AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

NOTICE OF WORKSHOP
FOR DISCUSSION OF NEW PROPOSED RULE 67.22 EXPANDABLE POLYSTYRENE FOAM PRODUCTS MANUFACTURING OPERATIONS

The San Diego County Air Pollution Control District will hold a public meeting to consider the adoption of a new rule, Rule 67.22 - Expandable Polystyrene Foam Products Manufacturing Operations. Comments regarding the proposed rule may be submitted in writing before, or made at the workshop, which is scheduled as follows:

DATE: Thursday October 29, 1992

TIME: 9:00 am

PLACE: County Operations Center
General Services Conference Room #252
Building #2
5555 Overland Avenue
San Diego, CA

Volatile organic compounds (VOC's) react in the atmosphere to form ozone. San Diego County does not meet the state or federal ambient air quality standards for ozone that have been established to protect the public health. Expandable polystyrene (EPS) foam products manufacturing operations use blowing agents such as pentane which is a VOC. Rule 67.22 is a new rule designed to reduce emissions of blowing agents containing VOC's from large EPS foam products manufacturing facilities that emit 25 tons or more per year of VOC's. Generally, this equates to approximately 420 tons of EPS foam products per year, but emission rates can vary with products and manufacturing techniques. Rule 67.22 is required by the 1990 Federal Clean Air Act Amendments. Specifically, proposed Rule 67.22 will:

- Require facilities subject to this rule to install air pollution control systems having a combined VOC capture and emission reduction efficiency of at least 85 percent by weight.
- Require the final EPS foam products be stored for at least 24 hours at the affected facility and all storage emissions be vented to an air pollution control system having a combined VOC capture and emission reduction efficiency of at least 85 percent by weight. This requirement will not apply if the highest concentration of blowing agent in the EPS foam products is not more than or equal to 1.8 percent by weight, as determined within 15 minutes of completion of the molding process.
- Specify requirements for air pollution control equipment. Existing and new facilities with VOC emissions of 25 tons per year or more would be required to install the air pollution control equipment within 36 months of rule adoption and upon startup, respectively.

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- Require records be kept, as specified, to demonstrate daily compliance if air pollution control equipment is required and to determine annual emission rates.

- Specify test methods used for determining compliance with Rule 67.22.

If you would like a copy of the proposed Rule 67.22, please call Juanita Ogata at (619) 694-5581. If you have any questions concerning the proposal, please call Natalie Zlotin at (619) 694-3312 or me at (619) 694-3303.

Richard J. Smith

RICHARD J. SMITH
Deputy Director

RJS:TTL:jo
9/17/92

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

PROPOSED NEW RULE 67.22

RULE 67.22. EXPANDABLE POLYSTYRENE FOAM PRODUCTS MANUFACTURING OPERATIONS

(a) APPLICABILITY

Except as otherwise provided in Section (b), this rule is applicable to any person who manufactures expandable polystyrene (EPS) foam products using volatile organic compounds (VOC's) as blowing agents. EPS foam products manufacturing operations subject to this rule shall not be subject to Rule 66.

(b) EXEMPTIONS

(1) The requirements of Section (d) of this rule shall not apply to any stationary source emitting less than 25 tons per year of VOC's from EPS foam products manufacturing operations.

(2) The requirements of Subsection (d)(2) of this rule shall not apply to any EPS foam products manufacturing operation where the highest concentration of blowing agent in the EPS foam products is less than or equal to 1.8 percent by weight, as determined within 15 minutes of completion of the molding process.

(c) DEFINITIONS

For the purposes of this rule, the following definitions shall apply:

(1) **"Blowing Agent"** means a liquid or gaseous material containing VOC's that facilitates the formation of an EPS foam product from polymeric raw materials.

