EPA-450/3-79-030b

Automobile and Light-Duty Truck Surface Coating Operations-Background Information for Promulgated Standards

Emission Standards and Engineering Division

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air, Noise, and Radiation
Office of Air Quality Planning and Standards
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ENVIRONMENTAL PROTECTION AGENCY

Background Information
and
Final Environmental Impact Statement
for
Automobile and Light-Duty Truck
Surface Coating Operations

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1. The promulgated standards would limit emissions of volatile organic compounds from new, modified, and reconstructed automobile and light-duty truck surface coating operations. Section 111 of the Clean Air Act (42 U.S.C. 7411), as amended, directs the Administrator to establish standards of performance for any category of new stationary source of air pollution which ". . . causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare." All regions of the United States would be affected by these standards except the Northwest.

2. Copies of this document have been sent to the following Federal departments: Labor; Health and Human Services; Education; Defense; Transportation; Agriculture; Commerce; Interior; and Energy; National Science Foundation; and the Council on Environmental Quality; to members of the State and Territorial Air Pollution Program Administrators (STAPPA) and the Association of Local Air Pollution Control Officers (ALAPCO); to EPA Regional Administrators; and to other interested parties.

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CHAPTER 1

SUMMARY

On October 5, 1979, the U.S. Environmental Protection Agency (EPA) proposed standards of performance for automobile and light-duty truck surface coating operations (44 FR 57802) under authority of Section 111 of the Clean Air Act. Public comments were requested on the proposal in the FEDERAL REGISTER. There were a total of 22 commenters. Five presentations were made at the public hearing and seventeen additional comments were received after the hearing. The majority of comments were received from representatives of automobile and light-duty truck manufacturers and coatings suppliers. Also commenting were State air pollution control agencies, trade and professional associations, and several Federal agencies. The comments that were submitted, along with responses to these comments, are summarized in this document. A list of commenters their affiliations, and the corresponding docket reference presented in Table 2-1. The summary of comments and responses serves as the basis for the revisions which have been made to the standards between proposal and promulgation.

1.1 SUMMARY OF CHANGES SINCE PROPOSAL

The significant changes to the standards involve the monitoring and reporting requirements. Affected facilities will now be required to determine the mass of VOC per liter of applied coating solids each calendar month using a volume weighted average VOC content of applied coating instead of the arithmetic average proposed. The use of a volume weighted average will more accurately reflect actual use of different coatings and allow sufficient flexibility for use of special coatings and colors in small volumes. In addition, to demonstrate

continual compliance, the owner or operator of affected facilities will be required to calculate the volume weighted average mass of VOC per liter of applied solids for each calendar month and report, within ten days, any month in which the facility is not in compliance with the standards. In addition, the owner or operator of an affected facility which utilizes incineration to meet the standards must submit reports quarterly on incinerator performance.

Two comments were received requesting that the standards be revised to exclude coating of plastics on automobile bodies. EPA has reviewed the data available regarding the coating of plastics and has concluded that the comments are justified. Therefore, the coating of plastic components or all-plastic bodies on separate coating lines has been excluded.

Data received during the comment period indicated that the effect of line purging on transfer efficiency was not adequately addressed. EPA has reviewed the data on which the proposed standards were based and the new data submitted by commenters and has concluded that changes were required in the transfer efficiencies used in the determination of the numerical emission limits. The baseline transfer efficiencies for air atomized spray systems of waterborne coatings have been changed from 40 percent to 39 percent for guide coat and from 40 percent to 37 percent for topcoat operations. As a result, the emission limit for guide coat operations has been changed to 1.40 kilograms of VOC per liter of applied coating solids and for topcoat operations to 1.47 kilograms of VOC per liter of applied coating solids. In addition, the standards have been changed to include transfer efficiencies for spray systems which utilize line purging and do not collect any of the purged material and for

systems that collect 100 percent of the purged material.

Reference Methods 24 and 25 were proposed along with the standards for automobile and light-duty truck surface coating operations. Subsequently, these reference methods have been promulgated separately from the standards for automobile and light-duty truck surface coating operations (__FR____). A revised version of the proposed Method 24 (Candidate 2) will be used as the reference method to determine data used in the calculation of the VOC content of coatings since conclusive data were presented by commenters showing that certain coatings representing a significant portion of those in use could not be distilled as required by the proposed Method 24.

