90-93.12

EVALUATING THE EFFECTIVENESS OF STATE IMPLEMENTATION PLAN STRATEGIES

Randall Guensler

California Air Resources Board
Sacramento, California

AIR & WASTE MANAGEMENT
ASSOCIATION

SINCE 1907

For Presentation at the
83rd Annual Meeting & Exhibition
Pittsburgh, Pennsylvania
June 24-29, 1990

BACKGROUND:

Over the past two years, a major component of the U.S. Environmental Protection Agency's (EPA) planning effort has been a three-phase program to evaluate volatile organic compound (VOC) regulations in non-attainment areas. Phase I evaluated existing local agency VOC rules for technical adequacy and national consistency, and was completed by EPA Region IX in 1989. Phase II was to require states to submit new State Implementation Plans (SIPs), correcting any deficiencies found during Phase I. However, because a new Clean Air Act was expected to be approved by Congress, Phase II was never implemented. When the new Clean Air Act is approved, the EPA should be requiring new SIPs for all post-1987 ozone non-attainment areas (those areas that have not attained the National Ambient Air Quality Standard (NAAQS) for ozone). Even though Phase II was never implemented, Phase III began an assessment of the overall effectiveness of VOC regulations. In FY 1989, each of EPA's regional offices initiated at least one Rule Effectiveness Study in an ozone non-attainment area.

The term "rule effectiveness" is, perhaps, a misnomer for the type of study that is conducted. A Phase III Rule Effectiveness Study is an evaluation of much more than simply whether or not industry is in compliance with the provisions of a regulation. The study also examines the performance of regulatory agency planning, rule development, permitting, tracking, and engineering programs. Essentially, the study attempts to examine the performance of a State Implementation Plan (SIP) strategy (i.e. regulation) to determine if the strategy provided the real emission reduction that it was designed to achieve. Thus, the term "SIP strategy effectiveness evaluation" is a better description for the process.

INTRODUCTION:

In California, a cooperative SIP strategy effectiveness study was undertaken by EPA Region IX, the California Air Resources Board (ARB), the Bay Area Air Quality Management District (BAAQMD), the San Diego County Air Pollution Control District (SDCAPCD), and the South Coast Air Quality Management District (SCAQMD). The 1989-90 California study examined the aerospace coating regulations of California's three largest air pollution control districts. Although the emissions from the aerospace industry are relatively lower than many other VOC source categories, the aerospace coating category was chosen primarily because the operations were representative of California surface coating operations (which account for approximately 35% of the VOC emissions from stationary sources in California). In addition, because there were fewer than 60 aerospace coating operations to be inspected, a high confidence interval was expected in estimating the emissions from the source category.

A number of the findings and recommendations of the 1989-90 California study may have far reaching effects upon the attainment planning process. However, the results of the rule effectiveness study conducted in 1989-90 are not discussed specifically in this paper because the findings are still in draft form (interested parties are encouraged to obtain a copy

of the final study when it becomes available)[1]. Instead, this paper describes the goals and objectives of a typical Phase III SIP Strategy Effectiveness Study and outlines the general study components and mechanisms. Insight regarding what a SIP strategy effectiveness evaluator may find, based upon the author's experience in the California study, is also provided.[2]

GOALS OF SIP STRATEGY EFFECTIVENESS STUDIES:

The primary goal of a SIP strategy effectiveness study is to determine if the State Implementation Plan (SIP) process ensures that emission reductions occur when emission control strategies are implemented. The effectiveness of a VOC rule for a specific source category in a non-attainment area is evaluated, in accordance with the quantitative criteria set forth in EPA's protocol for implementation of SIP strategy effectiveness studies (Seitz, 1988).

A SIP strategy effectiveness study determines if agency enforcement procedures identify and correct ongoing violations. The evaluation may identify violations directly from the inspection of facilities or from industry responses to Clean Air Act (CAA) Section 114 informational requests. The study should identify specific problems that can be addressed by the local agencies, the State, and the EPA to achieve greater rule effectiveness in the future. In addition, a SIP strategy effectiveness study evaluates the adequacy of the regulatory requirements. Rule requirements are examined in light of inspection findings to determine if regulatory limits are appropriate on a technical basis.

