November 18, 1997

TO: Jeff Gearhardt
Ecology Center of Ann Arbor

From: Alexander J. Sagady, Environmental Consultant

Attached please find the comments you requested I develop for Ecology Center of Ann Arbor concerning a permit application and proposed permit for the Ford Motor Company Miller Road Automobile Body Coating Process Facility

DRAFT

COMMENTS OF THE ECOLOGY CENTER OF ANN ARBOR CONCERNING A PERMIT APPLICATION AND PROPOSED PERMIT FOR THE FORD MOTOR COMPANY MILLER ROAD AUTOMOBILE BODY COATING PROCESS FACILITY

Presented to the Air Quality Division of the Michigan Department of Environmental Quality & the U.S. Environmental Protection Agency, Region V, Air and Radiation Division

November 18, 1997

Below please find the comments, analysis and review of the Ecology Center of Ann Arbor concerning the application and proposed permit for the Ford Motor Company Miller Road Auto Body Paintshop Replacement Facility. Please enter these comments into the public comment and hearing record in regard to the MDEQ Air Quality Division permit proceeding concerning this facility.

1 Matters Relating to Review of the Application for Prevention of Significant Deterioration Best Available Control Technology Requirements (PSD-BACT)

1.1 BACT determination for the Guidecoat Spray Booth

1.1.1 Introduction to Automatic Guidecoat Booth BACT Determination Issues

Ford has submitted an application to MDEQ-AQD in part for emissions and process controls from the guidecoat process for the proposed facility. Although the application embodies the use of high transfer efficiency spray guns and limits on the VOC content of the coating for this process, Ford's proposed configuration fails to incorporate stack emission controls for the 2 automatic guidecoat booth sections. Each of these 2 automatic booths has an expected discharge volume of 24,350 SCFM; Ford estimates in their BACT analysis that 102 TPY of VOC could be removed with add-on controls.

Based on a predicted cost of $11,500 per ton removal, Ford has rejected add-on stack controls as BACT in its application as economically infeasible. Ford further requests that MDEQ-AQD consider the cost of an alleged overcontrolling of the basecoat spray booth through the use of waterborne coatings as an offsetting economic factor in the economics consideration of the necesssary stack add-on controls for the two guidecoat automatic spray booths.

As of the publication date of its staff report, MDEQ-AQD has accepted the "Ford Proposal" as a valid determination of Best Available Control Technology for the Ford Permit, with certain qualifications which do not affect the ultimate result, as to the Ford application's portrayal of BACT for this facility.

Ecology Center of Ann Arbor contests the Ford's BACT analysis and MDEQ-AQD's acceptance of it and the MDEQ-AQD decision not to require, as PSD Best Available Control Technology, add-on controls for the two guidecoat spray booth emissions as set forth below.

1.1.2 The Record is Replete with MDEQ Findings that Stack Add-on VOC Controls for the Guidecoat Spray Booths are Economically Feasible

Notwithstanding Ford's position in its application, MDEQ-AQD takes the position in its September 11, 1997 staff report that stack add-on controls of the automatic guidecoat booth sections are economically feasible:

> "Staff believes that if the guidecoat booth is considered on its own control of the automatic bell section of the guidecoat booth may be economical." (09/11/97 Staff Report at P. 8)

As of August 6, 1997, MDEQ-AQD staff notes indicate:

> "Our new OAQPS BACT cost analysis shows that control of the automatic bells section of the guidecoat booth is economical and thus is required."

A September 12, 1997 version of the MDEQ-AQD Permit Evaluation form:

> "*Staff also feels that it is cost effective to control the automatic bell section of the guidecoat booth.* However, due to the applicant's willingness to provide greater emission reductions from the two topcoat booths portion of the coating process by the use of waterborne basecoats, staff feels that BACT for the overall coating process can be achieved by the applicant's proposal *even though it would be economical to control the emissions from the automatic bell section of the guidecoat booth.* EPA must however also signoff on this concept before it can go forward as BACT." (Form at P. 6) (italics emphasis added)

A MDEQ-AQD internal memo indicates:

> "We will recommend that this [Ford proposal] can be considered BACT *even thought the cost data shows that control of the guidecoat booth automatic section is in the economically feasible range."* (08/07/97 electronic mail from David Yanochko to Chad McIntosh, Dennis Drake and Dennis Armbruster)(emphasis added).

An MDEQ analysis shows 120.65 tons per year available for control compared to the understated 102 tons per year in the Ford analysis. Although Ford shows a range of 102-113 tons per year of auto-guidecoat booth emissions available for control, the Company nevertheless chose to perform their analysis at the lower emission bound, thus giving a higher cost-per-ton-destroyed figure.

Finally, MDEQ-AQD's OAQPS control cost calculation software printout in the file indicates a total annualized cost of $501,764 leading to a result of $4159 per ton VOC controlled on 120.65 tons per year of emissions.

All of the above constitutes, in the view of the Ecology Center of Ann Arbor, an explicit finding by MDEQ-AQD that stack add-on control for the automatic sections of Ford's proposed guidecoat booth must be considered economically feasible.