Several procedural and editorial changes have been made to the promulgated Method 24 and Method 25 as proposed in order to clarify and to improve the sampling and analytical procedures. These changes were based on additional information obtained by EPA from experience with the methods and on the public comments received. In addition, procedures have been added to ensure that analytical data fall within established precision limits. Also, to eliminate the possibility of an erroneous determination of noncompliance with waterborne coatings, a procedure has been added to modify analytical results obtained with waterborne coatings.

Based on comments from manufacturers that ASTM 2697 has only been shown to be applicable to architectural coatings, the laboratory procedure for determining volume fraction of solids has been eliminated. Method 24 now requires that the volume solids be determined from coatings manufacturers' formulation data. In addition, the coatings classification step in the proposed method was eliminated because industry comments indicated that it was only necessary to separate waterborne and solvent-borne coatings.

The majority of the changes to Method 25 relate to calibration requirements and are meant to improve quality assurance and simplify the daily operation of the analytical equipment. This is accomplished by requiring performance test reference values to determine whether the performance of the analytical equipment is still acceptable.

Finally, since only minimum performance specifications for several important system components were provided, an addendum which lists specific information regarding system components found to be acceptable has been added to the method to provide guidance for users. Detailed comments and responses regarding Methods 24 and 25 are presented in Reference Methods 24 and 25 - Background Information for Promulgated Test Methods (EPA-450/3-79-030c).

1.2 SUMMARY OF THE IMPACTS OF THE PROMULGATED ACTION

While a number of changes were made in the standards since proposal, the affected facilities and the regulatory alternatives on which the standards are based remain the same. The environmental, energy, and economic impacts remain as presented in the document, Automobile and Light-Duty Truck Surface Coating Operations - Background Information for Proposed Standards (EPA-450/3-79-030[BID]).

1.2.1 Alternatives to the Promulgated Action

The regulatory alternatives are discussed in Chapter 6 of the BID. The analyses of these alternatives remain as outlined in the BID.

1.2.2 Environmental and Energy Impacts of the Promulgated Action

The change in the emission limits for guide coat and topcoat operations and the exclusion of the surface coating of plastic components and of all-plastic automobile bodies will have negligible effect on the environ-

mental or energy impacts ascribed to the standard as originally proposed. Thus the environmental and energy impacts of the standards remain as discussed in Chapter 7 of the BID.

1.2.3 Economic Impact of the Promulgated Action

The economic impact of the promulgated action remains unchanged from that of the proposed standards as described in Chapter 8 of the BID.

1.2.4 Irreversible and Irretrievable Commitments of Resources

The impact is discussed in Chapter 7 of the BID and remains unchanged since proposal.

CHAPTER 2

SUMMARY OF PUBLIC COMMENTS

The list of commenters and their affiliations is shown in Table 2-1 of this chapter. In addition to the five presentations at the public hearing, seventeen letters were received with comments on the proposed standards and the document Automobile and Light-Duty Truck Surface Coating Operations - Background Information for Proposed Standards (EPA-450/3-79-030 [BID]). The comments on the proposed standards have been combined into the following five major areas:

1. General
2. Emission Control Technology
3. Economic Impacts
4. Legal Considerations
5. Reference Methods and Monitoring

The comments, issues, and responses to them are discussed in the following sections of this chapter. A summary of the changes to the regulations is included in Section 1.1 of Chapter 1.

The comments specific to the test methods, Methods 24 and 25 and the responses to them are discussed in detail in Reference Methods 24 and 25 - Background Information for Promulgated Test Methods (EPA-450/3-79-030c).

2.1 GENERAL

2.1.1 One commenter recommended that "Engineering Design Changes" defined as "those minor changes made during a model year to improve the quality or performance of the finished product" be exempted under the modification section (§60.395) to provide for those minor changes made during the model year to improve quality or performance of the finished product.

No changes were made in the standard as a result of this comment. While requested, the commenter did not supply data to support his recommendation. EPA, therefore, re-examined the available data. Under §60.397, changes in the application of coatings to increase coating film thickness are already exempted. In addition, minor operational changes which would include design changes are allowed as long as emissions are not increased. Therefore, EPA has concluded that sufficient relief is already provided in the standards and "engineering design changes" will not be specifically exempted.

2.1.2 A commenter requested specific exemption under the modification section (§60.395) for changes made to an existing facility in order for them to comply with State Implementation Plans (SIPs).