SIP STRATEGY EFFECTIVENESS:

Attainment plans are prepared by assessing the current emission inventory and projecting (through modeling) the emission reductions necessary to achieve the ambient air quality standards. If the attainment plan is to be successful, the projected necessary emission reduction must be achieved. If the emission reductions were not achieved by the existing regulations (i.e. an "emission reduction shortfall" has occurred), agencies are required to implement new emission control measures to offset the shortfall. EPA has outlined interim operating procedures (which will remain in effect until Congress either endorses or amends the existing Clean Air Act) for the reclamation of emission reduction shortfalls in the Federal Register, Volume 52, Number 226, November 24, 1987.

---

1 The draft SIP strategy effectiveness report for California aerospace coating operations was completed in May 1990 and copies of the final report are to be made available through EPA Region IX, Air Operations Branch (A-3-2), San Francisco, CA.

2 The author served as the California Air Resources Board's lead inspector and staff coordinator for the Phase III SIP Strategy Effectiveness Study of California Aerospace Coating Operations.

SIP strategy effectiveness studies measure the emission reductions that have been achieved through the implementation of a control strategy and whether the strategy has achieved the emission reductions claimed in the Air Quality Management Plan (AQMP). By comparing the emission reduction achieved to the emission reduction projected, we can determine how effective the overall control strategy was. Net SIP strategy effectiveness can be quantified by comparing:

$$S.S.E. = \frac{\text{(Original Baseline - Current Baseline)}}{\text{Original Baseline - Projected Baseline}}$$

Data collected from agency files are analyzed in light of the information gathered during facility inspections and Emission Trend/SIP Strategy Effectiveness bar graphs are developed. The best available data should be used to create each graph, and a text discussion of the sources and adequacy of the data should be included in the final report.

Each Emission Trend/Net SIP strategy Effectiveness graph is composed of three bar charts. The first bar chart represents the emission baseline for the regulation, the second bar chart represents the projected emissions after the regulation is implemented (as estimated by local agency staff during the SIP/Rule Development process), and the third bar component represents the actual emissions from the regulated sources (Figures 1 and 2 are examples). Each of the bar components are described in detail below:

Bar Component 1: The original emission baseline for the source/rule category, as developed by the local agency staff during their rule implementation effort.

Bar Component 2: The projected emissions for the source/rule category, developed by estimating the emission reduction that would result from control strategies and adding the projected emission resulting from growth. For multiple rule revisions (SIP amendments) emission changes should be cumulative.

Bar Component 3: The actual current emission levels for the source/rule category, as determined from the latest emission inventory, inspection data, and Section 114 responses when available. The estimates may be on the low end if sources under-reported emissions to any regulatory agency. The bar component is composed of 7 segments, some of which may be difficult to quantify:

Projected Emissions - Same as Bar Component 2

Underestimated Baselines and Additional Growth - Emissions that result from errors in determining the original emission estimates and emissions that result from unexpected industry growth are included in this segment. Adequate data to separate baseline emission errors from unprojected growth probably do not exist. The contribution of the underestimated baselines and additional growth component to the overall bar graph can be positive or negative, depending upon whether baseline errors and industry growth are positive or negative.