(2) **"Exempt Compound"** means any of the following compounds: methylene chloride; 1,1,1-trichloroethane; trichlorofluoromethane (CFC-11); dichlorodifluoromethane (CFC-12); chlorodifluoromethane (HCFC-22), trifluoromethane (HFC-23); trichlorotrifluoroethane (CFC-113); dichlorotetrafluoroethane (CFC-114); chloropentafluoroethane (CFC-115); dichlorotrifluoroethane (HCFC-123); tetrafluoroethane (HFC-134a); dichlorofluoroethane (HCFC-141b); chlorodifluoroethane (HCFC-142b); 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124); pentafluoroethane (HFC-125); 1,1,2,2-tetrafluoroethane (HFC-134); 1,1,1-trifluoroethane (HFC-143a); 1,1-difluoroethane (HFC-152a); and the following four classes of perfluorocarbon (PFC) compounds:

(i) cyclic, branched, or linear, completely fluorinated alkanes;

(ii) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;

(iii) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and

(iv) sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.

(3) **"Existing Equipment"** means any EPS foam products manufacturing equipment for which an Authority to Construct or Permit to Operate was issued before (*date of adoption*).

(4) **"EPS Foam Products"** means low-density foam products which are manufactured from a series of processes where raw polymeric materials such as polystyrene beads containing a blowing agent are expanded by exposure to steam or any other expansion agent and subsequently molded into the final products. EPS foam products include, but are not limited to, drinking cups, insulation boards, packaging materials, and ice chests.

(5) **"Manufacturing Emissions"** means emissions of VOC's which occur during the manufacturing of EPS foam products, from the delivery of the raw polymeric materials to the manufacturing site through the molding of pre-expanded materials to form the final EPS foam products. Manufacturing emissions do not include emissions of VOC's which occur during the first 24 hours of storage of the final EPS foam products.

(6) **"New Equipment"** means any EPS foam products manufacturing equipment for which an Authority to Construct was issued after (*date of adoption*).

(7) **"Stationary Source"** means an emission unit or aggregation of emission units located on the same or contiguous properties. Emission units which are on the same or contiguous property but which are not under the same ownership or entitlement to use and which are not related shall not be considered a single stationary source. Contiguous property means two or more parcels of land with a common boundary or separated solely by a public or private roadway or other public or private right-of way.

(8) **"Storage Emissions"** means emissions of VOC's which occur during the first 24 hours of storage of the final EPS foam products.

(9) **"Volatile Organic Compound"** means any volatile compound containing at least one atom of carbon excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonates, and exempt compounds which may be emitted to the atmosphere from EPS foam products manufacturing operations subject to this rule.

(d) **STANDARDS**

(1) A person shall not manufacture EPS foam products unless all manufacturing emissions are vented to an air pollution control system which meets the requirements of Sections (e) and (h).

(2) A person shall not manufacture EPS foam products unless the final EPS foam products are stored on site for a period of at least 24 hours and all storage emissions are vented to an air pollution control system which meets the requirements of Sections (e) and (h).

(e) **CONTROL EQUIPMENT**

(1) A person subject to the provisions of Subsection (d)(1) and/or (d)(2) shall comply by using an air pollution control system which:

(i) Has been installed in accordance with an Authority to Construct; and

(ii) Includes an emission collection system which captures manufacturing emissions and/or storage emissions, as applicable, and transports the captured emissions to an air pollution control device; and

(iii) Has a combined capture and emission reduction efficiency of at least 85 percent by weight.

(2) A person subject to the provisions of Subsection (e)(1) of this rule shall submit an Operation and Maintenance Plan for the air pollution control device and emission collection system to the Air Pollution Control Officer for approval and receive such approval prior to operation of the air pollution control equipment. Such plan shall:

(i) Identify all key system operating parameters. Key system operating parameters are those necessary to ensure compliance with Subsection (e)(1) such as temperatures, pressures and flow rates.

(ii) Include proposed inspection schedules, anticipated ongoing maintenance, and proposed recordkeeping practices regarding the key system operating parameters necessary to maintain continuous compliance with the provisions of Subsection (e)(1)(iii).

A person subject to the requirements of this section shall implement the plan upon approval of the Air Pollution Control Officer, and shall comply with the provisions of the approved plan thereafter.