If changes made to a facility in order to meet requirements of a SIP result in reduced emissions, it would not fall under the modification clause. If the "fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new affected facility," then the changes could come under the reconstruction clause. However, the general provisions also provide for a case-by-case determination of technical and economic feasibility before a reconstructed facility is required to meet the NSPS. EPA believes that this provision provides sufficient relief from the reconstruction clause and no further specific exemption is required.

2.1.3 One comment indicated that the standards should include all sources of VOC emissions from an assembly plant.

As originally stated under "Selection of Affected Facilities," the prime coat, guide coat, and topcoat operations account for more than 80 percent of the uncontrolled VOC emissions from automobile and light-duty

truck assembly plants. Final topcoat repair, cleanup, and coating of various small component parts account for the remaining VOC emissions and may be much more difficult to control for several reasons. Waterborne coatings cannot be used for final topcoat repair because the temperature required to cure waterborne coatings may damage heat sensitive parts which have been attached to the vehicle by this stage of production. Solvents are required for equipment cleanup and the cost of add-on controls may not be reasonable for these numerous small operations located throughout the plant. The use of waterborne coatings for topcoat operations on small component parts has not been adequately demonstrated. Often, these parts are plastic and the coating of plastic parts on a separate coating line has been exempted for reasons discussed in 2.1.9. Therefore, the standards will not be changed to include these additional sources of VOC at this time.

2.1.4 One commenter requested that the term "guide coat" be changed to "primer-surfacer" in order to better relate these standards with the majority of State regulations which have limits expressed for "primer-surfacer" operations.

EPA feels that the term "guide coat" is generally accepted by industry and since a specific definition is given for the term (§60.391), there should be no confusion created by its use. The term "primer-surfacer," therefore, will not be used.

2.1.5 One commenter recommended that the definition of transfer efficiency exclude line purging and that transfer efficiency for air atomized spray systems for waterborne coatings should be 36 percent.

The transfer efficiency data originally collected for these standards and presented in the background information document (BID) included the

effect of line purging but it was believed that the effects of line purging on transfer efficiency were insignificant. Specific data on line purging were not available from automobile manufacturers when the BID was being prepared. The transfer efficiency data provided in the BID and subsequently used in developing these standards were generally collected by methods that did not identify the effect of line purging.

Studies submitted by the commenter in support of his position were conducted at one of his existing facilities and demonstrated that line purging can have an important effect on transfer efficiency. The data indicated that the transfer efficiency for waterborne coatings applied with air atomized spray systems was 39 percent with no line purging. The data were obtained by block painting vehicles without a color change, i.e., no line purging. The data also indicated that the transfer efficiency for waterborne coatings applied with air atomized spray systems was 30 percent with each vehicle coated with a different color coating, i.e., line purging after each vehicle. Considering the average color schedule at this plant, an overall transfer efficiency with line purging but no purge capture was estimated to be 36 percent.

Subsequent discussions with and tests by the manufacturer indicated that the purged material could be effectively captured. A system using automatic purge capture is installed at one existing facility and a system using manual purge capture is installed at another existing facility. It was determined that if partial purge capture, i.e., approximately 50 percent, were taken into account an overall transfer efficiency of 37 percent can be achieved.

After evaluating these data, EPA agrees with the manufacturer that changes should be made to the standards. The baseline transfer efficiency

for an air atomized spray system using waterborne coatings and partial purge capture has been changed from 40 percent to 37 percent. The baseline transfer efficiency for an air atomized spray system without purge has been changed from 40 percent to 39 percent. As the emission limits for guide coat and topcoat operations were based on air atomized applied waterborne coatings, the limits for these operations have been changed from 1.36 kilograms of VOC per liter of applied coating solids to 1.40 kilograms of VOC per liter of applied coating solids for guide coat operations (typically no purge conditions) and to 1.47 kilograms VOC per liter of applied coating solids for topcoat operations (assuming line purge with partial purge capture).

The standards have also been changed to include tables of transfer efficiencies for application systems which collect 100 percent of the purged material and for systems which purge after each vehicle and do not collect any of the purged material. In addition, as the transfer efficiency for air atomized spray of solvent-borne coatings is typically higher than that for waterborne coatings, separate transfer efficiencies have been included for solvent-borne and waterborne coatings applied by air atomized spray systems.