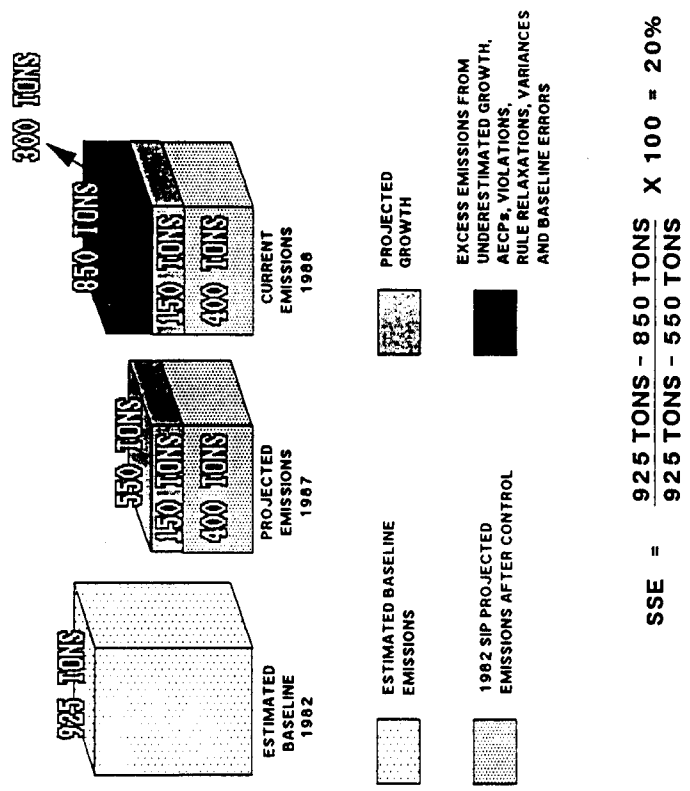

FIGURE 1

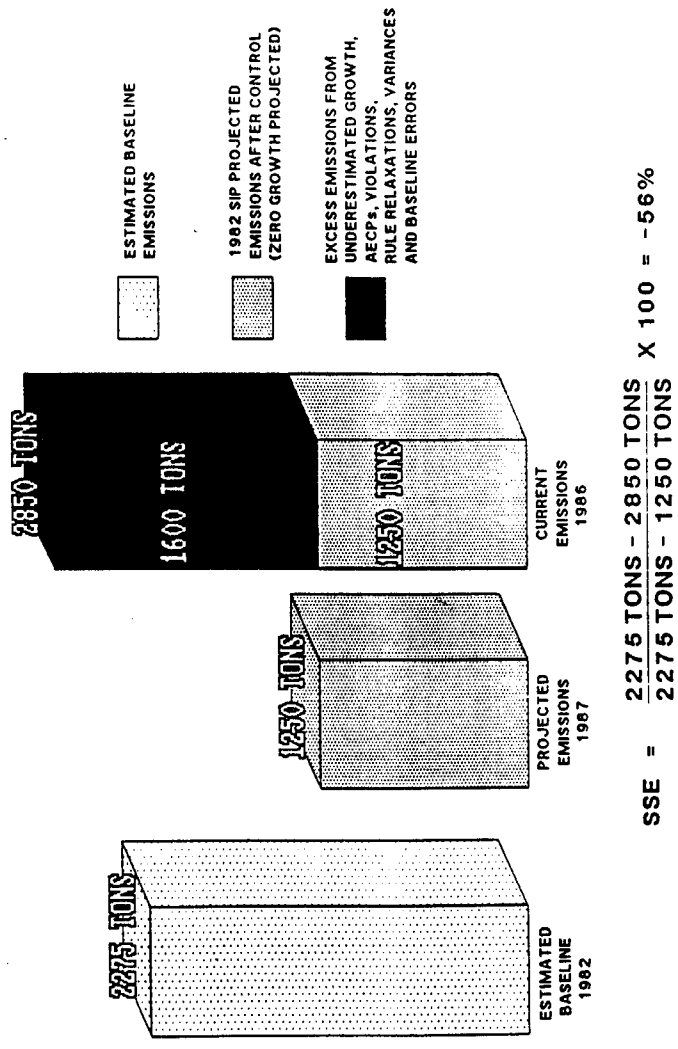

FIGURE 2

Rule Relaxations - If local agencies relax rule requirements, these emissions are in excess of the emissions allowed under the SIP. Thus, emissions resulting from rule relaxations constitute an excess emission portion in the bar chart.

Source Bubbles - Excess emissions may exist when facilities are allowed to control their emissions through a source bubble (such as an alternative emission control plan), and the emissions are more than the emissions that would result if the facility complied directly with the VOC limits of the rule.