(f) **RECORDKEEPING**

Any person who manufactures EPS foam products shall maintain records in accordance with the following requirements:

(1) Maintain monthly records of the amount of EPS raw materials used;

(2) Maintain records showing the amount of time the final EPS foam products were stored on site; and

(3) For control equipment, maintain daily records of the actual key system operating parameters.

These records shall be retained on site for at least three years and made available to the District upon request.

(g) **TEST METHODS**

(1) Calculations of emissions of VOC's pursuant to Subsection (b)(1) of this rule shall be based on the quantity of EPS foam products produced and the difference between the blowing agent content of the raw polymeric materials and that of the final EPS foam products, as determined after 24 hours of storage.

(2) Measurement of the blowing agent content of raw polymeric materials and/or EPS foam products pursuant to Subsections (b)(2) and (g)(1) of this rule shall be conducted in accordance with the South Coast Air Quality Management District (SCAQMD) Test Method 306-91, "Analysis of Pentanes in Expandable Styrene Polymers".

(3) The overall control efficiency pursuant to Subsection (e)(1)(iii) shall be determined by multiplying the capture efficiency of the emission collection system by the control efficiency of the air pollution control device. To determine the capture efficiency of the emission collection system, total potential VOC emissions shall be calculated from the amount of raw polymeric materials used and the blowing agent content, as determined using SCAQMD Test Method 306-91, "Analysis of Pentanes in Expandable Styrene Polymers". The amount of emissions carried into the control device and the efficiency of the air pollution control device shall be determined using EPA Method 25A (40 CFR 60, Appendix A), as it exists on (*date of adoption*). Measurements of organic gaseous emissions and determination of capture efficiency pursuant to Subsection (e)(1) of this rule shall be conducted using a protocol approved by the Air Pollution Control Officer. Subsequent to the initial compliance demonstration period, appropriate key system operating parameters as determined by the Air Pollution Control Officer may be used as indicators of the performance of the emission collection system.

(h) **COMPLIANCE SCHEDULE**

(1) Any person operating existing equipment who is subject to the provisions of Subsection (d)(1) and/or (d)(2) shall meet the following increments of progress:

(i) By (*twelve months after date of adoption*), submit to the Air Pollution Control Officer an application for Authority to Construct and Permit to Operate an air pollution control system meeting the requirements of Section (e).

(ii) By (*twenty-one months after date of adoption*), issue purchase orders for the control device and other long delivery time components necessary to comply with Section (e).

(iii) By (*thirty-six months after date of adoption*), demonstrate compliance with Section (e).

(2) Any person installing new equipment who is subject to the provisions of Subsection (d)(1) and/or (d)(2) shall comply with the provisions of Section (e) upon startup.

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

NOTICE OF WORKSHOP

TO DISCUSS THE PROPOSED ADOPTION OF NEW RULE 67.22 - EXPANDABLE POLYSTYRENE FOAM PRODUCTS MANUFACTURING OPERATIONS

The San Diego County Air Pollution Control District will hold a second public workshop to consider the adoption of a new rule, Rule 67.22 - Expandable Polystyrene Foam Products Manufacturing Operations, and to discuss the results of the Socioeconomic Impact Assessment (SIA) for this rule conducted by the District. Comments regarding the proposed rule and the SIA may be submitted in writing before, or made at, the workshop which is scheduled as follows:

DATE: Monday, March 14, 1994

TIME: 10:00 A.M.

PLACE: Air Pollution Control District
9150 Chesapeake Drive, Rm. 139
San Diego, CA 92123-1096

Expandable polystyrene (EPS) foam products manufacturing operations use blowing agents (such as pentane) which are volatile organic compounds (VOC's). Volatile organic compounds are ozone precursors. San Diego County is classified as a Severe ozone nonattainment area by the federal Clean Air Act which requires the District to adopt rules reflecting reasonably available control technology for all major sources emitting 25 tons of VOC's per year or more. In addition, the California Clean Air Act requires the District to adopt all feasible measures to reduce emissions of ozone precursors.