Provisions have also been made to allow the use of appropriate transfer efficiencies for systems with different purge and purge capture conditions.

2.1.6 Comments were received which requested exemptions for "special paints and colors" that are used in small volumes because the arithmetic average of all coatings as required in the proposed standards could result in values greatly different than a volume weighted average.

EPA agrees with the commenters and a change has been made which

will result in allowing more flexibility in the use of "special paints and colors" in small volumes. Originally, an arithmetic average was used in the proposed standards for determination of the "VOC content of all coating materials used in each surface coating operation that uses spray application." EPA believed that the arithmetic average would closely approximate a volume weighted average of VOC content and would simplify compliance calculations. However, data from recent lowest achievable emission rate determinations indicate that an arithmetic average is not an acceptable approximation of a weighted average for VOC content of topcoating materials planned for use in new plants. A major factor in this change is a trend in the industry toward the use of metallic base coat-clear coat finishes. These finishes have higher VOC contents than solid color finishes and their use will result in inaccuracies if an arithmetic average is used to determine the average VOC content of all topcoating materials. Consequently, the standards have been changed to require a volume weighted average to determine the VOC content of coating materials. EPA believes that the use of a volume solids weighted average for VOC content determinations will avoid misleading values and allow sufficient flexibility for the use of special paints and colors in small volumes. Therefore, no specific exemptions are provided in the standards for special paints and colors.

2.1.7 One comment suggested that the standards should specifically exempt final topcoat repair. This suggestion was based on the fact that waterborne coatings are not available for final off-line topcoat repair.

The affected facilities for these standards, as defined in §60.390, are "each prime coat operation, each guide coat operation, and each topcoat operation" of an automobile or light-duty truck surface coating line. This definition includes only the main surface coating operations

and does not include final off-line topcoat repair for reasons discussed in "Selection of Affected Facilities." Thus, EPA believes it is sufficiently clear that final off-line topcoat repair is not covered by the standards and no changes will be made to the standards.

2.1.8 Several commenters recommended that EPA adopt the CTG units for use in the proposed standards as most existing State regulations for automobile coating operations are written in those units. It was stated that emissions limits for existing plants in one set of units and emissions limits for new, modified, or reconstructed plants in another set of units could lead to confusion and result in erroneous calculations.

EPA agrees that there would be some advantage in retaining the CTG units for the new source performance standards. However, to facilitate equivalency determinations, VOC emissions reported in terms given in the CTG document Control of Volatile Organic Emissions from Existing Stationary Sources - Volume II: Surface Coating of Cans, Coil, Paper, Fabrics, Automobiles, and Light-Duty Trucks (EPA-450/2-77-008 [CTG]) must be recalculated to include transfer efficiencies and the volume of solids. Consideration of transfer efficiencies is significant because the standards can be met by using higher solids content coatings if the amount of overspray is kept to a minimum. In addition, this format allows equivalency determinations for systems using solvent-borne coatings in combination with high transfer efficiencies or capture systems and control devices. Therefore, the advantage to the CTG format is outweighed by the necessity of including transfer efficiency to obtain an accurate measure of the VOC emissions from surface coating operations. The units will remain as written in the standards.

2.1.9 Two commenters requested that the standards be revised to exclude

the coating of plastics used on car bodies.

Data provided by the commenter indicated significant problems associated with the use of surface coatings designed for sheet metal on plastic car bodies or parts. A summary of these problems follows:

(a) Ruptures and delaminations in the plastic substrate. Incidence of these defects is partially determined by the temperatures to which the plastic is subjected with the number of defects increasing with increasing temperatures. One automobile manufacturer has found the incidence of these defects unacceptable at temperatures 130°C(270°F). The incidence of these problems can also be increased by solvents used in enamels and laers.

(b) Cracking, pitting, and shrinking of adhesives used for structural joints between body panels. These defects occur at temperatures over 130°C (270°F). In those cases in which the joints are also coating-finish surfaces, any of these defects would be unacceptable. Also, exposure of the joint material to temperatures over 130°C (270°F) could affect the strength and flexibility of the bond.

The temperature required to cure topcoats applied with waterborne coatings is approximately 160°C (325°F). This is significantly in excess of the 130°C (270°F) limit for plastic parts and materials. Therefore, since current industry practice is to coat plastic bodies and components on separate coating lines, the standards have been changed to exclude these operations. However, plastic body parts that are attached to the metal body before the body is coated do not cause the coating operation of that body to be excluded.

