



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Office of Air Quality Planning and Standards  
Research Triangle Park, North Carolina 27711

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21 JUN 1989

MEMORANDUM

SUBJECT: Rule Effectiveness (RE) for Post-1987 Base Year  
Emission Inventories

FROM: *for* John Calcagni, Director *Kent Berry*  
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TO: Director, Air Management Division  
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Regions IV, VI  
Director, Air and Radiation Division  
Region V  
Director, Air and Toxics Division  
Region VII, VIII, X

Attached for your information and distribution to your States is the document, Procedures for Estimating and Applying Rule Effectiveness in Post-1987 Base Year Emission Inventories For Ozone and Carbon Monoxide State Implementation Plans. This is the guidance we promised last fall at the emission inventory workshops. Due to the complex nature of the subject matter and the extensive review it has received, the guidance is being distributed a few months later than originally anticipated. We are confident, however, that States wishing to develop RE estimates other than the 80 percent proposed in the post-1987 policy still have time to apply the procedures described in this document for incorporation in the inventories due this fall.

When distributing this guidance to your States, please stress that there are two distinct procedures described: 1) the questionnaire procedure for estimating local category-specific RE values, and 2) procedures for applying RE in the emissions calculations for sources in the inventory. States will need to refer to the latter even if they use the 80 percent presumption for all source categories.

I believe that stationary source RE will be an important component of all future emission inventories for ozone and CO SIPs. This includes both base year and projected inventories, although the attached guidance addresses only those reflecting the base year situation. The final post-1987 policy is expected to address the incorporation of RE in projection year inventories. It is possible that the concepts outlined in this guidance may be applied later to other types of emission inventories, such as those for other pollutants.

We appreciate the input your technical staff provided during the development of this guidance. If they have any questions or need clarification of the specific parts of the guidance, they may call Barb Duletsky at FTS 629-5284.

#### Attachment

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PROCEDURES FOR ESTIMATING AND APPLYING  
RULE EFFECTIVENESS  
IN POST-1987 BASE YEAR EMISSION INVENTORIES  
FOR OZONE AND CARBON MONOXIDE  
STATE IMPLEMENTATION PLANS

June 1989

Policy Development Section  
Ozone and Carbon Monoxide Programs Branch  
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Office of Air Quality Planning and Standards

## 1.0 INTRODUCTION AND BACKGROUND

### 1.1 Introduction

Past inventories have been based on the assumption that regulatory programs for stationary sources were being and would be implemented with full effectiveness, achieving all of the required or intended emission reductions and maintaining that level over time. However, experience has shown these regulatory programs to be less than 100 percent effective in most areas of the country. This means that past SIPs have understated actual emissions and, therefore, have resulted in lower emission reduction targets than are actually necessary to attain the national ambient air quality standards.

This guidance describes a procedure for bringing together planning and compliance perspectives on the effectiveness of existing regulatory programs for stationary sources. The procedure involves jointly answering generic questionnaires using available file information for specific sources and extrapolating the results to other sources in the same source categories. The results are to be used in the base year emission inventories being prepared in response to the post-1987 ozone and carbon monoxide (CO) calls for State implementation plans (SIPs).

### 1.2 Background

On November 24, 1987, EPA proposed the post-1987 ozone/CO policy.<sup>1</sup> A key component of this policy was the proposal that States account for the actual effectiveness of both present and future regulatory programs. For stationary sources, EPA proposed that a baseline assumption of 80 percent rule effectiveness (RE) should be applied to all regulated source categories in the inventory until a local source-specific evaluation could be completed to ascertain the actual category-specific effectiveness.

EPA received numerous comments regarding the RE requirements proposed in the policy. None of the commenters challenged the concept of applying RE in the inventories or of improving the RE of particularly troublesome categories. Many commenters, however, suggested that EPA provide an alternative to the across-the-board 80 percent presumption. The general theme contained in these comments was that EPA should allow States flexibility in making RE estimates so that regulatory programs showing good compliance rates for certain source categories can receive higher credit than those showing lower compliance rates.

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<sup>1</sup>"State Implementation Plans; Approval of Post-1987 Ozone and Carbon Monoxide Plan Revisions for Areas Not Attaining the National Ambient Air Quality Standards; Notice," Federal Register, Vol. 52, No.226, November 24, 1987. pp. 45044-45122.