Rule 67.22 is a new rule designed to control emissions of VOC's from EPS foam products manufacturing facilities that emit 25 tons or more per year of VOC's.

The first workshop for Rule 67.22 was held on October 29, 1992. Subsequently, the rule was revised as a result of comments received from industry, the State Air Resources Board, and the U.S. Environmental Protection Agency. A Workshop Report has been prepared.

Specifically, the most recent changes to proposed new Rule 67.22 will:

- Require EPS foam manufacturers emitting 25 tons of VOC's per year or more to meet a production-based emissions standard of 3.0 pounds VOC emissions per 100 pounds of EPS foam product. Options to achieve compliance include process modifications such as switching to raw materials which contain smaller amounts of pentane, and/or add-on air pollution control equipment applied to all or part of the operation. This replaces the specific requirement to install an air pollution control system which would achieve an 85 percent overall emission reduction.

- Delete requirements and exemptions which applied specifically to on-site storage of EPS foam products.
- Modify recordkeeping provisions to require facilities to retain manufacturer's data for the content of blowing agents used in EPS raw materials.
- Revise and update test methods for determining compliance with the rule.
- Modify the compliance schedule to provide a one-year period for process modifications.

The District has prepared a Socioeconomic Impact Assessment of proposed Rule 67.22 as required by state law. It estimates the emission reduction potential and the cost-effectiveness of the proposed rule. The SIA also presents the range of probable costs to industry, including small business, the availability and cost-effectiveness of alternatives, and the impact of the rule on employment and the economy of the region. It concludes that the economic impact of Rule 67.22 on the affected facility has been minimized to the extent allowed by statutory requirements.

If you would like a copy of the revised proposed new Rule 67.22, 1st Workshop Report or the Socioeconomic Impact Assessment, please call Juanita Ogata at (619) 694-8851. If you have any questions concerning the proposal, please call Natalie Zlotin at (619) 694-3312 or me at (619) 694-3303.

Richard J. Smith

RICHARD J. SMITH
Deputy Director

RJSm:NZ:PC:jo
3/1/94

SOCIOECONOMIC IMPACT ASSESSMENT

PROPOSED RULE 67.22-
EXPANDABLE POLYSTYRENE FOAM PRODUCTS MANUFACTURING OPERATIONS

DRAFT

FEBRUARY 1994

San Diego County
Air Pollution Control District

SOCIOECONOMIC IMPACT ASSESSMENT
PROPOSED RULE 67.22-

EXPANDABLE POLYSTYRENE FOAM PRODUCTS MANUFACTURING OPERATIONS

INTRODUCTION

Section 40728.5 of the State Health and Safety Code requires the Air Pollution Control District (District) to perform a Socioeconomic Impact Assessment (SIA) for any new or amended rules and regulations that will significantly affect air quality or emission limitations. This report contains the District's assessment of the socioeconomic impacts of proposed District Rule 67.22 - Expandable Polystyrene Foam Products Manufacturing Operations.

Rule 67.22 is a new rule developed to control volatile organic compound (VOC) emissions from expandable polystyrene (EPS) foam manufacturing operations. These operations produce 'Styrofoam' items such as cups, panels, and packing materials for electronic equipment. Volatile organic compounds such as pentane, which are contained in polystyrene beads, are used as foam blowing agents. Manufacturing processes include a 'pre-expansion stage' where the beads are exposed to steam which volatilizes and heats the blowing agents in the beads, thereby expanding the beads, and a 'molding' stage where the beads are heated further and formed into the desired shape. Pentane is emitted to the atmosphere during the manufacturing processes and subsequent storage of the fabricated EPS foam products. It subsequently participates in the photochemical reactions that form ozone. The San Diego Air Basin exceeds both federal and state ambient air quality standards for ozone.