1.1.3 In Performing its BACT Review of Potential Stack Add-on Controls of the Guidecoat Spray Booth Automatic Sections, Ford Overstated the Costs of Such Add-on Controls in its Economic Feasibility Analysis; Ford's Capitol Cost Calculations for Auto Guidecoat Booth Section Controls Defy Conventional Engineering Judgement When Compared with Capitol Costs for the Add-on Controls Accepted by Ford for the Auto-Clearcoat Booths.

MDEQ-AQD staff have criticized the Ford's past cost calculations on controlling the guidecoat automatic sections. In an internal staff memo that contemplated a denial of Ford's application, MDEQ-AQD wrote in regard to comparable motor vehicle coating operations:

> "In addition, the applicant's data is also not consistent with that submitted by other similar sources. Staff is currently reviewing two applications for similar coating lines. Both are proposing to control all automatic (basecoat and clearcoat) sections of their topcoat booths. Both are proposing to do so without the need for an independent electrical substation for the control equipment and roof mounting of the control equipment. Also, the cost estimates for the basic various sized incinerators evaluated by Ford are much greater than those provided by the other applicants. As a result the applicant has not done a proper top-down BACT

analysis as is required by EPA." (07/17/97 MDEQ-AQD Internal Memo from Bill Presson to Dave Yanochko)

The volumetric gas flow rate from the two combined auto-section guidecoat booths is 48,900 SCFM(Ford Stack Table); the volumetric gas flow rate from the two combined clearcoat automatic booth sections is 99,000 SCFM for before control flow rates (MDEQ BACT review). As such, the pre-controlled gas flow for the purposes of economic feasibility calculations for the auto guidecoat booth is just under 50% of the pre-control flow from the combined topcoat automatic sections.

As noted in Ford's application, add-on stack emission control was determined to be economically feasible for the automatic sections of the clear-coat booth with their 99,000 SCFM before control gas flow. And Ford's analysis was that controlling the lower SCFM auto guidecoat sections was NOT economically feasible.

However, Ford's application relied upon precisely the same control device and auxiliary equipment costs and total capitol investment costs for each of these two control calculations for the carbon wheel followed by an RTO option. Both calculations used $3,186,406 for the costs of the control device and auxiliary equipment and $4,937,947 for the total capitol investment. Ford's calculations, showing the same capitol costs for carbonwheel/RTO control systems intended for pre-control gas flows in two different systems with gas flow rates varying by a factor of 2, cannot be correct. The sizing and thus the capitol costs of these control systems are highly dependent on the pre-control volumetric flow rates. The comparative capitol cost calculations in Ford's application between the automatic guidecoat sections and the automatic clear coat sections thus defy conventional engineering judgement.

The same credibility problem for Ford's application arises from Ford's calculations on direct control systems with no carbon wheel absorbtion system.

Ford's calculations show that the topcoat control system total capitol investment numbers to be only about 120% of the total capitol investment calculation for the auto-guidecoat direct incineration system, which has only about one half the pre-control volumetric gas flow of the auto clearcoat booth section. This again defies conventional engineering judgement.

The conclusion of the Ecology Center of Ann Arbor is that if Ford is willing to accept as economically feasible the stated capitol investment costs for stack add-on controls for the clear coat section, then they should also except such capitol investment costs for auto-guidecoat booth sections with 50% of the pre-control gas flows and that such add-on control systems be required as PSD-BACT compliant from an economic feasibility standpoint.

1.1.4 MDEQ-AQD Failed to Adequately Consider Other PSD-BACT Determinations in the Setting of the Guidecoat Process Emission Limitations

The proposed permit would set a guidecoat process emission limitation of 9.9 lbs of VOC per gallon of applied coating solids, as contained in Table 1. This emission rate is significantly high than the 2.37 lbs of VOC/GACS rate that has been incorporated into the Toyota Motors facility in Indiana. Ford has not offered an adequate explanation other than the auto-guidecoat booth control cost calculations which have been criticized as to why they cannot comply with a legally enforceable emission rate similar to the guidecoat limits for the Toyota Facility. The Toyota guidecoat emission limitations more closely defined BACT for the guidecoat process.

Table B of the September 11, 1997 MDEQ-AQD staff report serves up a 1.7 lbs VOC/GACS emission rate characterization for the guidecoat process. Yet nothing in the proposed permit makes such an overall emission limitation enforceable. Instead, as noted above, Ford's guidecoat process emission limitation is, in fact, 9.9 lbs of VOC per gallon of applied coating solids as depicted in Table 1 of the permit.

1.1.5 The Ford Application Attempts to have All of the Waterborne Basecoat Process Costs Ascribed to Emission Control Objectives Without Acknowledging or Analyzing Other Motivations for Adopting Waterborne Basecoat on the Basis of Non-Emission Control Objectives Instead of Solvent Basecoat Systems

In its application, Ford desires to have considered in the guidecoat BACT-setting process the substantial costs implicit in its switch to waterborne basecoats in the topcoat vehicle body coating process. However, nothing in the application provides a detailed explanation of the non-air quality-related advantages and disadvantages of this type of process modification.

For example, there is no detailed discussion in the Ford application of the relative merits of waterborne basecoats compared to solvent borne basecoats in the areas of product quality, appearance, durability, manufacturing control objectives, etc. Without such a discussion and disclosure, the Ford Application is incomplete since the reviewer is unable to tell whether or not the older solvent basecoats are not longer technically feasible in light of current company product-quality related goals. If the process modification is indeed being made to increase product quality and durability, then waterborne basecoat becomes the "floor" technology and does not embody "overcontrol" of volatile organic compound emissions.

