



Air Pollution Control Board
 Greg Cox District 1
 Dianne Jacob District 2
 Pam Slater District 3
 Ron Roberts District 4
 Bill Horn District 5

Air Pollution Control District
 R. J. Sommerville Director

DATE: December 16, 1998

TO: Air Pollution Control Board

SUBJECT: Adoption of New Rule 67.21 (Adhesive Material Application Operations)
 (District: All)

SUMMARY

Overview

State law requires the District to implement all feasible control measures limiting emissions of ozone precursors [oxides of nitrogen (NOx) and volatile organic compounds (VOCs)] including Best Available Retrofit Control Technology (BARCT). Federal law requires implementing Reasonably Available Control Technology (RACT). Accordingly, District rules must reflect RACT, BARCT, and all feasible control measure mandates. Proposed new Rule 67.21 has been identified by the state Air Resources Board (ARB) as a feasible BARCT control measure. Implementing all feasible control measures is also required if the state-mandated no-net-increase program is rescinded. On November 4, 1998 (Board Item #3), the Board rescinded the no-net-increase program subject to ARB concurrence. The ARB is now evaluating this action. Adopting proposed new Rule 67.21 also implements the corresponding control measure in the Board's Regional Air Quality Strategy adopted on June 17, 1998 (Board Item #4).

Rule 67.21 reduces VOC emissions from adhesive material application operations. It was developed consistent with the ARB's statewide BARCT guidance. Similar rules have already been adopted by other large and many small California air districts. As a result, complying coatings are readily available. There are no related federal RACT requirements. To prevent the U.S. Environmental Protection Agency (EPA) from becoming inappropriately involved in the California program, state law prohibits including rules in the federal State Implementation Plan (FSIP) unless such rules are necessary to meet federal requirements. Because Rule 67.21 is not needed to meet federal requirements, it will not be submitted for inclusion in the FSIP. Hence, EPA will have no enforcement authority related to Rule 67.21.

The rule will reduce VOC emissions from all adhesive material application operations by 17%, or approximately 276 tons per year.

Permitted Sources

Rule 67.21 prohibits the sale and use of adhesive materials exceeding the VOC contents specified in the rule. It limits the VOC content of these materials (i.e. adhesives, sealants, adhesive and sealant primers) and associated cleaning processes used at various industries such as furniture, kitchen cabinet and countertop manufacturing, automotive repair, and rubber products manufacturing. These facilities are required to keep a list of such materials and monthly or daily usage records. Materials sold in small packages containing 16 fluid

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ounces or less, materials with a negligible VOC content, and such products used in specified operations such as tire repair and manufacture of undersea weapon systems are exempt. It also exempts businesses using less than 55 gallons of materials per year. It allows using up to 55 gallons per year of non-compliant products and cleaning solvents per year provided the total annual facility usage does not exceed 55 gallons.

The rule will apply to 84 facilities emitting approximately 71 tons of VOC's per year. It will reduce emissions by approximately 18 tons per year (25%). Almost half of these facilities currently use complying products. The cost of compliance for a business not using complying products will vary depending on the size of the company, the necessary application equipment upgrades, and the amount of adhesive material saved as a result of using compliant products with a higher solid content. The estimated cost-effectiveness ranges from a savings of \$8.80 to a cost of \$3.20 per pound of VOC reduced. This is comparable with the estimated cost-effectiveness of other recently adopted rules (between \$1 and \$3 per pound of VOC's).

Non-Permitted Sources

There are also approximately 5000 businesses and individual contractors that do work such as roofing, plumbing, floor, and carpet installation at a large number of job-sites throughout the County. These operations are not required to have District permits. However, the adhesive usage associated with these activities is estimated to be 1507 tons per year of VOC emissions and will be affected by new Rule 67.21. The rule will prohibit the sale and use of non-complying adhesive materials reducing emissions by about 258 tons per year of VOC emissions (17%). The majority of these businesses and contractors currently use readily available complying products. Additional compliance costs will be insignificant because these businesses and contractors typically do not use spray equipment and there is negligible price difference between complying and non-complying products.

The results of a socioeconomic impact assessment of the proposed rule (Attachment III) indicate new Rule 67.21 will not have a significant economic impact on affected industries.