Rule 67.22 applies to one EPS foam manufacturing facility in San Diego County which emitted approximately 35 tons of VOC's in 1990. The rule requirements are as follows:

- EPS foam manufacturers emitting 25 tons of VOC's per year or more are required to meet a production-based emissions standard of 3.0 pounds VOC emissions per 100 pounds of EPS foam product. Options to achieve compliance include process modifications such as switching to raw materials which contain smaller amounts of pentane, and/or add-on air pollution control equipment applied to all or part of the operation.

- If compliance is achieved with add-on air pollution control equipment, the rule specifies a compliance schedule for installation of the equipment. It also requires that an operation and maintenance plan be submitted, which includes a proposed inspection schedule for the control system, and the anticipated maintenance of key system operating parameters. A compliance date is also included for process modification.

- All EPS foam manufacturers are required to keep current records necessary to determine VOC emissions, such as the amount of EPS raw materials used and blowing agent content of each EPS raw material. Facilities installing air pollution control systems must also keep daily records of the system's key operating parameters.

Proposed Rule 67.22 is expected to reduce annual VOC emissions from EPS foam manufacturing by approximately 14 tons, or by 40% from the 1990 level. It is anticipated that the single affected facility would comply with the emissions standard by process modification. Estimated

cost-effectiveness is $1.10 per pound of VOC reduced, and total cost to the affected facility is estimated to be about $31,000 per year.

THE NECESSITY OF ADOPTING RULE 67.22

The 1990 Federal Clean Air Act Amendments require the District to adopt rules reflecting Reasonably Available Control Technology (RACT) for major stationary sources of ozone precursors. For San Diego County, identified as a 'Severe' federal ozone nonattainment area, a major source is defined as any stationary facility which directly emits or has a potential to emit 25 tons per year or more of volatile organic compounds (VOC) or nitrogen oxides (NOx).

The Environmental Protection Agency (EPA) has established specific RACT requirements for several categories of industry in Control Technique Guideline (CTG) documents. EPS foam manufacturing is not among these industries. For industries with no specific requirements, EPA considers RACT for major sources to be a level of control which achieves an overall reduction in uncontrolled VOC emissions of at least 81 percent. In cases where this is not achievable at a particular facility, the most stringent level of control achievable must be determined based upon technical and economic feasibility, and submitted to EPA for approval as a 'source-specific' alternative RACT.

VOC emissions reduction for EPS foam manufacturing operations can be achieved by using EPS beads with lower pentane content, or by using typical VOC add-on control technologies such as catalytic or thermal oxidation, or carbon adsorption. These practices are technologically feasible and currently available, and they have been used on EPS foam manufacturing operations in California and other parts of the country. However, while using low-pentane EPS beads is generally economically feasible for this industry, often using add-on emissions control is not. For the affected facility, the most stringent level of control economically feasible has been determined to be an emissions standard of 3.0 pounds per 100 pounds of EPS foam product, as is contained in proposed Rule 67.22.

A VOC control measure for EPS foam manufacturers was included in the District's 1991 Regional Air Quality Strategy (RAQS) developed to comply with the California Clean Air Act. The Act requires the District to adopt the RAQS control measures as expeditiously as possible in order to attain the state and national ambient air quality standards for ozone.

Therefore, both federal and state laws necessitate the adoption of Rule 67.22.

IMPACT ASSESSMENT

As specified in the Health and Safety Code, "socioeconomic impact" means the following:

(1) The type of industries or business, including small business, affected by the rule or regulation.

(2) The range of probable costs, including costs to industry or business, including small business, of the rule or regulation.

(3) The impact of the rule or regulation on employment and the economy of the region affected by the adoption of the rule or regulation.

(4) The availability and cost-effectiveness of alternatives to the rule or regulation being proposed or amended.

(5) The emission reduction potential of the rule or regulation.

(6) The necessity of adopting, amending, or repealing the rule or regulation in order to attain state and federal ambient air standards.

Item 6 was discussed in the preceding section. The remaining items are discussed below.

