

EPA Environmental Appeals Board Remands Air Permit Decision To MDEQ

The Ecology Center and the Michigan Environmental Council (EC/MEC) filed a petition with the United States Environmental Protection Agency (EPA) Environmental Appeals Board (EAB) for review of a prevention of significant deterioration (PSD) air permit issued by the Michigan Department of Environmental Quality (MDEQ) to General Motors Corporation (GM) for construction of a new vehicle assembly plant in Delta Township, Michigan. The EAB remanded the permit to MDEQ to provide an adequate explanation of its decision on several issues concerning the appropriate control technology required by the permit. In addition to EC/MEC and MDEQ, GM and EPA's Office of General Counsel (OGC) also filed briefs in the case.

GM's proposed plant is located in an area designated as "attainment" for the "criteria" air pollutant ozone, which is formed when certain air pollutants, such as volatile organic compounds (VOCs), react in sunlight. GM's plant is subject to PSD review because it has the potential to emit more than 250 tons per year of the criteria pollutants. The federal Clean Air Act (CAA) and its PSD regulations require that such sources employ the "best available control technology" (BACT) to limit emissions of pollutants that may be emitted in amounts greater than the levels designated as "significant" in the PSD regulations. EPA has delegated to MDEQ the authority to administer the PSD program in Michigan. EC/MEC argued that MDEQ: (1) improperly rejected emission controls with average costs within the range previously deemed acceptable by MDEQ and gave excessive weight to incremental costs in the BACT determination; (2) inappropriately failed to quantify (a) the engineering costs associated with determining the technical practicability of controlling the emissions from waterborne paints, and (b) the secondary impacts

of increased nitrogen oxides (NO_x) emissions from controlling the emissions; and (3) failed to group the basecoat and clearcoat emissions units in the BACT analysis.

BACT Determination

EPA's PSD regulations define BACT as:

[A]n emission limitation . . . based on the maximum degree of reduction for each pollutant subject to regulation under [the CAA] which would be emitted from any proposed major stationary source . . . which [EPA] on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source . . . through application of production processes or available methods, systems, and techniques . . . for control of such pollutant.

EPA issued a draft guidance document in 1990, the New Source Review Workshop Manual (the Draft NSR Manual), that is widely used in PSD reviews by permit issuing authorities such as MDEQ. The Draft NSR Manual directs that a "top-down" method should be applied for determining BACT:

The top-down process provides that all available control technologies be ranked in descending order of control effectiveness. The PSD applicant first examines the most stringent – or "top" – alternative. That alternative is established as BACT unless the applicant demonstrates, and the permitting authority in its informed judgment agrees, that technical considerations, or energy, environmental, or economic impacts justify a conclusion that the most stringent technology is not "achievable" in that case.

The Draft NSR Manual provides that "average" and "incremental costs" are the economic criteria to be considered in the BACT analysis. The purpose of the cost analysis is to determine if there are significant cost differences between the applicant and other sources that have adopted a control technology being reviewed and whether the costs of control are disproportionately high relative to the cost to control the same pollutant in other recent BACT determinations. The Draft NSR Manual also recognizes that the agency may consider energy and environmental impacts in

a BACT determination, such as concerns related to using locally scarce fuels and significant or unusual environmental impacts that would occur as a result of using a control technology.

The EAB acknowledged that the Draft NSR Manual should not be accorded the same weight as a binding EPA regulation and that a strict application of the Manual's methods is not mandatory, but further stated that, in evaluating BACT determinations, it has required a level of detail in the analysis by the permitting agency that is comparable to that in the Manual. The EAB further noted that MDEQ claimed it had followed the Draft NSR Manual and "top-down" approach in making the BACT determination for the proposed GM plant.

EC/MEC challenged the portion of the permit issued to GM that related to VOC emissions from the basecoat portion of the topcoat painting system. The EAB explained that the record showed GM considered the following VOC control technologies for controlling the basecoat VOC emissions: (1) direct thermal oxidation; (2) complex concentrator media; and (3) common control of the solvent-borne clearcoat and waterborne basecoat. These control technologies were rejected by MDEQ because:

(1) direct thermal oxidation controls would have an increased secondary environmental impact due to its associated NO_x emissions, and would require increased natural gas usage, which was impractical given the potential for future natural gas shortages; (2) complex concentrator media would require significant engineering effort to research, design, test and construct; and (3) common control of the solvent-borne clearcoat and waterborne basecoat would exact high incremental costs.