A workshop was held on April 29, 1998. The workshop report is provided in Attachment VI.

Recommendation

AIR POLLUTION CONTROL OFFICER:

Adopt the resolution adding Rule 67.21 to the District Rules and Regulations and make appropriate findings:

- (i) of necessity, authority, clarity, consistency, non-duplication, and reference as required by Section 40727 of the State Health and Safety Code;
- (ii) that adding Rule 67.21 will alleviate a problem and will promote attainment of ambient air quality standards (Section 40001 of the State Health and Safety Code);
- (iii) that an assessment of the socioeconomic impact of proposed new Rule 67.21 has been prepared, the socioeconomic impacts of the proposed rule have been actively considered, and the District has made good faith effort to minimize adverse socioeconomic impacts;

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- (iv) that an incremental cost-effectiveness analysis of proposed new Rule 67.21 has been prepared, and that the proposed rule emission limits represent the most cost-effective option; and
- (v) that there is no reasonable possibility proposed new Rule 67.21 may have a significant adverse effect on the environment, and that adoption of new Rule 67.21 is categorically exempt from the provisions of the California Environmental Quality Act pursuant to California Code of Regulations, Title 14, Sections 15308, as an action taken to assure the maintenance or protection of the environment and where the regulatory process involves procedures for protection of the environment.

Fiscal Impact

Adopting Rule 67.21 will have no fiscal impact on the District.

Business Impact Statement

This proposal will not have a significant impact on the local business community. Similar rules regulating the sale and use of adhesive products have already been adopted by all large and many small California air districts. As a result, adhesive materials complying with the rule are widely available and already used by many businesses.

Alternatives

There is no viable alternative to the proposed action because adopting Rule 67.21 is mandated by state law requiring implementing Best Available Retrofit Control Technology and all feasible control measures.

Advisory Statement

The Air Pollution Control Advisory Committee recommended adopting proposed new Rule 67.21 at its October 28, 1998, meeting.

BACKGROUND

Attachment I contains background information, information on compliance with Board policy on adopting new rules, additional information on Socioeconomic Impact Assessment requirements, information on compliance with the California Environmental Quality Act, and information on a comparison to existing requirements.

Additional Information

Attachment II contains the Resolution adding Rule 67.21 to the District's Rules and Regulations.

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Attachment III contains the Socioeconomic Impact Assessment of Rule 67.21 pursuant to the Health and Safety Code Section 40728.5.

Attachment IV contains the Comparative Analysis of Rule 67.21 pursuant to the Health and Safety Code Section 40727.2.

Attachment V contains the identified potential control options, their cost-effectiveness, and incremental cost-effectiveness pursuant to the Health and Safety Code Section 40920.6.

Attachment VI contains the report for the workshop held on April 29, 1998.

Concurrence:

Respectfully submitted,

LAWRENCE B. PRIOR III
Chief Administrative Officer



R. J. SOMMERVILLE
Air Pollution Control Officer

BY: ALEX MARTINEZ
Acting Deputy Chief Administrative Officer

**AIR POLLUTION CONTROL BOARD
AGENDA ITEM INFORMATION SHEET**

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CONCURRENCES

ID 12/1/98

COUNTY COUNSEL APPROVAL: Approval of Form Yes N/A
Type of Form: Standard Form Ordinance Resolution Contract
Review Board Letter Only Yes No

CHIEF FINANCIAL OFFICER/AUDITOR REVIEW: Yes N/A
Requires Four Votes: Yes No

CHIEF INFORMATION OFFICER: Yes N/A

DEPARTMENT OF HUMAN RESOURCES: Yes N/A

CONTRACT REVIEW PANEL: Yes N/A

Other Concurrences: _____ N/A

BUSINESS IMPACT STATEMENT: Yes N/A

PREVIOUS RELEVANT BOARD ACTION: N/A

BOARD POLICIES APPLICABLE: N/A

ORIGINATING DEPARTMENT: Air Pollution Control District, County of San Diego

CONTACT PERSON: Richard J. Smith, Assistant Director (S50) 694-3303 MS: 0-176



R. J. SOMMERVILLE

DEPARTMENT AUTHORIZED REPRESENTATIVE

DECEMBER 16, 1998

MEETING DATE

ATTACHMENT I

RULE 67.21 (ADHESIVE MATERIAL APPLICATION OPERATIONS)