Types of Industries Affected by Rule 67.22

The adoption of proposed Rule 67.22 will directly affect EPS foam product manufacturers (SIC 3069). The rule may indirectly affect electronic equipment (SIC 3651) and motor vehicle accessory manufacturers (SIC 3714) which purchase EPS foam packaging products because any increase in the cost of EPS products may be passed on by the EPS foam product manufacturers to their business customers.

Only one existing facility in San Diego County will be impacted by Rule 67.22. That facility employs about 15 persons and had estimated sales of about $3.3 million in 1990. It is considered a small business under Section 11342 (e) of the State Government Code. This section defines a small business, in part, as independently owned and operated, not dominant in its field of operation, and a manufacturing facility with less than 250 employees. This facility is also a small business according to the definition in the federal Small Business Act.

Range of Probable Costs of Proposed Rule 67.22

a. Cost of implementation of the emissions standard.

The single affected facility could comply with Rule 67.22 by switching to a low-pentane raw material. However, to use low-pentane EPS beads, the affected facility would need to replace its existing pre-expander with a different type of equipment. Table 1 shows the estimated costs associated with the implementation of this new process at the affected facility.

TABLE 1

Costs for Process Modification and Associated New Equipment at the Affected Facility

Inital Capital Cost	Annual Operating Costs	Total Annualized Cost	Cost-Effectiveness (per lb VOC reduced)
$115,000	$12,000	$31,000	$1.10

The initial capital cost estimate reflects the cost difference between the new and existing pre-expander, and includes installation. The operating cost estimate reflects additional steam requirements and operator training for the new equipment. The cost of the new raw material would be about the same as the current material used.

b. Cost of recordkeeping requirements

Compilation of annual records for the affected facility is estimated to require about 20 staff-hours per year. Assuming $15 per hour labor cost [1], and an equal amount for overhead, annual recordkeeping costs are estimated to be $600.

c. Costs to indirectly affected facilities

The affected facility may pass the cost of compliance with Rule 67.22 on to its business customers. This cost is estimated to be about 2¢ per pound of EPS product, or less than a one percent price increase. The affected facility's customers, such as electronic equipment and motor vehicle accessory manufacturers, may in turn pass this cost on to their consumers.

Economic Impacts of Proposed Rule 67.22

a. Impact on the facility subject to the emissions standard of Rule 67.22.

An economic criterion which has been used by EPA and the California Air Resources Board (ARB) to evaluate economic impacts of regulations is 'Return on Equity' (ROE). ROE is a general indicator of profitability and is determined as a company's net profit after taxes, often expressed as a percentage of the company's equity. An annual compliance cost of a single regulation greater than 10 percent of annual ROE for a facility is considered a potentially significant economic impact by ARB [2]. An annual compliance cost for all environmental regulations greater than 30 percent of ROE for a facility is considered potentially significant by EPA [3].

For the one facility in San Diego County affected by Rule 67.22, the estimated annual compliance cost of $31,000 is approximately 29 percent of the ROE. According to both the ARB and EPA criteria, this may represent a significant economic impact on the company's operations.

However, the affected facility has already secured the equipment necessary to process low-pentane EPS beads. In addition, the impact may be reduced if compliance costs are passed on to customers. Since the expected increase in price of their foam products is not significant (2¢ per pound or less than one percent) such a scenario may be realistic. Therefore, it is anticipated that compliance with proposed Rule 67.22 at this facility could be implemented without significant adverse economic impacts.

b. Impact on facilities indirectly affected by Rule 67.22

Facilities such as appliance and electronic manufacturers use EPS foam for insulating and packaging their products. These manufacturers would likely accept a passed-on cost increase only to the extent they could in turn pass the cost on to consumers. Otherwise they would seek alternative available suppliers. However, such suppliers would, most likely, be from the South Coast air district, which has a regulation more stringent than Rule 67.22. Options for EPS product substitution may exist, and affected businesses may choose other available products if the price increase of EPS products is substantial. However, at a foam price increase of approximately one percent, a significant impact is not expected at indirectly affected facilities. The increased costs for packaging an appliance or electronic product would likely be only a few cents or less.