As a result, MDEQ chose a waterborne basecoat system using electrostatic applicators as BACT for the basecoat operation and did not require add-on controls for the VOC emissions.

In addition to EC/MEC's challenges to the permit described above, EPA also argued that:

MDEQ (1) failed to explain how it considered average cost; (2) failed to consider the range of costs being borne by other automotive facilities as a result of recent BACT determinations; (3) failed to quantify engineering costs to control waterborne basecoat spray booth exhaust; and (4) failed to quantify the secondary impacts of using add-on controls to abate VOC emissions.

Incremental and Average Costs Analysis

EC/MEC argued that MDEQ's rejection of add-on controls was erroneous because MDEQ improperly relied on incremental costs in its BACT determination. The EAB explained that, as defined by the Draft NSR Manual, "average cost-effectiveness" is the "total annualized costs of control divided by annual emission reductions," while the "incremental cost-effectiveness calculation compares the costs and emissions performance level of a control option to those of the next most stringent option" The Draft NSR Manual, while allowing for consideration of both cost-effectiveness analyses, places primary importance on the average cost-effectiveness measure. The Manual warns that "[U]ndue focus on the incremental cost-effectiveness can give an impression that the cost of a control alternative is unreasonably high, when, in fact, the cost-effectiveness, in terms of dollars per total ton removed, is well within the normal range of acceptable BACT costs."

The EAB observed that, although MDEQ claimed that its cost-effectiveness analysis considered both average and incremental costs, MDEQ's cost-related justification for its decision to not require add-on controls appeared to rest entirely on the incremental cost considerations. The average cost-effectiveness for the control option selected by MDEQ (waterborne basecoat system with electrostatic applicators) without add-on controls was \$1,637/ton of VOCs abated. In comparison, the more stringent of the two other control alternatives considered would have reduced VOC emissions at an average cost of \$5,554/ton and an incremental cost of \$21,349/ton.

The second most stringent control alternative had an average cost of \$3,604/ton and an incremental cost of \$10,709/ton of VOCs abated.

EPA pointed out that, although MDEQ asserted it had considered both average and incremental costs, nowhere in its response to comments on the permit or in its briefs before the EAB did MDEQ provide an explanation of how it considered average cost-effectiveness. EPA argued that, therefore, MDEQ had failed to adequately explain on the record its decision to reject the top control alternatives presented in the BACT determination.

Reiterating the Draft NSR Manual's cautionary statement that reliance on the incremental cost only may give an impression that an alternative's cost of control is unreasonably high, the EAB observed that this was precisely what MDEQ had done by failing to explain its rejection of controls that apparently fell within the range of average cost-effectiveness that MDEQ had previously found acceptable in other BACT determinations. By failing to explain its analysis of average cost, MDEQ had failed to demonstrate that the rejection of an apparently more effective technology was truly justified on an economic basis. Therefore, the EAB remanded the BACT determination to MDEQ to provide further analysis on the issue and to make any revisions to the BACT determination that may be justified by the re-analysis.

Comparison of Other Facilities' Control Technologies Costs

MDEQ argued that an independent basis for its BACT determination can be found in the fact that no other facilities in the automotive industry had been required to install add-on controls for VOC emissions from either waterborne basecoat booth spray exhaust or from waterborne coatings. MDEQ essentially argued that the fact that no other facilities had been required to

install such controls justified the conclusion that the costs of add-on controls in GM's case were not within the range of costs borne by other sources of the same type.

The EAB stated that this argument ignored that BACT is a facility-specific determination and that while information on whether a control technology is used in other facilities may be useful, the primary focus is on the emission levels that would be achieved at the facility under consideration, and neither GM nor MDEQ had demonstrated that the technologies to control waterborne basecoat spray booth exhaust were rejected at the other facilities based on costs similar to GM's. EPA pointed out that the average costs per ton of VOC removed by both alternative control technologies (\$5,554/ton and \$3,604/ton) were significantly less than the \$7,000/ton average cost MDEQ had rejected as BACT in 1999 for waterborne basecoat spray booth exhaust control at another nearby GM facility in Lansing. The EAB stated that the absence of controls at other facilities and MDEQ's 1999 BACT determination at a similar facility alone were not dispositive because the cost-effectiveness of controls may vary greatly between facilities and because control technologies generally evolve over time and become more cost-effective. Therefore, the EAB remanded this issue to MDEQ to provide further analysis and make any revisions to the BACT determination as may be warranted.