EPA anticipates that the final policy will preserve the requirement to apply RE to each regulated stationary source category in the inventory. In addition, States that consider a presumption of 80 percent to be inappropriate for describing the average RE of their present regulatory programs will have the option of determining their own category-specific estimates according to the procedures described in this guidance.

The rest of this document is divided into 3 main sections. Section 2 discusses the definition of RE. Section 3 describes the procedures to be used in estimating category-specific RE values for States that choose not to use the 80 percent default. Finally, Section 4 contains instructions on how to apply RE to sources in the base year inventories.

## 2.0 DEFINITION OF RULE EFFECTIVENESS

RE reflects the ability of a regulatory program to achieve all the emission reductions that could have been achieved by full compliance with the applicable regulations at all sources at all times. The precise degree to which all affected sources comply with a particular regulation over time is virtually impossible to ascertain without the aid of continuous monitoring of VOC emissions at all sources. RE can be estimated, however, by evaluating the success of a regulatory program at a few sources and extrapolating the results to others.

There is no succinct mathematical formula that adequately accounts for the many different variables influencing RE, although it can be thought of as a complex function of the following types of factors: the nature of the regulation, the nature of techniques used to comply with the regulation, the performance of each source in complying with the regulation, and the performance of the implementing agency in enforcing the regulation. Table 2-1 lists specific examples of each type of factor. The list is not exhaustive, however, it demonstrates the large number and wide variety of factors that affect RE.

By definition, all source categories for which a regulation exists should have a RE of between 0 and 100 percent. To say that a particular regulation was 100 percent effective would mean that the regulatory agency could assure complete and continual compliance at all sources covered by the regulation, with no incidence of control equipment failure or process upset at any source and no sources evading control requirements. To say that a regulation was 0 percent effective would mean that no sources in the category had made any effort to comply with the applicable regulation. Source categories for which no regulation exists would have no RE factor associated with them.

Table 2-1 FACTORS INFLUENCING RULE EFFECTIVENESS

Nature of the Regulation

- possible ambiguity or deficiencies in wording
- level of detail of recordkeeping required
- level of complexity of compliance determination

Nature of Techniques Used to Comply With Regulation

- level of confidence in long-term capabilities of control technique (i.e., whether the emissions control is prone to failure or degradation even with adequate attention)
- complexity of control technique (i.e., likelihood that operator error or variability in operator technique could effect compliance)
- potential for fugitive emissions not ducted to control device (i.e., adequacy of emissions capture system)

Performance of Source in Complying With Regulation

- trained individual responsible for complying with environmental regulations
- schedule for maintenance and inspection of control equipment
- adequacy of recordkeeping practices (i.e., can compliance be determined from available records?)
- assurance of compliance over time, considering the previous record of process upsets or control equipment malfunction
- timeliness of response to notices of violation

Performance of Implementing Agency in Enforcing Regulation

- attention and resources directed at this source or source category
- communications effort, with respect to compliance requirements
- completeness of data maintained on file
- thoroughness in training inspection personnel
- timeliness and thoroughness of inspections
- adequacy of follow-up on noncomplying sources

### 3.0 PROCEDURES FOR ESTIMATING CATEGORY-SPECIFIC RULE EFFECTIVENESS

The procedure described in this section should be used by States that choose to develop category-specific RE estimates values instead of using the 80 percent across-the-board presumption proposed by EPA. The procedure involves the use of two generic questionnaires that are based on the factors listed previously in Table 2-1. There is one questionnaire to be used for individual point sources (see Appendix A) and another to be used for categories predominated by area source categories (see Appendix B). Table 3-1 lists source categories for which control techniques guidelines have been issued and should provide a good starting point for States to determine which questionnaire should be used for each category.

Many States contain more than one nonattainment area, raising the issue of whether RE should be estimated on a local or Statewide basis. In general, this procedure should be used to determine unique RE estimates for each nonattainment area, except in cases where Statewide regulations are implemented by a single agency throughout the State. The appropriate EPA Regional Office should be contacted for guidance if there is any question of which is the case in a particular State.