2.1.10 The projected adverse environmental impacts of waterborne coatings were questioned by one commenter. It was stated that the solid waste

impact did not reflect reality as waterborne coatings contain materials which are more soluble in water than the materials currently used in solvent-borne coatings.

The commenter did not provide adequate data to document the claim that waterborne and high-solids coatings have greater water and solid waste impacts than estimated by EPA. Such data were requested from the commenter, but have not been received. However, EPA has re-examined the assessment of water and solid waste impacts made in the BID and has found no evidence that the sludge from waterborne coatings is more difficult to dispose of than the sludge from solvent-borne coatings. The impacts summarized in the preamble to the proposed regulation are considered correct and no changes to the standards are required.

2.1.11 One commenter pointed out that, in previous work, EPA had included a list of "regulation excludable solvents", which were not considered in this standard. The commenter recommended that these solvents be specifically excluded in the definition of VOC. EPA's "Recommended Policy on Control of Volatile Organic Compounds," 42 FR 35314 (July 8, 1977), 44 FR 32042 (June 4, 1979), and 45 FR 48942 (July 22, 1980), exempts the following compounds from regulation under State Implementation Plans because they have negligible photochemical reactivity: methane, ethane, 1,1,1-trichloroethane (methyl chloroform); methylene chloride; and the following chlorofluorocarbons (CFC) or fluorocarbons (FC): trichlorofluoromethane (CFC-11); dichlorodifluoromethane (CFC-12); chlorodifluoromethane (CFC-22); trifluoromethane (FC-23); trichlorotrifluoroethane (CFC-113); dichlorotetrafluoroethane (CFC-114); and chloropentafluoroethane (CFC-115). These compounds were not ignored in the NSPS for automobile surface coatings. Rather, they were taken into

account in the definition of VOC added to 40 CFR 60.2, which defines VOC as organic compounds which participate in atmospheric photochemical reactions or which are measured by an applicable reference method.

This VOC definition exempts organic compounds which have a negligible photochemical reactivity even though the reference methods specified for VOC emissions do not provide procedures for excluding these compounds when emission measurements are made. While this may appear inconsistent, EPA believes this approach is reasonable and practical. This is because there is currently little, if any, known use of the exempt compounds in automobile coatings. Also, use of incineration devices and bake ovens can oxidize non-reactive solvents to a reactive form, thus further reducing the likelihood of non-reactive solvents being present in automobile coating plant emissions. Furthermore, while selective test methods are available which could be used to exclude the exempt compounds, these test methods which would require sophisticated gas chromatographic and/or mass spectographic techniques, are more expensive and complicated than the reference methods. EPA would, however, allow these techniques as alternative methods if an owner or operator were to use a coating which contains a significant amount of an exempted compound.

In addition to the above, the VOC definition is consistent with EPA's continuing concern over the possible environmental effects from emissions of certain of these compounds and it should be understood that EPA is not precluding the possible future regulation of these compounds.

It should be noted that EPA has proposed a NSPS for organic solvent cleaners (45 FR 39766, June 11, 1980) which would limit emissions of the reactive volatile organic compounds trichloroethylene and perchloroethylene as well as methyl chloroform, methylene chloride, and trichlorotrifluoroethane

(CFC-113) from new, modified, and reconstructed organic solvent degreasers. If these standards are promulgated, EPA will develop a guideline document for States to use in developing regulations required under Section 111(d) for existing organic solvent cleaners that use any of the designated compounds.

Whether, and to what extent, methyl chloroform and methylene chloride are human carcinogens or have other toxic effects, and to what extent methyl chloroform, CFC-113, and other CFC's deplete the ozone layer, are issues of considerable debate. Detailed health assessments of methyl chloroform, methylene chloride, and CFC-113 are being prepared by EPA's Office of Research and Development. These assessments will be submitted for external review, including a review by the Science Advisory Board, prior to promulgation of the regulations and the proposal of EPA guidance to States for developing existing source control measures. The extent to which the preliminary findings are affirmed by the review process may affect the final rulemaking for new as well as existing sources.

Until these issues of environmental impact are fully resolved, EPA remains concerned that the exemption of these chemicals from regulation may be misinterpreted as an encouragement for the substitution of exempt for nonexempt solvents with resulting large increases in emissions of pollutants that may have adverse health impacts.