For example, a recent article in Chemical and Engineering News features a discussion by an auto paint vendor of precisely these issues:

> "New waterborne base color coats not only offer better environmental performance, **but also give a deeper appearance unachievable with solvent-thinned material**, says Matoian [Michael Matoian, marketing director for the North American automotive coatings business unit of PPG]. He expects to see wider use of water-based color coats in the future." (C&EN, October 27, 1997, P. 43) (emphasis added)

If Ford will achieve important product quality competitive and consumer advantages with its waterborne basecoats, it would be wrong to ascribe all of the costs of this process to emission control objectives for the purpose of off-setting the failure to install PACT on another coating process. In addition, the technical feasibility analysis in the Ford Application would be incomplete and misleading because of its failure to acknowledge that the older style solvent-borne basecoat process was no longer capable to meeting current product performance objectives compared to the new waterborne basecoats.

1.1.6 The Ford Application and MDEQ-AQD's Analysis of it Failed to Properly Temper the BACT Decision-making Process with an Air Quality Planning/Environmental Concern about Ford's Excessive Consumption of the Southeastern Michigan "Growth Budget" under the Prevailing Ozone Maintenance State Implementation Plan

According to the September 11, 1997 MDEQ-AQD staff report, the proposed Ford facility would consume the majority of the remaining budget allowed in the ozone maintenance State Implementation Plan for Southeastern Michigan:

> "The budget includes a set amount of VOC emissions to account for major source growth in the area. The remaining available VOC emission growth budget totals 9.55 tons per day (includes emissions allocated to Chrysler Corporation Jefferson North Assembly Plant, Application No. 153-97, the public comment period began on August 19, 1997). The proposed facility [Ford] would emit 1376.5 tons per year of VOC and operate 4700 hours per year at 20 hours per day (235 days). This results in the emission of 5.86 tons per day, which will reduce the remaining 1997 VOC emissions budget to 3.69 tons per day." (MDEQ-AQD Staff Report, 09/11/97, P. 11)

Certainly the near-marginal ozone situation and the limited available SIP/maintenance budget available and Ford's consumption of the majority of this remaining

budget constitute environmental concerns that should affect decisions about the level of control that Ford is required to install.

However, neither the Ford application, nor the MDEQ-AQD review of the PSD BACT determination have any environmental factor consideration in the decision-making on the BACT determination or any consideration of this growth budget consumption issue.

1.1.7 The Environmental Protection Agency's Policy on Top-Down BACT Determinations Clearly Envisions Consideration and Adoption of BACT-Based Stack Emission Controls that are Economically Feasible on an Emission Unit Basis

Best Available Control Technology is defined as:

> "An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Clean Air Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results."

The U.S. Environmental Protection Agency has described a 5 step "top down" BACT determination process which must be incorporated in PSD-BACT decisions. The process involves identifying all control technologies, eliminating technical infeasible options, ranking the remaining technologies by control effectiveness, evaluating the most

effective controls and, finally, selection as BACT as the most effective means of control that is not rejected by the proceeding process.

EPA's "top-down" PSD-BACT process provides that determinations must be made on an "emission unit" basis:

> "In the second step, the technical feasibility of the control operations identified in step one is evaluated with respect to the **source-specific (or emission unit-specific)** factors. A demonstration of technical infeasibility should be clearly documented and should show, based on physical, chemical, and engineering principles, that technical difficulties would **preclude the successful use of the control option on the emissions unit under review**....." (From Step 2)
>
> "......all remaining control alternatives not eliminated in step 2 are ranked and then listed in order of overall control effectiveness for the pollutant under review, with the most effective control alternative at the top. **A list should be prepared** for each pollutant and **for each emission unit (or grouping of similar units)** subject to a BACT analysis." (From Step 3)
>
> "The most effective control option not eliminated in step 4 is proposed as BACT for the pollutant and **emission unit under review**." (From Step 5)
>
> (All emphasis is added)

1.1.8 The Ford Application's Exposition in its Best Available Control Technology Demonstration and MDEQ-AQD's Final Evaluation and its Proposed Permit All Fail to Comply with the Requirements for Best Available Control Technology for the Automatic Guidecoat Booth Sections and EPA's Top Down BACT Policy

In conclusion, the Ford Application and the MDEQ-AQD consideration of this application and the proposed permit fail to conform to the required "top down" PSD-BACT decisionmaking process in the manner as set forth below; as a result, all of these instruments are fundamentally flawed and should not be approved as proposed:

A. MDEQ-AQD specifically found that stack add-on controls were economically feasible under the EPA top down BACT policy. As a result, such controls are required. But the proposed MDEQ-AQD permit doesn't provide for such controls, either in an equipment requirement or as an emission limitation.

B. Ford has overstated the cost of controlling the auto-guidecoat booths by incorporating cost elements which should not be part of BACT economic review, such as the cost of substations, roof mounting, and property taxes.

C. Ford's estimate of the capitol costs of the required emission control devices for the automatic guidecoat booth sections are not credible when such costs are compared with the capitol costs required for the automatic topcoat booth sections and their pre-control gas flow which is over twice as high pre-control flows for the auto guidecoat sections. Ford's estimates indicating that the capitol costs are either the same or at most 80% of the cost of the top coat emission controls cannot be regarded as credible conventional engineering judgement.