#### 3.1 Identifying Personnel to Perform the Evaluation

In most cases, a representative from the State agency's SIP planning group should take the lead in conducting the RE evaluations described in this document. (This person will be hereafter referred to as the "evaluator".) Since one of the goals of incorporating RE in the base year inventory is for planning personnel to become more aware of the extent to which sources are complying with SIP regulations and the actual emission reductions that have resulted, the evaluator should enlist the aid of the local inspector(s) most familiar with each source. The role of the EPA Regional Office generally will be to review the results of the individual evaluations and/or the final RE estimates. In specific cases where this arrangement is not satisfactory, States may negotiate with the Regional Offices to modify the respective roles.

#### 3.2 Choosing Sources to Evaluate

States choosing to develop category-specific RE estimates are required to use the questionnaire procedure for all regulated stationary source categories in their inventories, not just selected categories or selected sources. This is because the 80 percent presumption represents an average RE across all stationary sources and source categories, accounting for the fact that RE in some categories may be higher than 80 percent, while in others it may be lower.

Table 3-1 SOURCE CATEGORIES COVERED BY EPA  
CONTROL TECHNIQUES GUIDELINES (CTGs)

<u>Source Category</u>	<u>CTG Group</u>
CATEGORIES PREDOMINATED BY POINT SOURCES	
Gasoline Loading Terminals	I
Gasoline Bulk Plants	I
Fixed Roof Petroleum Tanks	I
Miscellaneous Refinery Sources	I
Surface Coating of:	
Cans	I
Metal Coils	I
Fabrics	I
Paper Products	I
Automobiles and Light Duty Trucks	I
Metal Furniture	I
Magnet Wire	I
Large Appliances	I
Miscellaneous Metal Parts	II
Flat Wood Paneling	II
Graphic Arts	II
Leaks from Petroleum Refineries	II
External Floating Roof Petroleum Tanks	II
Gasoline Truck Leaks and Vapor Collection	II
Synthetic Pharmaceutical Manufacturing	II
Rubber Tire Manufacturing	II
Equipment Leaks from Natural Gas/Gasoline Processing Plants	III
Manufacture of HDPE, PP, and PS Resins	III
Fugitive Emissions from SOC, Polymer, and Resin Manufacturing Equipment	III
Large Petroleum Dry Cleaners	III
SOCMI Air Oxidation Processes	III
CATEGORIES PREDOMINATED BY AREA SOURCES	
Service Stations - Stage I	I
Cutback Asphalt	I
Solvent Metal Cleaning	I
Commercial Dry Cleaning	II

Using one method or the other, but not a combination of both, will prevent the introduction of biases into the inventories.

The most accurate way to estimate RE for point source categories would be to evaluate all, or at least a statistical sample, of sources in each category for which a regulation exists and average the results. Since this would place an unreasonable resource and time burden on the agency performing the evaluation, States should evaluate RE for only 10 or 10 percent of the sources in each category for which a regulation exists, whichever is less. The point sources should be chosen randomly to avoid biasing the results. (Area sources will be evaluated by category, so no individual sources in the area source categories would need to be chosen.)

One possible method for choosing random point sources to evaluate is for the evaluator to obtain a list of all sources in the local inventory, grouped by source category, including the numerical identification codes and any other details necessary to obtain the appropriate file information. The evaluator might then enlist the aid of another employee who is unfamiliar with both the sources and the numerical coding system of sources in the air program. This employee would be presented with a list of only the numerical identification codes, not the company names, of all sources in the inventory grouped by source category, and asked to choose at random ten (10) sources in each point source category for which a regulation exists. The evaluator will then use the procedure outlined in Section 3.3 to verify that each point source chosen is appropriate for evaluation.

### 3.3 Preliminary Screening of Sources

Each point source chosen should be subjected to the preliminary screening test at the beginning of the point source questionnaire. This screening will determine the appropriateness of evaluating RE by means of the questionnaire procedure for the chosen sources. The questionnaire should not be used to determine RE for the chosen source if any of the following is true:

- the source is completely uncontrolled,
- the source achieves emissions reduction by means of an irreversible process change that completely eliminates VOC from the production process, or
- emissions from the source are calculated by means of a direct determination.

Sources for which any of the above is true should be excluded from the questionnaire evaluation, and a different source in the same category should be chosen to evaluate.