Variances - Excess emissions, allowed by the local agency but not accounted for in the SIP, may result from the granting of variances.

Violations - Excess emissions resulting from the direct violation of VOC limits.

The bar charts illustrate the ability of the local agency to coordinate the attainment planning process for the specific SIP strategy reviewed. The most important aspect is the actual emission change rather than the percentage SIP strategy effectiveness. The actual emission change indicates the emission reduction shortfall (or excess) for the SIP strategy.

MECHANISMS OF THE SIP STRATEGY EFFECTIVENESS STUDY:

The mechanisms of a SIP strategy effectiveness study include: a comprehensive pre-planning process, a field investigation phase, and an office investigation phase. Based upon California's experience, the field inspection phase should precede the office review phase. However, we also determined that the inspections should not begin until a one-day pre-inspection meeting with all parties is held.

PRELIMINARY PLANNING MEETINGS:

To implement a SIP strategy effectiveness study, a task force consisting of management representatives from the EPA region, and the participating state and local agencies should be formed. Preliminary meetings are undertaken to: establish the study protocol, determine the manner in which the study will be technically and logistically implemented, and establish a basis for participating agency corrective action once the study has been finalized. Pre-planning meetings are critical to the success of a truly cooperative evaluation.

One of the most critical pre-study meetings in California involved the analysis of the regulations to be studied. Detailed summaries of the local regulations should be prepared by the study staff. Summaries should outline the rule requirements in detail and include summary paragraphs related to the interpretation of each regulation section and requirement.

Open discussion must be facilitated between all agencies, as consensus must be reached regarding all rule interpretations. The preparation of this detailed document is a key factor in increasing the efficiency of study implementation. Rule summaries help to resolve interpretive differences before they can occur during field inspections.

The current version of locally approved regulations may differ from the last version of the regulation that was approved by EPA for incorporation into the SIP. Whether the revised version of the rule is recognized by EPA is dependent upon the SIP approval process. Until the EPA recognizes the new regulation, the last approved version of the regulation remains in effect and federal enforcement action may be undertaken under the previous version of the rule. Local agencies can, of course, take enforcement action under their most recent adopted version of the rule. Considerable discussion of the EPA policy toward SIP relaxations (changes made to a rule to make it less restrictive) is included in the California SIP strategy effectiveness report (USEPA, et al., 1990).

One-day pre-inspection meetings of all staff are essential in preparing for smooth and efficient inspections and allow staff to:

1. modify inspection schedules for logistical reasons,
2. prepare a line-by-line evaluation of each rule,
3. select lead inspectors,
4. discuss sample collection procedures,
5. determine the process for the issuance of citations,
6. study and discuss the inspection checklist,
7. add additional facilities that may have been recently permitted or identified by the local agency,
8. emphasize the importance of a flexible schedule,
9. review the operating history and permits of facilities.

FIELD INVESTIGATION:

The compliance status of facilities are evaluated and any excess emissions that result from rule violations are calculated. The study also attempts to determine if inspection findings are representative of the actual operations at the facility. The adequacy of source bubbles (or alternative emission control plans) are reviewed from both the engineering and enforcement perspectives. Field data is gathered for comparison to the emissions and process data maintained by the local agency. An attempt to reconcile the local agency emission inventory data is undertaken by comparing field data to the data reported to the district.

Inspections:

Field inspections involve observation of operations in progress along with extensive information gathering from the facilities. The primary goals of the field inspections are to determine whether normal inspection procedures are adequate to identify and correct facility violations and to gather information necessary to calculate actual and allowable emissions

for each source. In addition, the inspections gather information necessary to verify the emission inventory data, and provide the opportunity to audit technology currently employed in inspected operations. Based upon inspections and review of operating records, recommended reasonably available control technology (RACT) emissions limits may be established in the conclusions of the study.

When possible, all major sources that are subject to the regulation under review should be inspected.[3] If all facilities cannot be inspected, a sufficient number of inspections should be performed to result in a high confidence interval when projecting inspection results to the entire source category. However, specific confidence intervals are controversial and highly debated. It is recommended that the number of sources to be inspected and projected confidence intervals be agreed upon prior to beginning inspections.

