant Applicability

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

2. Process or Production Unit Applicability

   Section 112(g) applies to any collection of structures and/or equipment that processes, assembles, applies, or otherwise uses material inputs to produce an intermediate or final product. Determine all potential process or production units and emission points, including fugitive units. Emission sources can be classified as one of five different types. Process vent or stack discharges; equipment leaks; evaporation and breathing losses; transfer losses; and operational losses. These emission source types should be used as a guide in identifying available control options while considering the concentration and type of constituents of a gas stream.

3. Identification of Available MACT Control Technologies

   a) Controls include any pollution prevention strategy that effectively limits emissions and is federally enforceable. Identify all available control technology options including transferable and innovative control technologies when appropriate. Control technologies include process changes; substitution of materials or other modifications; collecting, capturing or treating pollutants; or other techniques to reduce the quantity of or eliminate emissions of HAPs. Alternative processes that inherently produce less pollution and various configurations of the same technology which achieve different control efficiencies should also be reviewed. The following information sources should be investigated to ensure that all possible control technology options have been identified:

      i) A relevant proposed regulation, including all supporting information.
      ii) Background information documents for a draft or proposed regulation.
      iii) Data and information available from the United States Environmental Protection Agency (EPA) Control Technology Center developed pursuant to Section 112 of the federal CAA.
      iv) Data and information contained in the EPA Aerometric Informational Retrieval System (AIRS), including information in the MACT database.
      v) Additional information considered available by the AQD, which includes the following:
         - RACT/BACT/LAER Clearinghouse (RBLC)
         - Technical literature
         - Industrial publications
         - EPA/State/Local air pollution control agency surveys

   b) Rank all possible control technology options in descending order based on the most stringent emission limitation achieved in practice by the best controlled similar source.

4. Evaluation of MACT Control Technologies

   MACT cannot be less stringent than the emission limitation which is achieved in practice by the best controlled similar source, unless it has been demonstrated that the emission limitation is not feasible. Identify any non-air quality health and environmental impacts, and energy requirements. If the control technology that achieves the maximum degree of HAP emission reduction is not feasible because of costs, non-air quality health and environmental impacts, and energy requirements, continue evaluating the next most efficient control technologies. The following are examples when energy, economic, or environmental impacts may make a limitation 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 (i.e., 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. For example, a marginal increase in control efficiency that results in a doubling of capital or annual costs for a nominal reduction of mass emissions.

c) Environmental – Certain control options may result in detrimental environmental impacts (i.e., generation of solid or liquid waste, impacts to surface or ground water).

The capital cost, the amortized capital cost, and the annual operating costs of the emission control system should be submitted for each different economic control cost evaluation preformed. A 7% interest rate should be used unless interest rates change significantly, and the life of the control equipment is assumed to be at least 10 years unless a demonstration to the contrary is provided. Provide all supporting assumptions, calculations and other documentation. The standard method used to determine the aforementioned costs is contained within the USEPA OAQPS Control Cost Manual which is available on the following website: www.epa.gov/ttn/catc/products.html#cccinfo.

5. Alternative Options

An applicant may recommend a specific design, equipment, work practice or operational standard or a combination thereof as the MACT determination. Such a standard may be approved, if the AQD specifically determines that it is not feasible to prescribe or enforce an emission limitation under the criteria set forth in Section 112(h)(2) of the CAA.

6. Selection of MACT

MACT is the most effective emission limitation, work practice and/or operation standard that has not been eliminated in Steps 4 or 5.

For technical questions pertaining to this document, contact the AQD Permit Section at 517-373-7074.