3.3.1 Uncontrolled Source - As illustrated by the first screening question on the point source questionnaire, RE does not need to be determined for sources that are completely uncontrolled. This is because a regulation is considered to be totally ineffective in cases where the source is making no attempts at compliance. The RE for such a source would be zero and should be recorded in the inventory as such.

3.3.2 Irreversible Process Change - An irreversible process change involves a process modification or equipment substitution that completely eliminates solvent use from the production process and cannot be quickly or easily reversed. Examples of this would be the substitution of a hot-melt lamination process for solvent-based adhesives and the use of a powder coating process instead of solvent-based coatings. The use of "exempt" solvents or "complying coatings" would not constitute an irreversible process change, however, because neither involves the installation of new equipment, the total redesign of a production line, or the total elimination of VOC use.

As indicated by the second screening question, sources controlling emissions by an irreversible process change should be assigned a RE of 100 percent in the inventory because the nature of the control technique assures continual compliance over time.

3.3.3 Direct Determination - A direct determination is one in which emissions are calculated directly from solvent usage data (e.g., explicit records for each type of coating and/or solvent used) rather than from estimates of uncontrolled emissions and level of control. Thus, any calculation that involves estimates of production rates, capture efficiency, transfer efficiency, or solvent consumption rates would not qualify as a direct determination.

One example of a direct determination would be where emissions are controlled by use of low-solvent or waterborne coatings and calculated by the following method:

- determine coating and solvent usage over time (for example, a typical month during the ozone season) from detailed plant records;
- use manufacturer's specifications to obtain solvent content of all coatings used;
- for each coating used, calculate amount of solvent used over time by multiplying usage (gal/month) by actual solvent content (lbs VOC/gal coating), as supplied by the manufacturer;
- calculate the total amount of solvent used over time by adding the amount in each coating and the amount of raw solvent used for cleanup and dilution (lbs VOC/month);

- assume that all solvent used was emitted to the atmosphere at some point within the plant, if appropriate; and

- calculate emissions in lbs VOC/day by dividing total solvent emitted (lbs VOC/month) by number of working days in that month (days/month).

Ideally, this type of direct determination should be done by the State compliance personnel. However, EPA recognizes the significant time and resource burden involved in performing the necessary calculations. Therefore, similar types of calculations performed by plant personnel would also constitute a direct determination if the results were reproducible (e.g., based on explicit records).

Another potential case in which emissions could be directly determined is where some type of continuous emission monitoring (CEM) equipment is used. EPA does not know of any sources currently using CEM to monitor VOC emissions. (Utility boilers emit VOC and use CEM, but not to monitor VOC.) If technology advances to the point where CEM is used to monitor VOC, however, the use of CEM might preclude the need to apply RE.

In all cases where emissions are directly determined, RE would fall out of the calculation because there is no control efficiency estimate to which it should be applied. Thus, for such sources, a determination of RE would not be meaningful and should not be performed.

### 3.4 Answering the Questionnaires

The evaluator should complete one point source questionnaire for each point source that passes the preliminary screening test and one area source questionnaire for each area source category. The questionnaires are designed to be answered using available file information, only. No dedicated source inspections are required. The complete file information on a particular source, including reports of previous visits and inspections, should be obtained by the evaluator prior to answering the questionnaire. The evaluator should confer with the State compliance inspector most familiar with the source or source category being evaluated to answer the questionnaires. If an answer cannot be ascertained, the space marked "unsure" should be indicated on the questionnaire.

In addition, the evaluator should obtain any information relating to potential deviations or deficiencies in the State regulations. The most helpful information would be in the SIP-call follow-up letter sent to the State Air Program Director from the corresponding EPA Regional Air Division Directors, which delineates specific deficiencies that EPA required be corrected in response to the SIP-calls for nonattainment areas in that

State. Another source of information is the document, Issues Relating to VOC Regulations, Cutpoints, Deficiencies, and Deviations, issued in May 25, 1988 by EPA's Air Quality Management Division (AQMD/OCMPB/PIS). The evaluator should confer with the EPA Regional Office to ascertain the most current and applicable information on regulation deficiencies.

### 3.5 Determination of Effectiveness Values

The answers to each question on the questionnaires have a point value associated with them. After answering each question with the most appropriate response, the evaluator should sum the point values of the answers for each section and record the sub-totals and/or totals in the space provided on the last page.