2.2 EMISSION CONTROL TECHNOLOGY

2.2.1 Two comments recommended that EPA consider revising the baseline transfer efficiency value of 40 percent, which was used in determining the emission limits. It was stated that modified or reconstructed facilities would have particular difficulties in obtaining 40 percent transfer efficiency.

At the time the 40 percent transfer efficiency value was chosen for use in the standards, it was based on the latest industry data. Since that time tests have indicated that transfer efficiency at retrofitted facilities using waterborne coatings is approximately 30 percent, but that the transfer efficiency at a new facility is 37 percent with partial block painting and partial purge capture. Changes have been made in the standards to reflect these data (see 2.1.5). However, no changes were made to reflect different transfer efficiencies for new affected facilities versus modified or reconstructed affected facilities. It is believed that the baseline transfer efficiency can be achieved at modified or reconstructed affected facilities with proper design which incorporates the experience gained at existing facilities.

2.2.2 Two commenters objected to the solids weighted average method of determining the VOC content of prime coat material because of problems they anticipate with "flow control" additives which are normally added to the electrodeposition process (EDP) tank to maintain or improve the application process. These additives are added to the tank on a periodic basis and the commenters claim that they should not be included when determining VOC emissions because of the potential wide fluctuations in the calculated VOC emissions.

The prime coat emission limit is based on a volume solids weighted average VOC content of all makeup material including flow control additives added to an EDP tank during one calendar month. Flow control additives are high in VOC content but are added only periodically. If a short time period (such as a day) is used to calculate VOC emissions, the effect of flow control additives could be significant causing wide daily fluctuations. A longer averaging period dampens these fluctuations. Information

supplied to EPA during the development of these standards indicates that makeup material which includes flow control additives is available to meet the emission limit of 0.16 kilograms of VOC per liter of applied coating solids averaged over a calendar month. Therefore, a volume solids weighted average over a calendar month period allows plants to achieve the proposed value (including flow control additives) and flow control additives will continue to be included when determining VOC emissions from the prime coat operation.

2.2.3 These commenters also objected to the proposed emission limit for prime coat operations which is equivalent to 1.2 pounds of VOC per gallon of coating minus water claiming that such prime coat materials are not available.

As indicated in 2.2.2, data from one automobile manufacturer indicate that prime coat material including flow control additives is available and operating experience demonstrates that the emission limit calculated on a calendar month basis for prime coat operations is achievable. Therefore, the emission limit will not be changed.

2.2.4 One commenter opposed the statement in the preamble that predicted that high solids coatings will be technically demonstrated for use in the auto industry by 1982. The commenter stated that "current development forecasts indicate that it will be 1984 at the earliest before high solids topcoat coatings will generally be available for use in automobile and light-duty truck assembly plants."

EPA agrees that the projection of a date by which a product will be available depends on a number of factors and that high solids topcoat coatings may not be available by 1982. The reference to the year 1982 is incorrect and should read "in the near future". However, this does

not affect the regulatory alternative, waterborne coatings, on which the standards are based.

2.2.5 One comment contained a statement that since spray booth exhaust incineration is not technically feasible it should not be considered as an alternative control technique. The commenter claimed that the huge volume of air with low VOC concentration makes incineration unreasonable and impractical.

EPA has reviewed the available data and believes that spray booth exhaust incineration is technically feasible. As originally stated under "Selection of Best System of Emission Reduction," there are no facilities that use thermal or catalytic incineration to control VOC emissions from spray booths. In addition, it was stated that the reason incineration is not used is not due to technical problems, but to the high use of supplemental fuel. A review of the available data confirms that spray booth exhaust incineration is an available, although energy intensive, control technique.

2.3 ECONOMIC IMPACTS

2.3.1 There were some comments which claimed that the economic impacts given in the standards for new facilities were underestimated. One commenter claimed that the costs could be two to three times that estimated for various regulatory alternatives.

EPA used the best data available at the time the background information document was written. Analyses of those data resulted in an estimated incremental cost per vehicle produced at the facility of $17.23 for waterborne coatings and $19.65 for catalytic incineration. Prices for automobiles and light-duty trucks are set by averaging production costs over all facilities producing a given vehicle. Using this approach, the

estimated cost increase from this standard for a typical vehicle is less than 0.1 percent. Since the data for the BID were gathered, inflation and more stringent water and solid waste regulations may have increased the economic impacts. EPA believes that the increase is not two to three times the impact presented in the BID. However, even if the actual economic impacts were in that range, the estimated cost increase would be 0.2 or 0.3 percent, a price increase per vehicle which EPA would view as acceptable for the standards. Therefore, no change in the standards has been made as a result of this comment.