D. By attempting to place a "bubble" over the automatic guidecoat booths together with the automatic basecoat sections, the MDEQ-AQD has failed to comply with the requirement of the EPA "top down" BACT policy to proscribe a PSD-BACT decision for each "emission unit" as specified in the policy.

E. Ford's application is incomplete because it has failed to acknowledge, on either an absolute or comparative basis, all important non-emission control factors in its decision to select waterborne basecoat that go to product performance, quality, consumer satisfaction, appearance and durability. Balanced consideration of all such factors might lead to a different decision that waterborne basecoats have become a "floor" technology because of product quality reasons and that an allowance for its costs allocated exclusively to emissions control [and a portrayal as "overcontrol" available for offsets] would no longer be proper in light of meeting non-emission control objectives in any technical feasibility and manufacturing analysis.

F. By failing to factor consideration of Ford's consumption of the majority of the remaining growth budget under the Southeastern Michigan Ozone Maintenance Plan into the decision on the level of PSD-BACT emission control that Ford is required to install, Ford and MDEQ-AQD have failed to comply with the requirement in the definition of BACT that mandates consideration of "environmental impacts" of pending PSD-BACT control technology decisions.

1.2 The BACT Automatic Guidecoat Booth Decision and Issues of Emission Reduction Trading

1.2.1 Ford/MDEQ-AQD are Clearly Contemplating a "Trade" of Alleged Greater Control of the Basecoat Booth Sections with Waterborne Coatings in Exchange for Less Stringent Emission Limitations for the Automatic Guidecoat Booth Sections

The record indicates that Ford is proposing its use of waterborne basecoat as an "overcontrol" in a trade for less control on the emissions from the automatic guidecoat booth sections; further, the record indicates MDEQ-AQD acceptance of this emission control trading scheme.

In its application, Ford stated:

> "Until recently, Ford's corporate practice for vehicle finishing used high solids, low solvent content coatings. In this project, Ford is implementing a corporate decision to move toward more innovative paint technology and reduce emission by process change through the introduction of waterborne basecoat. This innovation is roughly equivalent to our traditional all-solvent topcoat system with controls on automated booth sections. Equivalence is demonstrated in the context of emission limits achieved, or the measure of BACT performance. Considerable additional initial capital costs is incurred - estimated at $14.9 million, and annualized costs (including operation and maintenance) increase by $9.5 million, or a total of $95 million over the ten year amortization period used. Greater detail is provided in the topcoat analysis that follows."
>
> "Ford believes that these costs must be considered in conducting the BACT analysis, with respect calculating cost effectiveness of add-on systems commonly employed with solvent borne coating lines. The latter have inherently high emission potential, and allow greater VOC emission reductions when add-on controls are applied, thus producing relatively low cost-effectiveness results ($/ton VOC controlled). Failure to account for these real, added expenditures will provide strong disincentives to industry for process innovation, pollution prevention and waste minimizations - objectives which all regulatory agencies, environmental activists - and Ford - advocate. Further, failure to consider these costs and rely solely on cost effectiveness, without looking at marginal cost escalation, will serve to put Michigan industry at a disadvantage with other domestic and global competitors." (Ford application, BACT section P. 1-2)

For its part, MDEQ-AQD explicitly embraces Ford's request for trading:

"The applicant also evaluated control of the automatic bell section of the guidecoat booth using a carbon absorption unit followed by a thermal oxidizer and felt it was not economical and thus not required as a part of BACT. The applicant requested that staff consider the additional costs associated with the use of new water-based coatings in the topcoat section of the coating process in the BACT analysis for the guidecoat process. The applicant proposed that the use of water-based basecoats and no control of the automatic sections of the guidecoat booth results in lower combined guidecoat/topcoat emissions than would have been achieved by the typical industry practice of solvent-based coatings and control of all automatic booth sections. Staff agrees with the applicant that the proposed combination of water-based basecoats and uncontrolled guidecoat automatic sections results in lower emissions than would be achieved by the typical industrial practice of solvent based coatings and control of all automatic booth sections." (MDEQ-AQD 09/11/97 Staff Report, P. 7)

"However, due to the applicant's willingness to provide greater emission reductions from the two topcoat booths portion of the coating process by the use of waterborne basecoats, staff feels that BACT for the overall coating process can be achieved by the applicant's proposal." (Ibid, MDEQ report at P. 8)

"The applicant proposed a demonstration that the use of the waterborne basecoats and the reduction in the resulting VOC emissions (approximately 65 TPY) offsets the need for control of the automatic bell section of the guidecoat booth then BACT is applied (evaluated) over the entire coating process. They have attempted to show that considerable initial capital and recurring operating/maintenance costs are associated with their proposal to utilize waterborne coatings. In addition, the applicant provided a demonstration that the environmental benefits of the waterborne coatings are considerable. Therefore, staff agreed to consider the additional costs associated with waterborne basecoat when evaluating the appropriate reasonable costs level for add-on control." (Ibid, MDEQ report at P. 10)

1.2.2 Michigan's MDEQ-AQD Rules Specifically Prohibit the Use of Emission Reduction Credits in order to Evade Requirements for New Sources to Comply with PSD Best Available Control Technology Requirements.