For area source categories, the total calculated for the questionnaire is the RE value that should be applied to the emission inventory. For point sources, the RE for a particular category should be determined by calculating the arithmetic mean of the scores of each source of that type evaluated. In other words, the questionnaire scores from each point source in a particular category should be summed and then divided by the number of sources evaluated in that category. The result should be rounded to the nearest whole number. Thus, the evaluation procedure will result in a unique RE value for each point and area source category. The next section describes how to apply these RE values in the emission inventory.

## 4.0 APPLICATION OF RULE EFFECTIVENESS IN BASE YEAR EMISSION INVENTORIES

RE factors are to be applied for the purpose of more accurately representing actual emissions than has been done in past inventories. While local RE values may be determined on a source category basis, these same factors should be applied in the inventory on a source-by-source basis. Because applying RE factors to individual sources will increase the emissions indicated for most sources, it is important for air pollution control specialists to understand that the RE estimates determined by the above procedure are to be used for emission inventory purposes only, NOT FOR ESTABLISHING A NEW SOURCE-SPECIFIC ALLOWABLE EMISSION LEVEL. RE is not intended to be used in calculating source-specific emissions for the purposes of the new source review or emission trading programs or for determining compliance status.

### 4.1 Determining Sources to Which Rule Effectiveness Should Apply

Each category-specific RE value determined by the above procedure is to be applied to all sources in the inventory that are subject to the particular regulation, with the following

exceptions (described in detail in Section 3.3 above):

- sources that are completely uncontrolled,
- sources for which control is achieved by means of an irreversible process change that eliminates the use of VOC, and
- sources for which emissions are calculated by means of a direct determination.

In effect, all point sources in the inventory should be subjected to the preliminary screening test described in Section 3.3. For sources that are completely uncontrolled, a RE of 0 percent should be recorded in the inventory. Sources using an irreversible process change to control emissions should be assumed to be achieving 100 percent RE. Finally, when emissions can be calculated by means of a direct determination, RE falls out of the calculation and, thus, is not applicable. For all other types of sources, RE should be applied in a manner consistent with the examples below.

#### 4.2 Example Calculations

Following are examples of how to include RE in the emissions calculations for several types of facilities.

4.2.1 Gasoline Loading Terminal - A gasoline loading terminal delivers 250,000 gal/day. The uncontrolled emissions from tank truck loading at the terminal are estimated to be 8 lbs VOC per 1000 gal. The terminal has installed RACT and achieves an estimated 87 percent emission reduction. The RE for this source category has been determined to be 80 percent. What emissions should be reported in the inventory?

Answer: Emissions should be determined by the following formula:

$$\begin{aligned} E &= \text{Unc. Emis.} \times (1 - (\text{Cont. Eff.})(\text{RE})) \\ &= 250,000 \text{ gal/day} \times 8 \text{ lb/1000 gal} \times (1 - (.87)(.80)) \\ &= 608 \text{ lbs VOC/day} \end{aligned}$$

4.2.2 Paper Coating Facility - A paper coater uses only coatings specified by the manufacturer to contain 2.9 lb VOC per gal, less water, to comply with the RACT limit. (This RACT level assumes an 81 percent reduction from baseline.) Coating usage at the plant is documented to be 100 gal, less water, per day. The RE for this source category has been determined to be 70 percent. What emissions should be reported in the inventory?

Answer: Emissions from this plant can be calculated by means of a direct determination, thus RE does not need to be applied.

$$\begin{aligned}
E &= \text{VOC content of coating} \times \text{Coating usage} \\
&= 2.9 \text{ lbs VOC/gal less water} \times 100 \text{ gal less water/day} \\
&= 290 \text{ lbs VOC/day}
\end{aligned}$$

If it is assumed that the facility uses RACT complying coatings, but this has not been verified in writing by the plant or by the State compliance records, then RE would need to be applied to the emissions determination. To perform the necessary calculation, one would first need to estimate baseline emissions as follows:

$$\begin{aligned}
\text{Unc. Emis.} &= \frac{\text{Emis. after control, assuming RACT}}{(1 - \text{Cont. Eff.})} \\
&= \frac{290 \text{ lbs VOC/day}}{(1 - .81)} \\
&= 1526 \text{ lbs VOC/day}
\end{aligned}$$