BACKGROUND INFORMATION

Overview

State law requires the District to implement all feasible control measures limiting emissions of ozone precursors [oxides of nitrogen (NO_x), and volatile organic compounds (VOC's)] including Best Available Retrofit Control Technology (BARCT). Federal law requires implementing Reasonably Available Control Technology (RACT). Accordingly, District rules must reflect RACT, BARCT, and all feasible control measure mandates. Proposed new Rule 67.21 has been identified by the state Air Resources Board (ARB) as a feasible BARCT control measure. Implementing all feasible control measures is also required if the state-mandated no-net-increase program is rescinded. On November 4, 1998 (Board Item #3), the Board rescinded the no-net-increase program subject to ARB concurrence. The ARB is now evaluating this action. Adopting proposed new Rule 67.21 also implements the corresponding control measure in the Board's Regional Air Quality Strategy adopted on June 17, 1998 (Board Item #4).

Proposed new Rule 67.21 will reduce VOC emissions from adhesive material application operations to meet state BARCT and implementing all feasible control measure requirements. There are no related federal RACT requirements.

California's air pollution control program generally applies to more pollution sources and reflects more stringent control requirements than the federal program. Any rule included in the federal State Implementation Plan (FSIP) is enforced by the U.S. Environmental Protection Agency (EPA). Any amendment to a rule in the FSIP must be approved by EPA. To prevent EPA from becoming inappropriately involved in the California program, state law prohibits including rules in the FSIP unless such rules are necessary to meet federal requirements. Because Rule 67.21 is not needed to meet federal requirements, it will not be submitted for inclusion in the FSIP. Hence, EPA will have no enforcement authority related to Rule 67.21.

Requirements

General

Rule 67.21 was developed consistent with ARB's statewide BARCT guidance. Similar rules have already been adopted by other large and many small California air districts. As a result, complying products are readily available. It prohibits the sale or use of adhesive materials exceeding the VOC contents specified in the rule. VOC content limits are specified for a large variety of adhesive materials (i.e. adhesives, sealants, and related primers) in four categories: general adhesive materials, specialty adhesive materials, substrate-specific adhesive materials, and others. Each category includes several subcategories based on application purpose, types of material being bonded, or other common characteristics.

The proposed rule exempts adhesive materials with negligible VOC content, materials used in tire repair, assembly, and manufacture of undersea weapons, and testing and evaluating procedures conducted in quality assurance or analytical laboratories.

Adhesive materials and aerosol adhesives sold in packages containing 16 fluid ounces or less are also exempt because they are subject to an ARB Consumer Products regulation.

Attachment 1 - Background Information
Rule 67.21

The rule also includes definitions, test methods for determining compliance, and an implementation schedule for facilities choosing to install add-on emission control equipment. The rule will become effective six months after adoption to allow sources to deplete any supplies of non-complying products and, if necessary, adapt equipment and process lines to effectively use compliant materials.

The VOC emissions from all adhesive material application operations are 1578 tons per year. When implemented, the rule will reduce VOC emissions by approximately 276 tons per year (17%).

Permitted Sources

The rule limits the VOC content of adhesive materials and associated cleaning processes at various industries such as furniture, kitchen cabinet and countertop manufacturing, automotive repair, and rubber raft and wet suit production. These sources are required to keep a current list of adhesive and cleaning materials and daily or monthly records of the amount of each material used.

Small businesses using less than 55 gallons of such materials per year are exempt from emission limits but must keep records demonstrating exemption eligibility. In addition, the rule allows using up to 55 gallons per year of non-complying products provided total annual usage at a permitted source does not exceed 55 gallons.

As an alternative to using complying materials, the rule also allows using add-on emission control equipment with at least 85% overall reduction efficiency. No sources are currently planning to use this option.

There are 84 permitted facilities emitting approximately 71 tons of VOC's per year. The rule will reduce these emissions by approximately 18 tons per year (25%). Almost half of these facilities now use products complying with the rule. The cost of compliance for a business not currently using complying products will vary depending on the size of the company, the necessary application equipment upgrades, and the amount of material saved as a result of using compliant products with a higher solid content. The estimated cost-effectiveness ranges from a savings of \$8.80 to a cost of \$3.20 per pound of VOC reduced. This is comparable with the cost-effectiveness of other recently adopted rules (between \$1 and \$3 per pound of VOC's).