2.3.2. Two comments were received which recommended that separate standards be proposed for new plants versus modified or reconstructed facilities because of the differences in economic impact.

If a physical or operational change were made to an existing facility at an automobile or light-duty truck plant which would potentially increase VOC emissions, the owner or operator would implement the changes necessary to hold VOC emissions at or below the previous level so as not to be subject to the standards. This course of action would be less costly to the plant than implementing control strategies to meet the new source performance standards. This reduction could be accomplished by switching to a coating with a lower VOC content or by incineration of a portion of the VOC emissions. Both of these options are available to all plants. The cost of switching to a coating with a lower VOC content or to incineration of a portion of the VOC emissions is affordable and reasonable.

Although it is unlikely to happen, if an existing facility is modified and is required to meet the limits of the NSPS, it would be more costly than the previous options described above but would still be affordable. Some existing plants may not be able to use the full range

of control options because of physical constraints. For example, an existing enamel plant may not have enough room in its existing spray booths to use waterborne coatings as the enamel booths are shorter than the ones required for waterborne coatings. Nevertheless, the enamel plant has other options such as the use of high solid enamels or incineration which would be available to all such plants.

Control options that are affordable are available to all existing plants to reduce emissions to premodification levels or to meet the levels of the NSPS; therefore, the development of a separate NSPS for modifications is not justified.

If physical or operational changes were made to an existing plant which would qualify as a reconstruction under §60.15, the fixed capital cost of new components would exceed 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility. During development of the standards, EPA found that the capital cost of a new coating facility is approximately $30,000,000 (average of solvent-borne enamel and lacquer systems) and that the capital cost of implementing the standards approximately $750,000 for that facility. In the extreme situation under reconstruction where the cost of a reconstructed facility would be $15,000,000, or 50 percent of the cost of a new facility, the cost of implementing the standards would still be $750,000 or 0.5 percent of the capital cost of the facility. The Administrator believes that this cost is not unreasonable and that relief is provided for a source in unusual financial situations through §60.15 which requires that it be economically feasible for a reconstructed source to meet the applicable standards. Therefore, separate standards for reconstructed plants are not justified. The standards will apply to modified and reconstructed

facilities as well as new facilities.

2.4 LEGAL CONSIDERATIONS

2.4.1 One comment suggested that EPA develop criteria to identify innovative control technologies for which "innovative waivers" may be granted.

On October 31, 1979, the White House issued a fact sheet on the President's Industrial Innovation Initiatives. Included in this fact sheet is a directive for the EPA Administrator to "develop and publicize a clear implementation policy and set of criteria for the award of innovative waivers" and to "assess the need for further regulatory authority." EPA is committed to carrying out this directive; therefore, the Administrator has requested that the Office of Enforcement initiate an implementation policy regarding the award of innovative technology waivers.

EPA will consider, but is not committed to, the commenter's request for specific innovative control technology criteria or procedures for issuing waivers for automobile and light-duty truck surface coating operations. EPA's decision will, in part, depend upon the outcome of the development of general criteria for innovative technology waivers.

Until the innovative control technology criteria are issued, EPA will continue to handle Section 111(j) waiver requests on a case-by-case basis.

2.5 REFERENCE METHODS AND MONITORING

2.5.1 Several commenters stated opposition to the parts of §60.393 that deal with the monitoring of incinerators which are used to control VOC emissions. It was stated that the required accuracy of the temperature monitoring device $\pm 2^{o}C$ ($\pm 3.6^{o}F$) is too restrictive and unnecessary

because of the normal operating temperature range. Concern was also expressed that the reporting requirement under §60.393 did not allow enough time for normal operation shutdowns such as breaks and lunch.