Inspection Criteria:

Each facility should be inspected by multiple members of the study team (one from EPA, and one from the state and/or local agency). The purpose of the inspection is primarily to determine if the facility is operating in compliance with the local regulation.

Standardized inspection forms should be prepared and agreed upon by all members of the study team so that data may be collected in a uniform manner. The preliminary planning meetings related to rule interpretation provide much of the guidelines necessary for preparing comprehensive inspection forms. Some standardized inspection forms are available in Compliance Assistance Technical Manuals available from the Compliance Division of the California Air Resources Board.

Inspection reports are best prepared during the inspection and finalized immediately following the completion of the inspection. All of the attending inspectors should read and sign the report to certify its contents. Follow-up actions should be noted in the inspection report and agreed upon by all parties. By preparing the reports during and immediately following an inspection, while inspection events are still fresh in everyone's minds, the potential for disagreement is minimized.

Standardized inspection procedures should be followed by all participating agency staff. However, even with standardized procedures, minor deviations from inspector to inspector will be unavoidable. Standardized inspection procedures outlined in the ARB Metal Parts and Products Compliance Assistance Manual may be an asset in preparing inspection guidelines (CARB, 1989).

Samples may be collected during the SIP strategy effectiveness evaluation and laboratory test methods used to determine facility

3 In California, because small facilities are an important emission source, facilities with emissions greater than 0.5 tons per year of VOC were also inspected in the California SIP strategy effectiveness study (USEPA, et al., 1990).

compliance. Split samples should be taken whenever possible, so that all participating agencies can obtain separate lab results. This process serves two purposes: first, it allows each agency to have in-house laboratory results that could be used to pursue enforcement action; and second, the laboratory results can be cross-checked in a limited quality assurance mode. If appreciable differences in sample analysis results occur, further investigation of laboratory methods could be undertaken.

For facilities that employ the use of add-on control equipment to demonstrate compliance with regulations, source testing should be undertaken as a component of the evaluation. Source testing decisions and protocol should be outlined before the study begins.

Source Bubbles:

Source bubbles, some of which are referred to as alternative emission control plans (AECPs) in California, are designed to average the emissions from more than one operation within a facility that are subject to a single rule. For example, a coating that exceeds a required VOC limit may be compensated for by a coating that is below the required VOC limit, provided that the net emissions from the two operations are less than or equal to the emission that would occur if only complying coatings were applied. Because emissions are traded between operations, source bubbles and AECPs are required to comply with EPA's Emission Trading Policy Statement (USEPA, 1986; Guensler, 1989). The federal emission trading policy, and the specific requirements that affect aerospace coating AECPs, are discussed in detail in the California SIP strategy effectiveness report for aerospace coating facilities (USEPA, et al., 1990).

Source bubbles and AECPs must be structured to ensure that emissions from the operations are less than the emissions that would result from direct compliance with the rule limits. Thus, source bubbles and AECPs must be diagnosed to determine if the plans yield equivalent emission reductions. A number of major problems that were common to AECPs in California's aerospace sources are presented in the SIP strategy effectiveness report (USEPA, et al., 1990).

An excess emission evaluation of an AECP takes significant staff time. Calculation methodology and actual operating data must be verified. If resources are not available, only a limited number of plans can be reviewed in detail for excess emissions. It is important to note that the burden of proof with respect to compliance rests with industry and not with the regulatory agency. Each facility must clearly demonstrate that the source bubbles or AECPs result in ongoing compliance with the equivalent emission requirement.

OFFICE INVESTIGATION:

The local agency rule development and SIP files should be reviewed to locate the data that is needed to prepare the SIP strategy effectiveness bar charts and report findings. Interviews of key staff at the local

agency should also be undertaken. Review should focus on the planning, emission inventory, rule development, permitting, engineering, and enforcement programs. The primary goal of the office investigation phase is to determine whether the rule development programs ensure that the emission reductions claimed in the SIP were achieved. To accomplish this goal, the evaluators examine the function of local agency programs as they relate to attainment planning and the claimed emission reductions.