Incorporating RE into the calculation of emissions would result in the following:

$$\begin{aligned}
E &= \text{Unc. Emis.} \times (1 - (\text{Cont. Eff.})(\text{RE})) \\
&= 1526 \text{ lbs VOC/day} \times (1 - (.81)(.70)) \\
&= 661 \text{ lbs VOC/day}
\end{aligned}$$

4.2.3 Automobile Assembly Plant - An assembly plant that coats automobile parts uses 150 gal per day of coatings containing 5.5 lb VOC per gallon. An additional 10 gal of solvent, with a density of 7.1 lb per gal, is used for cleanup each day. Emissions are controlled by a carbon adsorber that demonstrated a 90 percent control efficiency during a recent stack test. The plant keeps substantial records of coating and solvent usage, but no data on control device operation and/or maintenance (O&M). The RE for this source category has been determined to be 75 percent. What emissions should be reported in the inventory?

Answer: It may appear that emissions can be calculated by means of a direct determination due to the good recordkeeping practices at the source. However, the absence of O&M data on the control device prohibits full assurance of achieving the demonstrated control level over time. Therefore, RE needs to be included in the emissions calculation.

$$\begin{aligned}
\text{Unc. Emis.} &= ( 150 \text{ gal/day} \times 5.5 \text{ lb/gal} ) \\
&\quad + ( 10 \text{ gal/day} \times 7.1 \text{ lb/gal} ) \\
&= 825 \text{ lb VOC/day} + 71 \text{ lb VOC/day} \\
&= 896 \text{ lb VOC/day}
\end{aligned}$$

$$\begin{aligned}
E &= \text{Unc. Emis.} \times ( 1 - ( \text{Cont. Eff.} ) ( \text{RE} ) ) \\
&= 896 \text{ lb VOC/day} \times ( 1 - ( .90 ) ( .75 ) ) \\
&= 291 \text{ lb VOC/day}
\end{aligned}$$

4.2.4 Large Petroleum Dry Cleaner - A large petroleum dry cleaner has an estimated uncontrolled emission rate of 200 ton VOC per year. The RACT control level is 80 percent, and the RE determined for this source category is 85 percent. The plant is in operation 310 days per year. What emissions should be reported in the inventory?

Answer: Emissions should be calculated as follows:

$$\begin{aligned}
E &= \text{Unc. emis.} \times ( 1 - ( \text{Cont. Eff.} ) ( \text{RE} ) ) \\
&= \frac{200 \text{ tons/yr} \times 2000 \text{ lbs/ton}}{310 \text{ days/yr}} \times ( 1 - ( .80 ) ( .85 ) ) \\
&= 413 \text{ lbs VOC/day}
\end{aligned}$$

4.2.5 Area Source Category - The gasoline throughput for service stations in a nonattainment area is reported to be 400,000 gal/day. The uncontrolled Stage I emissions are estimated to be 11.5 lbs VOC per 1000 gal. The State regulation requires 95 percent control at each facility and covers about 90 percent of the overall emissions from the category (i.e., rule penetration = 90 percent).<sup>2</sup> The RE for this category has been determined to be 60 percent. What emissions should be reported in the inventory?

Answer: RE and penetration should be introduced into the emissions calculation as follows:

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<sup>2</sup> For a more detailed discussion of rule penetration, refer to Procedures for the Preparation of Emission Inventories for Precursors of Ozone, Volume I. 3rd edition. EPA-450/4-88-021, December 1988. pp. 4-1, 4-4.

$$\begin{aligned} \text{Unc. emis.} &= 400,000 \text{ gal/day} \times 11.5 \text{ lbs VOC/1000 gal} \\ &= 4,600 \text{ lbs VOC/day} \end{aligned}$$

$$\begin{aligned} E &= \text{Unc. emis.} \times ( 1 - ( \text{Cont. Eff.} ) ( \text{RE} ) ( \text{Pene.} ) ) \\ &= 4,600 \text{ lbs VOC/day} \times ( 1 - ( .95 ) ( .60 ) ( .90 ) ) \\ &= 2,240 \text{ lbs VOC/day} \end{aligned}$$

## 5.0 SUMMARY

The incorporation of RE in base year emission inventories for post-1987 ozone and CO SIPs is a necessary step toward developing inventories that depict actual emissions for each nonattainment area. The procedures described in this guidance for determining RE for stationary sources should facilitate enhanced communication and coordination among State, local, and Federal planning and enforcement personnel. The procedures described for applying RE estimates to the inventories are based on the need to account for the likelihood of continuous compliance over time at all sources. EPA believes that the incorporation of RE will result in more realistic emissions inventories and, thus, more meaningful emissions reduction targets.