On September 18, 1997, the U.S. Environmental Protection Agency published in the Federal Register (62 FR 181; Page 48972-48981) a proposed conditional State

Implementation Plan approval of Michigan's Emissions Averaging and Emission Reduction Credit Trading Rules.

> "Compliance with NSR and PSD Emission Limits: Michigan's rule prohibits the use of credits in place of installing equipment determined to constitute BACT or LAER requirements under the NSR program." (September 18, 1997 Federal Register Notice)

Michigan had specifically submitted the Emissions Averaging and Emission Reduction Credit Trading Rules to U.S. EPA in order to have them approved as amendments to the Michigan State Implementation Plan under the Clean Air Act.

Michigan has codified such a requirements concerning emission reduction credits at Michigan Administrative Code R 336.2204(2)(b):

> "Emission averaging and the use of emission reduction credits is prohibited for both of the following: ..... (b) In place of installing equipment determined to constitute a best available control technology requirement established under Section 165 of the federal clean air act or R 336.1702 or the lowest achievable emission rate established under section 173 of the federal clean air act or R 336.1220. Emission averaging or the use of emission reduction credits for the purpose of complying with a best achievable control technology emission rate established under section 165 of the federal clean air act or R 336.1702 or the lowest achievable emission rate established under section 173 of the federal clean air act or R 336.1220 shall be allowed only where a source, process, or process equipment has been properly installed and is properly operated and maintained." Michigan Administrative Code R 336.2204(2)(b)

1.2.3 MDEQ-AQD may not Issue a BACT Decision on Ford's Application that Embraces Trading the Stated Emissions Reductions from Basecoat Waterborne Coating Processes to Accommodate a Failure to Install Best Available Control Technology for the Automatic Guidecoat Stack Emissions; MDEQ-AQD's Acceptance of Ford's Proposal Constitutes a "Back Door," Site-Specific Attempt to Gain Approval of "BACT Trading" practices that U.S. EPA has Determined Would Not Be Allowed in Michigan's Trading Rule

MDEQ-AQD is contemplating by a back door approach a site specific decision to allow trading of an emission reduction from the basecoat booths for less than the best emission control for the automatic guidecoat booth sections. MDEQ-AQD clearly acknowledges as seen in the above discussions that it does believe that additional emission

control is economically feasible for the automatic guidecoat sections. Notwithstanding this clear finding, MDEQ-AQD is nevertheless clearly accepting the applicant's argument that it be allowed to credit a perceived overcontrolling of the basecoat emission unit in order to justify the undercontrol of the automatic guidecoat booth section.

That the Ford basecoat emission reduction credit has not yet been registered with any tracking/registry service does not obviate the specific prohibition against this type of trading scheme embodied in MDEQ-AQD Rule 1204(2)(b). MDEQ-AQD's proposed permit for Ford and its relaxation of stack add-on emission control requirements for the guidecoat automatic booth section by trading this requirement away clearly violates the U.S. EPA's requirement that new sources install and be regulated by requirements for Best Available Control Technology, and further violates Rule 1204(2)(b).

Finally, implicit in Ford's request to have the costs of waterborne basecoat technology considered in the automatic guidecoat booth control decision is the weakness of Ford's overblown cost projections for the guidecoat booth controls. If, indeed, Ford's estimation of such control costs were valid, the decision to allow no stack add-on controls for the auto guidecoat sections would be compelling and determinant in its own right. Ford's application, however, will not stand such scrutiny.

Moreover, it is possible that the actual reason for Ford's reticence over the guidecoat booth controls is the marginal situation of the application as to nitrogen oxide emissions and thresholds for more detailed NOX BACT review. It is possible that additional add-on stack controls could lead to increased scrutiny on the level of emission control required for NOX emission sources at the facility. To the extent that such BACT scrutiny for NOX emissions were required, and to the extent that such scrutiny resulted in decreased NOX emissions, the Ford analysis has failed to adequately consider environmental benefits that may accrued with more careful statement of potential NOX emissions.

1.3 The Emission Limitations and Operational Practices in the Proposed Permit for Purge/Cleaning Impermissibly Do Not Require Best Available Control Technology (BACT)

Ford is proposing VOC emissions of 300 tons per year and up to 2553 pounds/day of combined purging, cleaning and wipedown-related VOC emissions. However, over half of the 300 tons of VOC -- 176.2 TPY -- are predicted to come from emissions associated with purging paint spraying equipment, including the basecoat bells, reciprocators and robots, clearcoat bells and prime bells and robots.

However, Ford's predictions of emissions assume the maximum rate of production of 80 jobs per hour on each of the purging operations. This means that Ford has modeled its prospective emissions on the basis of a required purge operation after each car is painted.

However, the existing practice at the existing Ford facility indicates a different practice, as verified by MDEQ inspection:

> "The company will be instituting a new process called 'in-line vehicle staging' which will allow them to paint cars in large blocks of the same color. This will allow them to use less paint and less purge solvent." (MDEQ August 7, 1997 internal memo from Paul Collins to Mark Mitchell)

At the very least, Ford should have included "in-line vehicle staging" in its application as a required work practice within the meaning of the work practice provisions of the definition of best available control technology (see the definition above).