Rule Development:

Rule development files are reviewed in detail. Any changes over time for the selected regulation are reviewed to determine if requirements have been relaxed without providing offsetting emission reductions. Rule relaxations result in excess emissions from the SIP strategy unless the emission reduction shortfalls are identified and specifically mitigated by the local agency.

Emission Inventory:

The emission inventory for the source/rule category being reviewed should be estimated. The emission estimates should be derived from data contained in the current local agency emission inventory system, the industry response to EPA Section 114 letters,[4] data collected during inspections, and the most recent emission reporting forms submitted to the local agency by industry.

The emission inventory is a key element in estimating the emission reductions that are available from the implementation of a control strategy. Ideally, emission inventory tracking systems would be capable of monitoring the net effect of control strategy implementation and capable of tracking progress toward achieving the emission reduction estimates claimed in the AQMPs. However, current local agency emission inventory systems are usually not yet sophisticated enough to track SIP strategy effectiveness.

Major facilities (known as point sources) are required to provide annual emission data to the local agency for all of their operations (emissions per emission point, usually reported on standardized forms). Planners use the emission inventory data in the SIP planning process; however, the database systems may not always include complete emissions estimates for each facility. For example, emissions may be lacking from equipment or operations that are not required to obtain a permit to operate. It is only possible to pinpoint unreported emissions by extensively reviewing local agency files and comparing reported emissions to data collected in the field; however, this is a labor intensive operation.

4 The Section 114 data provided by industry to the EPA appeared to significantly under-report emissions of solvents, topcoats and specialty coatings (compared to local emission inventory data and to some of the most recent emission reporting forms sent to the local agency by industry). However, the reason for the apparent under-reporting to EPA could not be determined.

An emission estimate should also be included for area sources related directly to the source/rule category being reviewed. The contribution of area source emissions to the total emission inventory for a source/rule category may be significant. The area source category would include: 1) emissions from small facilities that are not required to obtain local agency permits to operate due to low throughput (i.e. sources that are excluded from the point source emission inventory), 2) emissions from diffuse operations at major sources that may not have been reported, and 3) emissions from point sources that were somehow placed in the database for other source categories (e.g. aerospace coating emissions from a facility may have been reported in the metal parts and products source category).

When the local emission inventory is updated continuously and is capable of tracking emissions by source/rule category and regulatory tactic, as is the case in the Bay Area Air Quality Management District, determining SIP strategy effectiveness is greatly simplified. Also, when source emission reporting forms are detailed, such as those used by the San Diego County Air Pollution Control District, local agencies are provided with detailed data and can better track SIP strategy effectiveness.

Baseline Emission Calculations:

The original emission inventory estimates for any source category constitute the emission baseline, from which control strategies are to achieve an emission reduction. The baseline calculation is critical in the SIP process for both developing the control strategy and estimating the emission reduction that may be achieved.

Problems associated with reconciling baseline inventories are numerous. Original rule baselines, such as those developed in 1979, may not be accurate. The data that was available to a local agency when the rule was originally developed may have been sketchy. Baseline estimates may have been simply pieced together from phone interviews or written source surveys. In addition, facilities may not have been required to submit the detailed annual emission inventory questionnaires as they are today.

Emission baseline estimates are usually documented in the local agency's files. However, numerous and wide ranging estimates for the baseline emission inventory may be contained in rule development files, the Air Quality Management Plan (AQMP), and Reasonable Further Progress (RFP) reports. Planning documents may not correspond to data in staff reports, emission inventory estimates, and enforcement or engineering staff reports. In some cases, pinning down the actual baseline emission inventory after the fact is difficult if not impossible.

Nevertheless, the best estimate for the emission baseline must be used as a study component. Discrepancies between the baseline emissions claimed in the SIP and the baseline emissions contained in the files should be resolved whenever possible. Care should be taken, because the use of an artificially high or low baseline will result in an altered perception of SIP strategy effectiveness. If detailed data is lacking, the emission baseline established by the study staff is likely to result in some

controversy when the report is prepared. When establishing the emission baseline, be sure to state any assumptions in the final report.