Engineering Costs

The EAB next addressed EC/MEC's argument that MDEQ erroneously based the BACT determination, in part, on the undocumented assertion that engineering costs to install the add-on controls made the control technology less cost-effective. The EAB observed that, as was the case with the other cost issues, MDEQ simply provided no documentation in the record for the BACT determination on the engineering costs to substantiate its conclusion. Therefore, this issue was also remanded to MDEQ for further analysis.

Secondary Impacts

As noted above, the CAA and the PSD regulations require that BACT determinations take into account a control technology's "energy, environmental, and economic impacts or other costs," generally referred to as "secondary impacts." In rejecting add-on controls for emissions from the waterborne basecoat spray booth exhaust, MDEQ cited the secondary impact of increased NOx emissions that would result from the use of natural gas in the control technology. (NOx also contributes to the formation of ground-level ozone and natural gas is used as fuel in thermal oxidizer controls.) MDEQ acknowledged in its response to comments on the permit that it had "not received any specific calculations or quantities for secondary impacts" and argued in its brief before the EAB that it was an "uncontroverted fact" that the control would result in increased NOx emissions.

The EAB observed that the Draft NSR Manual provides that the secondary impact of other pollutants produced by control technologies should be considered in a BACT determination. The Manual states further, however, that such assessments should be based on quantified estimates of the actual levels to the extent possible. EC/MEC estimated that the secondary NOx emissions would amount to approximately 3.5 tons per year. The EAB stated that "[b]ased on the record before us, MDEQ has neither posited a contrary, more worrisome projection of increased NOx emissions, nor explained why a small increase in NOx emissions would drive MDEQ's BACT analysis."

MDEQ also cited "recent cost increases, supply limitations, and potential future shortages of natural gas" as support for its decision to reject add-on controls, but again provided no factual support for these claims, nor did it explain why these were not issues with respect to the emission controls to be employed elsewhere in the plant.

Therefore, the EAB remanded the “secondary impacts” issues to MDEQ for further consideration.

Inherently Lower Polluting Process

MDEQ finally argued that the application of low-VOC waterborne coatings is an inherently lower polluting process and that it would be inappropriate to use the same cost-effectiveness standards for both solvent-borne (high VOC) and waterborne coatings. The EAB interpreted this “argument as suggesting that the application of an inherently lower polluting process by itself satisfies the obligation to meet all applicable BACT requirements.”

The EAB stated that, although the Draft NSR Manual recognizes that there are instances where consideration of an alternate production process is warranted in a BACT determination, the mere fact that a production technology is inherently lower polluting than other technologies does not end the analysis. The EAB also noted that the Draft NSR Manual envisioned “consideration of not only add-on controls and inherently lower-polluting processes, but also combinations of these controls.” The EAB concurred with EPA’s argument that nothing in the CAA or the PSD regulations indicated that facilities employing lower polluting processes were exempt from the BACT requirements. Therefore, the EAB rejected MDEQ’s argument that GM’s application of an inherently lower polluting process obviated the need for a full BACT analysis.

Logical Grouping of Processes

EC/MEC finally argued that MDEQ was “initiating a major new BACT policy change by not requiring applicants to analyze a wide variety of paint process groupings to determine cost-effectiveness” and that the new policy established “a precedent that a ‘logical grouping’ does not

exist between basecoat and clearcoat emission units [in the automobile coating industry] when water-based paints are used.” EC/MEC’s argument was based on a memorandum issued by MDEQ’s director stating that MDEQ “will conduct cost-effectiveness BACT analysis on each step of the painting process and will only group those process steps where like paint formulations, volumes and methods of application are being employed.” The EAB explained that the Draft NSR Manual states that a “logical grouping” of new or modified emission units subject to PSD is required to undergo BACT review and encourages permitting authorities to evaluate logical groupings of emission units on a case-by-case basis.

EC/MEC offered no support for their assertion that MDEQ actually applied the memorandum to the GM permit application. In fact, the memorandum was issued eleven months after GM submitted its permit application to MDEQ. MDEQ and GM both asserted that the waterborne basecoat and clearcoat zones were grouped together as an emission unit in performing the BACT analysis. The EAB, therefore, concluded that EC/MEC did not meet their burden of showing that review of this issue was warranted.

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