Ford's application should have incorporated "in-line vehicle staging" in its emissions characterization. It should be possible via the use of statistical techniques and daily averages to predict purging-related emissions at less than the specified 80 jobs per hour. As a result, the absolute level of predicted purging related emissions of 176.2 TPY and the overall purging/cleaning/wipedown emissions of 300 TPY are too high and do not reflect best available control technology for purging emissions. As such, the proposed permit allows significant and unnecessary latitude in emissions exceeding what is required as purging-related emissions for an adequate and approvable best available control technology determination.

Finally, the ability to combine purging, cleaning and wipedown-related emissions into one category allows less accountability for reducing each such type of VOC emission-related activity. The proposed permit should at least separate out the purging-related emissions from this group for greater accountability and assurances that the facility is incorporating work practices that reflect pollution prevention and best available control technology.

2 Volatile Organic Compound Emission Source, Stack and Process Characterizations

2.1 The Volatile Organic Compound (VOC) Emission Characterizations in the Ford Application are Inconsistent and Contradictory Between Various Characterizations Offered

In Ford's July 29, 1997 application on its projected summary emissions in the early part of the document, Ford lists the following emissions:

Process	VOC Emissions (TPY)	Pounds/hour
E-Coat	5.0	2.6
Sealer	75.1	38.3
Guidecoat	313.4	160.0
Topcoat #1	304.1	310.5 (topcoat combined
Topcoat #2	304.1	
Purge/Cleaning	300	2553 (pounds/day)
Blackout/Wax	36.8	18.8
Glass Installation	25.7	13.1
Final Repair	10.7	5.5
Natural Gas	3.8	1.9
Total	1378.6	678.4

The Gradient Corporation Air Toxics Analysis, September 4, 1997 contains Table 2, a Merged Stack Parameter Determinations chart, showing VOC emissions in pounds/hour by stack ID. The total emissions are 622.09 pounds per hour, which is about 9% less than the total emissions in the main part of the application. The specific process emissions in this table are set forth below:

Process/stack nos.	VOC lbs/hr From Table 2	VOC (lb/hour) from requested limit	% Diff
Sealer (1-4)	33.16	38.3	+16%
Guidecoat (5-11)	181.13	160.0	-12%
Topcoat #1 (12-25)	172.45	310.5 (comb)	-10%
Topcoat #2 (26-39)	172.45		
Blackout/Wax (40-43)	25.48	18.5	-27%

Final Repair (44-46)	0.88	5.5	+525%
RTO (47)	7.57		
CC Carbon Ad (48)	18.74		
Windshield/Blackout	10.23		
Total	622.09		

Note that if the Guidecoat, Topcoat and Blackout/Wax hourly stack emission rates emit at the VOC rates specified in the Table 2 Merged Stack Parameter Determinations table, the facility will violate its overall hourly emission rate limitations.

The Gradient document also contains a listing of emissions by toxicant which shows a total emissions of 603.99 pounds/hour on both Tables 1A and 1B. Table 3 shows total emissions at 600.62 pounds/hour for the toxicants examined.

More conflicting information with requested rates on VOC emissions comes with consideration of the process specific rates in an appendix to the application. The following table assumes 20 hour days.

Process	Requested Lbs VOC/day	lbsVOC/hr
Ecoat	42.9	2.15
Guidecoat	2667.4	133.37
Topcoat	5175.1	258.8
Blackout/Wax	122.2	6.11

More conflict arises looking at the process totals on Table 1B of the Gradient report as compared to the overall plant VOC emissions on an hourly basis:

Process	Lbs/hour toxic VOCs
Guidecoat	112.08
Basecoat	163.15
Clearcoat	93.71

(Basecoat plus clearcoat = 256.86)

The conclusion we draw is that the VOC-related information across all parts of the Ford Application and its supporting analysis cannot be readily reconciled on an emissions

characterization basis for hourly emission rates. It appears that the emissions inputs to the Gradient Air Toxics Analysis don't fairly state the largest potentially expected emission rates for all volatile compounds for the purpose of the Rule 230 analysis. In particular, emission inputs for the guidecoat and basecoat/clearcoat processes are significantly understated and thus significant doubt is cast upon the validity of Ford's Rule 230 demonstration. In particular, this generates a concern about the materials whose emissions are closest to the screening levels under the existing analysis: formaldehyde, aromatic hydrocarbon, ethylene glycol monobutyl ether and its acetate.

Yet, the VOC emissions in the same report in the Merged Stack Parameter Table show the facility will violate its requested, legally enforceable emission limits.

2.2 Other Emission Sources

The Application contains no detail concerning emissions from material storage tanks and the paint kitchen.

There is no information in the application about on-site volatile organic compound emissions from wastewater handling and paint sludge management. There is no information on whether Ford is required to comply with any pre-treatment discharge requirements before discharge to public sewers and potential VOC air emissions associated with any such equipment.

2.3 Emissions Characterization Issues Related to Substance Volatility

Appendixes to Ford's application contain sheets showing chemical constituents for the guidecoat and the topcoat paint applications, including "emission control factors" of 0.762 for all of the guidecoat constituents and 0.829 for all of the topcoat constituents. However the application contain few details concerning the derivation of these emission control factors that adequately explains potential physical factors that would influence potential emission rates.