EPA is committed to developing a cooperative effort among compliance and planning personnel to evaluate RE on a continuing basis. As part of that effort, many EPA Regional Offices have begun conducting source-by-source RE evaluations under the oversight of EPA's Stationary Source Compliance Division (SSCD). The objectives of this program are to evaluate the RE of selected State or local regulations for stationary sources and identify implementation problems that hinder full effectiveness. These evaluations will provide comprehensive data on various aspects of compliance, as well as reasonably well-documented estimates of source-specific emissions over time. After the first round of RE evaluations have been performed and the results have been reviewed, EPA will provide specific guidance on how the results should be incorporated in future inventories.

EPA envisions that RE will be an important component of all future emission inventories for ozone and CO SIPs. This includes both base year and projected inventories, although the preceding guidance addresses only those reflecting the base year situation. The concepts outlined in this guidance may be applied to other types of emission inventories, such as for other pollutants, at a later date.

APPENDIX A



- Determination can be made by collecting and analyzing one sample or by evaluating continuous emission monitoring reports. (4)
- Stack testing, including capture and control, must be performed to determine compliance. (3)
- Determination requires that multiple samples be taken and analyzed and that plant records be evaluated, as in the case of cross-line averaging, time averaging, or other bubbles. (2)

Score       

B. Nature of Procedures Used to Comply With Regulation

1. This question concerns the relative level of confidence in the long-term performance capabilities intrinsic to different control techniques (e.g., how time in operation and maintenance degradation might effect emissions control). Check each technique used at the facility, average the scores assigned to each, and report the average as a single score. If State can verify through detailed records that the source has actually been in continuous compliance at all times during the past two years, score 10 points on this question regardless of control methods used.

- Floating roof (10)
- Thermal incinerator (8)
- Vapor balance (8)
- Reversible process change (e.g., coating reformulation) (8)
- Condensation system (7)
- Carbon adsorber (7)
- Catalytic incinerator (7)
- Other (assign point value  $\leq 10$ , as appropriate, relative to above controls) ( )

Score       

2. Are fugitive emissions that might cause noncompliance a possibility where add-on controls are used (check one)?

- No or not applicable because there is no add-on equipment (5)
- No, because they have been shown by an EPA-approved capture efficiency test to be below allowable limits and to be so on a continual basis (5)
- Yes or unsure (0)

Score

C. Performance of Source in Complying With Regulation

"Yes" answers to questions in Section C must be confirmed by information in the State or local agency's file; otherwise answer no or unsure (or yes or unsure for question 4a).

1. What procedures does the source follow for operation and maintenance (O&M) of the control equipment?

- Plant personnel complete a formal training program and follow daily written instructions for O&M (5)
- Same as above, except no training (4)
- Plant personnel follow daily or weekly established O&M routine (3)
- Equipment is assumed to be operating correctly unless major malfunction is detected (1) Score \_\_\_\_\_

2. What is the nature of self-monitoring efforts conducted by the plant to assess compliance?

- Source test (using EPA-approved method)<sup>1</sup> is conducted annually (5)
- Sample analysis (using EPA-approved method)<sup>2</sup> is conducted for each ink or coating used (5)
- Above tests are performed, but less frequently (3)
- None or unsure (0) Score \_\_\_\_\_

3. Does the plant keep records of data (including self-monitoring, O&M, coating usage, etc.) that would allow verification of compliance?

- Yes (5)
- No or unsure (0) Score \_\_\_\_\_

4a. Has source been found to be out of compliance in the last 12 months? (If "yes", then answer question 4b also.)

- No (10)
- Yes or unsure (0) Score \_\_\_\_\_

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<sup>1</sup>For examples of approved test methods, see "Test Methods or Procedures for Group I, II, and III CTG's," Issues Relating to VOC Regulations, Cutpoints, Deficiencies, and Deviations, EPA/OAQPS/AQMD/OCMPB/PIS, May 25, 1988.