Employment Impacts of Proposed Rule 67.22

a. Impact on the facility subject to emission control requirements of Rule 67.22

If the compliance cost cannot be passed on to customers, the affected facility may reduce its existing work force, or may shutdown or relocate the facility. If the facility were to bear the entire annual compliance cost of $31,000, any resulting decrease in personnel at the affected facility would probably be, at most, one employee.

On the other hand, the existing plant personnel may not be able to perform additional operational and maintenance work for the new process equipment or for emissions control equipment. Therefore, extra help may need to be hired at the facility.

Overall, no significant employment impact is expected at the affected facility.

b. Impact on employment in San Diego County.

If emission control equipment were installed and local contractors hired for the design and installation, there may be a temporary increase in local employment resulting from Rule 67.22. However, with only one affected facility, it is not anticipated that such increases will create new permanent jobs in the County.

Availability and Cost-Effectiveness of Alternatives to Rule 67.22

Alternative A: Not adopt Rule 67.22

This is not a viable option. It is inconsistent with the federal Clean Air Act Amendments of 1990, which require air pollution control districts to adopt rules reflecting reasonably available control technology (RACT) for major sources emitting more than 25 tons per year of VOC's by November 15, 1992. On January 15, 1993, EPA notified the District of a finding of failure to submit RACT rules for several major sources of VOC emissions. EPA stated that this failure would result in the imposition of federal sanctions, such as withholding of federal highway and transportation funds to the region and severe restrictions on industrial expansion, unless the required rules are adopted within 18 months of the finding, i.e. by July 15, 1994. Failure to adopt RACT rules within two years of such a finding could also result in promulgation of a Federal Implementation Plan. Rule 67.22 should be adopted as expeditiously as possible to fulfill the requirements of the federal Clean Air Act Amendments.

Additionally, a tactic containing the emissions control measures required by proposed Rule 67.22 is included in the 1991 Regional Air Quality Strategy (RAQS) which was adopted by the Air Pollution Control Board on June 30, 1992. Therefore, not adopting Rule 67.22 would be inconsistent with the RAQS and with the California Clean Air Act which requires the District to adopt all feasible VOC control strategies.

Alternative B: Adopt a more stringent Rule 67.22

As mentioned previously, for industries with no specific requirements, such as EPS foam manufacturing, EPA considers RACT for major sources to be a level of control which achieves an overall reduction in uncontrolled VOC emissions of at least 81 percent. The rule could be made more stringent by requiring 81 percent emission reduction at facilities emitting 25 tons of VOC's per year or more. This requirement would be more stringent than the 40 percent emission reduction provided by the proposed emissions standard of 3.0 pounds VOC's per 100 pounds of production, and would be achievable only by applying add-on air pollution control equipment to the entire manufacturing operation. The cost and economic impact of this alternative are presented below.

a. Probable Costs to the Affected Facility

Several VOC control technologies were considered for implementation at the affected facility, including thermal and catalytic incineration, and carbon adsorption. Catalytic oxidation has been determined to be the least expensive choice with an estimated cost-effectiveness of $3.20 per pound of VOC reduced.

A detailed cost analysis was performed for VOC emission control using catalytic oxidation at the affected facility (Table 2). Initial capital cost estimates included cost of the control device, cost of all ancillary equipment, and all costs associated with delivery installation, and startup. Operating cost estimates included all costs associated with general maintenance and utilities, and catalyst replacement. The estimates indicate an initial capital expense of $520,000 and total annualized costs of $180,000.

TABLE 2

Cost and Economic Impacts of Alternatives for Rule 67.22 for the Affected Facility

Rule Option	Initial Capital Cost	Total Annualized Cost	Cost-Effectiveness (per lb VOC reduced)	Percent of ROE	Emission Reduction ton/yr	%
Current Proposal	$115,000	$31,000	$1.10 / lb	29%	14	40
Alternative B	$520,000	$180,000	$3.20 / lb	167%	30	81

b. Economic Impacts of Alternative B on the Affected Facility

The cost-effectiveness of Alternative B ($3.20/lb VOC reduced) is within the bounds of cost-effectiveness values associated with other current District VOC rules. However, cost-effectiveness values do not always serve as indicators of economic impact on a facility affected by any environmental regulation. Factors that should also be considered are the capital and annual compliance cost estimates.