First, the factors apply across the board for each of the chemical constituents in each of the coatings. In other words, Ford has determined that the emission control factors for guidecoat application will be the same in a specific coating process across a spectrum of volatile organic compound identities which will have varying molecular weights and thus varying volatilities and vapor pressures at in-plant ambient conditions. Ford's assumption about the non-chemical specific speciated differences in emission control factors is highly unlikely.

In the coating lines, the most volatile, lower molecular weight compounds will tend to be emitted from deposited coatings first under in-plant ambient conditions. Time relationships in the coating lines between the time of application, the time of further travel down a line and the time a vehicle enters a curing oven will influence the mix of emission rates and thus emission factors, all depending on substance volatility.

Ford's insistence that all specific chemical toxicants will be emitted with the same emission factors with the progression of the coated surfaces down the line defies an expectation based upon the physical properties of the substances that are used (as they related to volatility and temperature).

Ford's assumptions about uniform, non-speciated emission control factors can be expected to erroneously reduce emission rate estimates of potentially high volatility materials at earlier points in any given coating process. Such assumptions create the potential for errors in both overall VOC emission rate estimation and in specific chemical toxicant emission characterization as set forth in the Gradient Air Toxics Analysis.

Ford officials have acknowledged the effect of differing solvent emissions based on differing volatility:

> "Also, during our previous meetings, questions arose regarding the variance in capture efficiency which exist between primer surfacer and clearcoat. In explanation, this variance results primarily from the material composition differences in the two coatings. Primer surfacer is a urethane based material which contains a high concentration of pigment for color and improved sandability. This high concentration of pigment retards the flow of the material. The corresponding solvent package consists of "slow" solvents which will remain with the pigment/resin package as it flows over the surface of the vehicle. In contrast clearcoats have a very low pigment concentration and therefore flow much faster than primer surfacers. Clearcoat solvent packages therefore consist of "fast" solvent packages which match the faster flow characteristics of clearcoat. Because the "slow" solvent contained in the primer surfacer remain with the coating film longer, a high percentage is flashed off and emitted in the curing oven." (July 22, 1997 letter from Dennis J. Karl, Ford to Mark Mitchell, MDEQ-AQD)

Notwithstanding Ford's acknowledgment of the different volatility characteristics of the different solvents contained in their paints, they used the same "emission control factor" for all of the different chemical solvents contained in any one coating. In effect, the only acknowledgment Ford gives to differential volatility rates is to bulk VOC emissions and NOT to individual chemical solvent species for purposes of air toxics analysis.

3 Air Toxics Analysis

3.1 Merged Stack Parameter Determination

The Gradient Air Toxic analysis used the sealer oven stack as the one with the lowest merged parameter stack for the purpose of screening modeling for all of the stacks. Notwithstanding the requirements of the screening models procedure for dealing with multiple stacks, it should be pointed out that this stack has an uncharacteristic feature compared to all of the other process vent stacks. The sealer oven stack discharge is 290 degrees F and will have a significant buoyant characteristic that none of the other non-combustion stacks will have. All of the other non-combustion stacks have 80 degree F discharge temperatures and will have minimal buoyancy.

We question whether the sealer oven stack was sufficiently characteristic in order to use in the screening analysis.

3.2 Air Toxics Screening Levels and Misc. Errors in Analysis

The Gradient Air Toxics Analysis shows 330.00 ug/m3 for the MDEQ ITSL for ethylene glycol monoethyl ether acetate (CAS 111-15-9) when the value published by MDEQ as an interim level is actually 270.00 ug/m3.

The Gradient analysis shows 7,130.00 ug/m3 for the MDEQ ITSL for n-butyl acetate (CAS 123-86-4) when the value published by MDEQ as an interim level is actually 950 ug/m3.

The Gradient analysis shows 520.00 ug/m3 for the MDEQ ITSL for naphthalene (CAS 91-20-3) when the value published by MDEQ as an interim level is actually 500 ug/m3.

The Gradient analysis shows 800.00 ug/m3 for the MDEQ ITSL for monoethanolamine (CAS 141-43-5) when the value published by MDEQ as an interim level is actually 80 ug/m3.

The Gradient analysis shows different toxicant predictions for CAS number 64742-48-9, one for “heavy hydrotreated naphtha” and the other for “heavy naptha.” If these materials have the same CAS number it is presumed that they are the same material and thus the ambient exposures should be combined for the purpose of comparing to the ITSL.

The Gradient analysis does not contain any review for 2-hexyloxyethanol which is indicated as a paint constituent in Ford's application.

3.3 Air Toxics From the Regenerative Thermal Oxidizer as a Combustion Source

The Gradient Air Toxics Analysis does not contain any characterization of the toxic air contaminants that are emitted by the regenerative thermal oxidizer. The permit allows this combustion device to be operated with a destruction efficient floor of 95%. This means the permit can potentially allow 5% of the VOC materials introduced to be emitted as VOCs from this device or as other products of incomplete combustion.

Of particular concern is the potential for release of formaldehyde from this device, since this substance is already emitted by a number of sources at the site and presently modeled emissions produce ambient concentrations which are about 90% of the IRSL.

3.4 Incidental Benzene Contamination of Petroleum-Related Paint Constituents

Nothing in the application submitted by Ford or the analysis by Gradient deals with the potential for incidental benzene contamination of some of the petroleum based materials which are constituents of the paints contemplated for use.