Emission Reduction Estimates:

The emission reductions are established as a component of the SIP when the control strategy is adopted by the local agency and approved by the EPA for incorporation into the SIP. Through the AQMP and SIP process, the state and local agencies become responsible for achieving the emission reductions claimed.

Emission reductions resulting from the implementation of a control strategy are calculated by local agencies from their estimated baseline emission inventory. Emission reduction estimates are dependent upon the accuracy and detail of the original emission inventory as well as the technical accuracy of control efficiency estimates prepared by local agency engineering staff. The emission reductions claimed may be simply an estimated control factor multiplied by the baseline emissions, or the reductions may be based upon detailed emission analyses. In some cases, it may not even be possible to locate the methodology originally used to calculate the emission reduction.

It is possible, based upon detailed review of rule development files, that the SIP strategy effectiveness evaluators will determine that the emission baseline should be changed to improve its accuracy. When this occurs, the emission reduction estimates should also be revised. For example, if a lower baseline is used in the SIP strategy effectiveness evaluation than was originally claimed by the local agency, the emission reduction expected from the rule should also be revised downward to reflect the lower baseline. It may be that the local agency is still required to achieve the additional emission reductions claimed in the SIP; however, this additional planning issue is beyond the scope of this paper.

When emission reductions are not achieved, the local agency should develop strategies to offset the emission reduction shortfall that has occurred. Additional control strategies may be implemented in the same or other source categories; however, in the AQMP, the new emission reduction strategy should be specifically targeted as a control measure to offset the emission reduction shortfall.

Accounting for Industry Growth:

In preparing the attainment plan, local agency staff estimate the growth that will occur for each source category that is regulated. Because attainment can be reached only when the modeled emission reductions have been achieved, estimating and tracking industry growth is essential. The study should attempt to determine if industrial growth is effectively monitored and mitigated by current planning strategies.

If excess growth in emissions from a source category occurs (i.e. growth in emissions that is beyond the amount of growth that was projected in the SIP), the local agency is theoretically required to mitigate the

emissions increase. Unfortunately, local mechanisms may not exist to actively track the net increase in emissions by a source category to determine if additional control strategies are required. Usually, local agencies simply monitor the overall increase and decrease in basinwide emissions in the point and area source emission inventories as a component of RFP. However, simply monitoring the net changes in the emission inventory is unlikely to ensure progress.

The response of industry to outside economic forces can result in the deceptive appearance that attainment progress is being made. For example, if all facilities in an air basin were to operate below their permitted emission limits for three years, emission inventory and ozone monitoring data might indicate that attainment progress was being made. However, when industry returns to increased production during an economic boom, the emissions in the basin can return to their original permitted level. Thus, emission growth in any industry is somewhat dependent upon the buffer that the facilities have between current emission levels and the maximum emissions allowed by their operating permits.

Operating permit conditions should be reviewed to ensure that maximum daily emission limits (based upon the information submitted by the facility in their original application for an Authority to Construct) and specific limiting conditions have been established (Hunt and Seitz, 1989).

Planning Feedback Loops:

One goal of the SIP strategy effectiveness study is to determine whether adequate communication channels exist within local agencies to ensure that SIP strategy effectiveness data is shared. To ensure that an attainment plan is effectively implemented, all of the key players must communicate. Planning, emission inventory, modeling, rule development, permitting, and enforcement staff must be able to share information that relates to the effectiveness of any control strategy implementation. Without proper information feedback loops, planning staff cannot determine if existing control strategies should be modified or if new control strategies should be adopted.

Compliance with control strategies should be actively monitored such that excess emissions data is transmitted to planning staff. Because excess emissions were assumed to have been controlled by the strategy, offsetting emission reductions can be appropriately planned.