Table 2 shows these estimates for the affected facility assuming the application of the least expensive technology, catalytic oxidation, to comply with Alternative B. It shows that the annual compliance cost of this alternative significantly exceeds its return on investment (167%). In addition, the resulting increase in product costs which may be passed on to business customers and consumers is approximately 13¢ per pound of EPS product, or about a 6% price increase. This larger price increase may be less acceptable to the affected customers and may cause them to seek alternative suppliers. Many EPS foam manufacturing facilities in the neighboring South Coast air district which have installed air pollution control equipment are larger than the facility in San Diego. Since cost increase per unit production is expected to be smaller for larger facilities[4], larger suppliers in the South Coast air district would be able to offer smaller cost increases. As a result, supplies from these larger facilities may represent cost-effective alternatives to the products from the company located in San Diego County, if that company were required to install add-on emission control equipment.

If the annual compliance cost cannot be passed on to its customers, the facility affected by Alternative B to the proposed rule, may have to absorb the costs. However, these costs are of such magnitude that they would affect overall economic viability of the facility, and could cause the facility to shutdown or relocate.

Another significant expenditure for the affected facility would be the initial capital cost. Securing conventional financing may be difficult for this facility. Since it is a major emission

source, it does not qualify for the small business environmental compliance assistance program of the federal Clean Air Act. However, the facility could qualify for a seven year loan from the State CLEAN Program (California Loans for Environmental Assistance Now) at 8.75 percent interest and a two percent loan fee.[5]

c. Employment Impacts on the Affected Facility of Adopting Alternative B

If the compliance cost cannot be passed on to customers, the affected facility may reduce its existing work force, or may shutdown or relocate the facility. In the South Coast air district, approximately 25 EPS foam manufacturing firms were affected by requirements of Rule 1175, Control of Emissions from the Manufacture of Polymeric Cellular (Foam) Products, which in practice could be met only by installing add-on emissions control. According to the Society of the Plastics Industry,[6] several smaller firms were compelled to relocate or shutdown their operations in that district.

d. Conclusions

The economic impact of Alternative B on the affected facility far exceeds the ARB and EPA criteria. It shows the potential for significant negative effect on the facility's financial viability of a magnitude that could result in facility closure. The District does not recommend adopting Alternative B.

Alternative C: Adopt a less stringent Rule 67.22

This is also not a viable option. As indicated previously, the proposed rule contains a technologically and economically feasible emissions control measure which represents RACT for the affected facility. A less stringent rule would not comply with the 1990 Federal Clean Air Act Amendments which require the District to adopt rules implementing RACT. Alternative C would also result in lower emission reductions than required by the Regional Air Quality Strategy.

Benefits and Emission Reduction Potential in Adopting Rule 67.22

The annual VOC emissions from the EPS foam manufacturing facility in San Diego County were 35 tons in 1990. Implementation of Rule 67.22 would result in an annual VOC emission reduction of about 14 tons per year, or 40%. Implementation of Rule 67.22 will contribute to the attainment of the ambient air quality standards for ozone in San Diego County.

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1 EPA, Office of Air Quality Planning and Standards, Control Cost Manual

2 California Air Resources Board, Technical Support Document to Draft Staff Report, proposed Control Measure for Metal Melting Processes, August 1992

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[3] EPA Small Business Sector Study: Impacts of Environmental Regulations on Small Business, EPA 230-09/88-039, September 1988

[4] EPA study, "Control of VOC Emissions from Polystyrene Foam Manufacturing", EPA-450/3-90-020, September 1990

[5] Discussion with California Department of Commerce- Business, Transportation, and Housing Agency

[6] Discussion with Steve Reiter, EPS Division, Western Region, Society of the Plastics Industry