Some of the petroleum-based solvents have some potential for benzene contamination as a result of petroleum refinery temperature-specific distillation processes. Each such distillate flow has a characteristic boiling point temperature range and the possibility of benzene contamination exists when the temperature range of a given material crosses the boiling point of benzene, which is 80 degrees C. For example, TSCA documents list hydrotreated heavy naphtha (CAS 64742-48-9), one of the materials expected to be contained in Ford's paints, as being evolved from distillation in the temperature range of 65-230 degrees C. Given the relatively low IRSL for benzene and the substantial number of petroleum distillate-based paints Ford intends to use, Ford should submit testing information to determine the actual benzene content of all paints expected to be used that contain petroleum distillates, naptha, xylene and toluene. Such a course of action would have the added benefit of more carefully characterizing the risks to workers from any benzene exposure that may occur as a result of workplace operations.

3.5 Isocyanate-Related Emissions

Nothing in the Gradient Air Toxics Analysis or in the Ford Application discusses the use of and potential emissions of isocyanate-based chemical toxicants that are sometimes associated with urethane coating and chemical reactant systems.

4 Review of Odor Impacts

Given the pre-existing substantial odors and community complaints of odors from the entire Rouge Steel/Ford complex, some concern for the odor impact of the proposed facility is warranted. Concern for odors is buttressed by the fact that the proposed facility is expected to substantially increase total VOC emissions compared to the actual baseline emissions from the existing coating facility.

While a review of some of the most significant chemical solvent emissions did not show one hour ambient concentrations above the odor threshold, the potential for odors from shorter (5-10 minute exposures) is still a concern. Unfortunately, no information was available on odor thresholds for all of the petroleum distillate materials that will be emitted. In addition, some of the materials that are chemically similar, such as the alcohols, may be perceived as an aggregate odor problem rather than being characterized by any one particular chemically emission.

MDEQ-AQD should do some comparative review of auto plant emissions found in other locations that have caused community odor complaints with respect to the Ford facility to determine the likelihood of expected public odor complaints. In addition, field staff should more carefully characterize existing odor complaints in the community adjacent to the Ford facility and determine their emission source.

5 Proposed Permit Provisions

Permit condition #39 contains no detail on how the 90% purge solvent recycling provision is required to be measured or the means by which this result will be achieved. If specific operational practices and equipment is required for the 90% result to be achieved, then specific provisions should be incorporated into the permit.

Permit condition #41 does not provide a specific emission factor for NOX emissions with which Ford must comply. Given the marginal situation depicted in the staff report between expected emissions and emissions justifying full PSD NOX BACT review,

more specificity should be incorporated into the permit so there can be no argument if Ford's emissions are greater than predicted by the emission factors in their application.

Permit condition #47 requires temperature monitoring of the thermal oxidizers, but fails to require monitoring and recordkeeping of gas inlet flows, fan speeds or some other surrogate of the requirement to maintain a 0.5 second retention time.

Permit conditions # 42, 43 and 46 are written in such a way as to undermine the specific requirements for compliance merely by allowing the preparation of a malfunction abatement plan. Preparing and implementing a malfunction plan is no substitute for having specific performance requirements written into the permit as legal requirements that ensure operation of air pollution control equipment. As written, the "alternate" plan provision undermines the enforceability of the permit.

6 Wayne County Issues and Permit Amendments

Condition #13 of the permit should be more carefully written to truncate the ability of the Wayne County Air Quality Management Division to waive or substantially change requirements of the proposed permit. The record contains some disturbing information as to the relationship between the Wayne County agency and the applicant:

> "Existing facility compliance status in question via conversation with Wayne County and Ford officials. Wayne County issued a revised permit consolidating several state permits. In doing so they:
>
> relaxed several existing LAER determinations
> significantly increased particulate emission limits
> significantly increased VOC emission limits
> added additional equipment
> increased productions limitations
> eliminated several emission limits all together
>
> it appears, without performing a proper netting demonstration and/or a PSD review, with a public comment period. Wayne County does not have a file to track the above information." (5/6/97 Internal MDEQ-AQD Document entitled "Issues - Ford PSD Application"

From a citizen and public decisionmaking perspective we express deep concern about this type of process again being carried out by the Wayne County Air Quality

Management agency. The permit should be amended to ensure that such an event does not happen again.

7 A Thirty Day Stay of the Proposed Permit is Requested if MDEQ-AQD Intends to Issue the Ford Permit Without Resolving the Serious Technical and Legal Problems Identified in the Ecology Center of Ann Arbor Comments

The Ecology Center of Ann Arbor has identified serious technical problems, unresolved issues of Federal Clean Air Act compliance and other serious matters in regard to the proposed Ford permit. If it is the decision of MDEQ-AQD to go forward and issue a final decision on the proposed permit without resolving the serious issues that have been identified, the Ecology Center of Ann Arbor requests, as a public commentor on the proposed Ford permit, that a provision be inserted in the permit that stays the effective date of the final permit action for a period of 30 days consistent with the requirements for appeal of unresolved issues pursuant to 40 CFR 124.19. This will allow an appeal by any commentor to the U.S. Environmental Protection Agency Environmental Appeals Board in Washington, DC.

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