<sup>2</sup>Ibid.

4b. In responding to Notices of Violation, did the source demonstrate compliance within the required time frame? (Answer this question only if you answered "yes" to question 4a. above)

\_\_\_ Yes (5)  
\_\_\_ No or unsure (0) Score \_\_\_

D. Performance of Implementing Agency in Enforcing Regulation

1. Does the implementing agency maintain file information that allows verification of the source's compliance? (Score 2 points for each "yes" or for items that are not applicable to this source. Score 0 points if the file data for an item are inadequate or unavailable.)

Are all permits and abatement orders available? \_\_\_  
Are all applicable requirements identified in the permit (e.g., emission limits, averaging times, compliance schedule, monitoring, recordkeeping, reporting, operation and maintenance, test requirements)? \_\_\_  
Are accurate and complete flow diagrams available for the emission points and control, capture, ventilation and process systems? \_\_\_  
Are all source test and sample analysis results available? \_\_\_  
Are all appropriate control system operating data available? \_\_\_

Score \_\_\_

2. What is the professional background of the person who most frequently inspects this source? (Choose applicable answer with highest score.)

\_\_\_ Has  $\geq$  3 years of experience in conducting plant inspections (5)  
\_\_\_ Has engineering degree and has completed formal training program on how to conduct plant inspections (4)  
\_\_\_ Has engineering degree (3)  
\_\_\_ Has completed formal training program on how to conduct plant inspections (3)  
\_\_\_ No training, < 3 years of experience, and no engineering degree (0)  
\_\_\_ Unsure (0)

Score \_\_\_

3. How many times has source been inspected in the past 24 months? (Inspections must be confirmed by inspection reports in implementing Agency's file.)

       >2 times, unannounced (10)  
       Once or twice, unannounced (8)  
       Once or more, with prior notice  
          or unknown if notice given (6)  
       None or unsure (0)                    Score       

4. What was the highest level of inspection performed at the source in the last 24 months? (This must be confirmed by inspection reports in the implementing agency's file.)

       Level 4: sampling inspection including  
          preplanned sample collection (5)  
       Level 3: compliance evaluation (4)  
       Level 2: walk-through (2)  
       Level 1: observation from outside (1)  
       None or unsure (0)                    Score       

5. Does the agency generally determine compliance by the method(s) specified in the regulation?

       Yes (5)  
       No or unsure (0)                    Score       

6. If this source has been found out of compliance within the last 12 months, has formal documented enforcement action (e.g., consent decrees, variances, court actions, penalties) been taken against the source?

       Not applicable because source has not  
          been found out of compliance (5)  
       Yes (5)  
       No or unsure (0)                    Score       

7. If source has been found out of compliance within the last 12 months, has a follow up inspection been made to affirm compliance?

       Not applicable because source has not  
          been found out of compliance (5)  
       Yes (5)  
       No or unsure (0)                    Score       

SCORING:

A:        of 15    B:        of 15    C:        of 25    D:        of 45

Total Score =            of 100 points maximum

APPENDIX B



5. Has formal documented enforcement action been taken against sources found to be in noncompliance?

- Not applicable since no inspected sources have been found to be in noncompliance (10)
- Yes, for all noncomplying sources (10)
- Yes, in 50 to 99 percent of the cases (5)
- Yes, in < 50 percent of the cases (2)
- Never, or don't know (0)

Score       

6. Have enforcement actions for sources in this source category been publicized in media, either through news stories or paid advertisements (newspaper, TV, radio, trade journals)?

- Not applicable since no inspected sources have been found to be in noncompliance (5)
- Yes, in every case (5)
- Yes, in 50 to 99 percent of the cases (3)
- Yes, in < 50 percent of the cases (1)
- Never, or don't know (0)

Score       

7. Have follow-up inspections been made on sources which were found to be out of compliance?

- Not applicable since no inspected sources have been found to be in noncompliance (10)
- Yes, in 100 percent of the cases (10)
- Yes, in 50 to 99 percent of the cases (5)
- Yes, in < 50 percent of the cases (2)
- Never, or don't know (0)

Score       

TOTAL SCORE:             
(100 points maximum)