Engineering and enforcement staff must cooperate with respect to identifying emission increases at facilities. When a facility increases emissions beyond the emission level indicated in the original application for an authority to construct, an emission increase has occurred. The BAAQMD considers an increase in emissions of this kind to be a process modification. Modifications and emission increases must be effectively tracked to determine when New Source Review regulations apply. Ineffective tracking of emission increases can result in potential best available control technology (BACT) and offset trigger levels being overlooked. The identification of emission increases is a shared task between enforcement and engineering staff. A permit condition feedback loop should exists

between enforcement and engineering, and emission information must transfer to the emission inventory, rule development, and planning staff.

An effective emission inventory audit program, such as the SCAQMD program, is important in SIP strategy effectiveness tracking. The goal of an audit program is to determine if facilities have reported annual emissions to the local agency correctly. A SCAQMD emission audit includes aspects of engineering assessment, field inspections, and source testing. More than 70% of the 180 facilities visited by the SCAQMD audit team in 1988 had under-reported emissions to the district, and emissions were under-reported by an average of 15% (SCAQMD, 1988). Based upon follow-up inspections results, the audit program serves as an effective deterrent to the under-reporting of emissions. An emission inventory auditing system helps to improve the feedback loops between all of the planning agents.

CONCLUSIONS:

In California, air pollution control districts are already scraping the bottom of the emission barrel, searching for those elusive emission reductions that will lead to attainment of the NAAQSs. Gone are the days when new regulations could be expected to bring about large emission reductions from single source categories. The current trend is to focus regulations on smaller emission categories. With higher marginal costs associated with the control of smaller sources, it is imperative that existing regulations be monitored to determine if they are achieving the emission reductions that they were expected to achieve and to determine if additional emission reductions are available. By examining the implementation of regulations, as well as the ability of local agencies to project, monitor, and react to changes in source category emissions, we can increase the effectiveness of emission reduction efforts.

Although the 1989-90 Phase III reports have yet to be finalized, the first round of SIP strategy effectiveness studies appear to indicate that a number of planning, rule development, engineering, and enforcement issues should be addressed to improve SIP strategy development and implementation. The cooperative nature of SIP strategy effectiveness studies lends to coordinated progress toward the attainment of the NAAQS. Based upon the initial success of the EPA Phase III SIP strategy effectiveness evaluation program, it is likely to become an integrated part of state and local agency air quality programs.

REFERENCES:

California Air Resources Board (1989), Compliance Assistance Program; Surface Coating Operations, Metal Parts and Products, Technical Manual; Sacramento, CA; July 1989.

Hunt, Terrell f. (1989), Associate Enforcement Counsel, Air Enforcement Division, Office of Enforcement and Compliance Monitoring, U.S. Environmental Protection Agency, and John S. Seitz, Director, Stationary Source Compliance Division, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency; Policy Memorandum: Guidance on Limiting Potential to Emit in New Source Permitting; Washington, D.C.; June 13, 1989.

Guensler, Randall (1989); Preparation of Alternative Emission Control Plans for Surface Coating Operations; Proceedings of the 1989 Air and Waste Management Association Annual Meeting in Anaheim, CA; Pittsburgh, PA; June 1989; (this paper was revised in August 1989 and copies may be obtained directly from the author).

Seitz, John S. (1988), Director, Stationary Source Compliance Division, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency; Policy Memorandum: Implementation of Rule Effectiveness Studies; Washington, D.C.; March 31, 1988.

South Coast Air Quality Management District (1988); SCAQMD 1988 Annual Emissions Audit Report; El Monte, CA; 1988.

United States Environmental Protection Agency (1986); Emission Trading Policy Statement...; Federal Register, Volume 51, Number 233; December 4, 1986; pp 43814-43860.

United States Environmental Protection Agency (Region IX), California Air Resources Board, Bay Area Air Quality Management District, San Diego Air Pollution Control District, and South Coast Air Quality Management District (1990); Phase III SIP strategy Effectiveness Study of the Aerospace Coating Industry; San Francisco, CA; scheduled for release in 1990.

NOTE TO EDITORS

Under the new federal copyright law, publication rights to this paper are retained by the author(s).