Non-Permitted Sources

The rule also prohibits the sale and use of non-complying materials typically used in construction and related activities such as roofing, floor, carpet and tile installation, and plastic-pipe welding in plumbing and irrigation system installation and repair. These operations are not required to have District permits. There are approximately 5000 such businesses and individual contractors. The adhesive material and related cleaning processes associated with these activities produce an estimated 1507 tons per year of VOC. The rule will reduce these emissions by approximately 258 tons per year (17%). The majority of non-permitted businesses are currently using complying products that are readily available. Additional compliance costs will be insignificant because they typically do not use spray equipment, and there is negligible price difference between complying and non-complying products.

Compliance with Board Policy on Adopting New Rules

On February 2, 1993, the Board directed that, with the exception of a regulation requested by business or a regulation for which a socioeconomic impact assessment is not required, no new or revised regulation shall be implemented unless specifically required by federal or state law. Proposed Rule 67.21 is required by state law and is consistent with this policy.

Socioeconomic Impact Assessment

Section 40728.5 of the State Health and Safety Code requires the District to perform a socioeconomic impact assessment for new and revised rules and regulations significantly affecting air quality or emission limitations.

A socioeconomic impact assessment is provided in Attachment III and indicates the rule will not have a significant impact on affected businesses. Two major factors minimizing possible adverse socioeconomic impacts are: the existence of similar rules regulating the sale and use of adhesive products in other California air districts (including the South Coast Air Quality Management District) and recent trends in adhesive and sealant manufacturing industry. For the past decade, this industry has been able to develop quality adhesive products with significantly lower VOC contents in response to air quality regulations and fire safety, public health, and workers' health issues. As a result, these products are readily available.

Almost half of affected permitted businesses already comply with the proposed rule. Most use complying materials according to responses from manufacturers and distributors of adhesive materials. Businesses (including contractors) not already complying will be required to switch to low VOC content adhesive materials. They will be able to recoup any additional compliance costs in a short period of time because complying materials typically have higher solid contents that provide more coverage resulting in decreased adhesive materials usage and saving money.

The District also minimized potential adverse impacts for small businesses using highly-specialized adhesives for bonding rubber products. After consultations with the affected businesses and subsequent evaluation of the availability of complying materials and other alternatives, the District included a customized definition of Elastomeric Adhesives and a higher VOC limit to meet their needs.

California Environmental Quality Act

The California Environmental Quality Act requires an environmental review for certain actions. No significant adverse impacts on the environment have been suggested; no such impacts are reasonably possible. Adopting Rule 67.21 will not have a significant effect on the environment and is categorically exempt from the provisions of the California Environmental Quality Act pursuant to California Code of Regulations, Title 14, Section 15308, as an action taken to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment.

Comparison with Existing Requirements

Prior to adopting, amending, or repealing a rule or regulation, California Health and Safety Code Section 40727 requires findings of necessity, authority, clarity, consistency, non-duplication, and reference. As part of the consistency finding to ensure proposed rule requirements do not conflict with or contradict other District or federal regulations, Health and Safety Code Section 40727.2 (a) requires the District to perform a written analysis identifying and comparing the air pollution control standards and other provisions of proposed new Rule 67.21 with existing or proposed District rules and guidelines and existing federal rules, requirements, and guidelines applying to the same source category.

There are no applicable existing or proposed federal requirements for these operations. Currently, adhesive material application operations are regulated by District Rule 66 (Organic Solvents). Once new Rule 67.21 becomes effective, Rule 66 will no longer apply to operations subject to Rule 67.21.

The District prepared a Comparative Analysis of the proposed rule with existing Rule 66 and emission control standards representing Best Available Control Technology (BACT) for adhesive material application operations subject to new Rule 67.21. The applicability, exemptions, emission limits, recordkeeping, and test method requirements of these rules were compared. The analysis shows new Rule 67.21 is more stringent than Rule 66 in applicability, exemptions, and emission limits. It is the same as Rule 66 for recordkeeping and test methods. New Rule 67.21 is the same as BACT in all respects. Thus, there are no contradictions between new Rule 67.21 and Rule 66 or BACT. The analysis is presented in Attachment IV.