The commenter did not provide information to support his claim, however data were solicited from vendors of incinerators and temperature recorders. Because of the high temperatures (760-820°C [1400-1500°F]) at which these incinerators operate K60.394 has been changed to read "the device shall have an accuracy of the greater of 0.75 percent of the temperature being measured expressed in degrees Celsius or $\pm 2.5^{o}C$." In addition, Method 25 requires that the destruction efficiency of an incinerator be based on the average of three one-hour tests during which the temperature is monitored. Therefore, it was decided, in order to exclude normal short-term interruptions from the reporting requirement, to change the 15 minute period to a three-hour period corresponding to the three-hour period for which temperature was originally monitored.

2.5.2 There were comments objecting to the proposed requirement that analysis of VOC content be performed "whenever a change occurs in the composition of any of these coating materials."

EPA realizes that, in a coating operation, frequent adjustments occur in the type and quantity of reducing solvents used in the coatings. The wording of appropriate sections has been revised so manufacturers' data may be used in demonstrating compliance. This will significantly reduce the burden of requiring an analysis for each change in coating. This change, while reducing the number of analyses, could result in a slight increase in the quantity of records being maintained. It is believed that this is a reasonable alternative.

2.5.3 One commenter recommended that a schedule should be specified for recalibrating any continuous monitoring devices required for compliance with the standards.

The temperature monitoring device necessary for monitoring incinerator operations will require recalibration annually according to the procedure already established in §60.13. Therefore, no schedule is necessary in the regulation.

2.5.4 One comment suggested that industry be required to disclose information showing any "day" during which the emission limits are exceeded.

It is EPA's opinion that requiring the reporting of daily excess emissions would create an undue burden on industry and EPA. Because of the variable nature of the operation, daily reporting might also be misleading. For example, solvents are added to the EDP tank in batches and a daily reporting requirement would incorrectly indicate excess emissions for those days when solvents are added. A longer averaging time is necessary to give an accurate indication of emissions. While a rolling 30 day average could have been used, this would impose an undue burden on industry as data are already maintained by industry on a calendar month basis. Therefore, the standards have not been changed.

TABLE 2-1

LIST OF COMMENTERS ON THE PROPOSED STANDARDS OF PERFORMANCE FOR AUTOMOBILE AND LIGHT-DUTY TRUCK SURFACE COATING OPERATIONS

Public Hearing

Commenter	Docket Reference
Victor Sussman, Director Stationary Source Environmental Control Office Ford Motor Company One Parklane Boulevard Dearborn, Michigan 48126	A-79-05 76/2-IV-F-1
Douglas A. Frank Staff Engineer Environmental Activities Staff General Motors Corporation Warren, Michigan 48090	A-79-05 76/2-IV-F-1
Hiro Fujimoto Technical Manager Analytical Services Automotive Division 5935 Milford Avenue Detroit, Michigan 48210	A-79-05 76/2-IV-F-1
Byron C. Behr, President Byron Instruments, Inc. 520 South Harrington Raleigh, North Carolina 27601	A-79-05 76/2-IV-F-1
Richard H. Schenkel, Manager Plant Engineering American Motors Corporation 14250 Plymouth Road Detroit, Michigan 48232	A-79-05 76/2-IV-F-1

Written Comments

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Larry L. Thomas, Executive Director National Paint and Coatings Association 1500 Rhode Island Avenue, N.W. Washington, D. C. 20005	A-79-05 76/2-IV-D-3
Robert H. Collom, Chief Air Protection Branch State of Georgia Department of Natural Resources Environmental Protection Division 270 Washington Street, S. W. Atlanta, Georgia 30334	A-79-05 76/2-IV-D-4
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R. J. Anderson, Vice-President DeSoto, Inc. 1700 South Mount Prospect Road Des Plaines, Illinois 60010	A-79-05 76/2-IV-D-6
W. R. Johnson, Director Plant Environment Environmental Activities Staff General Motors Corporation Warren, Michigan 48089	A-79-05 76/2-IV-D-7
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A-79-05
76/2-IV-D-9

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A-79-05
76/2-IV-D-10

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A-79-05
76/2-IV-D-11

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A-79-05
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A-79-05
76/2-IV-D-13

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A-79-05
76/2-IV-D-14

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A-79-05
76/2-IV-D-15

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16. ABSTRACT
This document contains a summary of public comments EPA responses and a discussion of differences between the proposed and promulgated standards of performance to control volatile organic compounds (VOC) emissions from new, modified, and reconstructed automobile and light-duty truck surface coating operations in the U.S. The standards are being promulgated under Section 111 of the Clean Air Act.

17. KEY WORDS AND DOCUMENT ANALYSIS

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