Incremental Cost-Effectiveness Analysis

To ensure alternative methods of complying with emission control requirements, monitoring, and recordkeeping requirements of a proposed rule and associated costs are considered prior to adopting rules or regulations to meet state BARCT requirements, Health and Safety Code Section 40920.6 requires the District to identify one or more potential control options which achieves the emission reduction objectives for the regulation, calculate the incremental cost-effectiveness for the potential control options, and consider and review in a public meeting the cost-effectiveness of each potential control option and the incremental cost-effectiveness between the potential control options.

Rule 67.21 implements state BARCT requirements. It contains the same applicability, emission limits, exemptions, and recordkeeping requirements as the ARB's related Guidance. The only other control option available for permitted sources is to install add-on control equipment in lieu of complying with emission standards. The absolute and incremental cost-effectiveness of this option are provided in Attachment V. It shows the option is not economically feasible.

There are no alternative control options available for non-permitted businesses and contractors because add-on control is not technologically feasible for such sources. Considering that proposed Rule 67.21 results in minimal costs and, in many cases, in actual savings for affected businesses, it was concluded the emission limits in the rule represent the most cost-effective option.

ADDED NEW RULE

WEDNESDAY, DECEMBER 16, 1998

Re Rules and Regulations of the
Air Pollution Control District)
of San Diego County)

RESOLUTION ADDING RULE 67.21
TO REGULATION IV
OF THE RULES AND REGULATIONS OF THE
SAN DIEGO COUNTY AIR POLLUTION CONTROL DISTRICT

On motion of Member Slater, seconded by Member Jacob the following resolution is adopted:

WHEREAS, the San Diego County Air Pollution Control Board, pursuant to Section 40702 of the Health and Safety Code, adopted Rules and Regulations of the Air Pollution Control District of San Diego County; and

WHEREAS, said Board now desires to amend said Rules and Regulations; and

WHEREAS, notice has been given and a public hearing has been had relating to the amendment of said Rules and Regulations pursuant to Section 40725 of the Health and Safety Code.

NOW THEREFORE IT IS RESOLVED AND ORDERED by the San Diego County Air Pollution Control Board that the Rules and Regulations of the Air Pollution Control District of San Diego County be and hereby are amended as follows:

Proposed new Rule 67.21 to read as follows:

RULE 67.21 ADHESIVE MATERIAL APPLICATION OPERATIONS
(Adopted xx/xx/xx: Effective: *6 months after adoption*)

(a) **APPLICABILITY**

(1) Except as otherwise provided in Section (b), this rule is applicable to all adhesive material application operations. Adhesive material application operations include all steps involved in the application, drying, and/or curing of adhesive materials, and associated surface preparation, stripping, and cleanup materials, and the cleaning of application equipment.

(2) Subsections (d)(5) and (d)(6) and Section (g) of this rule, apply to any person who supplies, sells, offers for sale or specifies the application of adhesive materials.

(3) On and after (*6 months after date of adoption*), Rule 66 shall not apply to any adhesive material application operation.

(4) Any adhesive material application operation subject to the requirements of Rules 67.4, 67.5, 67.9, or 67.16 shall not be subject to this rule.

(5) The provisions of Subsection (d)(3) of this rule shall not apply to surface preparation, stripping, or cleaning operations conducted in equipment subject to Rule 67.6.

(6) Any adhesive material used in the manufacture of aircraft float systems shall be subject to this rule, and not subject to Rule 67.9.

(b) EXEMPTIONS

(1) Adhesive Materials

The provisions of Sections (d), (e), and (f) shall not apply to the following:

(i) Except for adhesive materials listed in Subsection (d)(1)(i)(B), adhesive materials and aerosol adhesives sold, supplied and used in single or multi-unit packages having an aggregate net weight of one pound or less, or containing an aggregate of 16 fluid ounces or less.

(ii) Self-curing adhesive materials containing reactive diluents.

(iii) Adhesive materials that contain less than 20 grams of VOC per liter of adhesive material, as applied, less water and less exempt compounds.

(iv) Low-solids adhesive materials that contain less than 20 grams of VOC per liter of adhesive material, as applied.

It is the responsibility of any person claiming an exemption pursuant to Subsections (b)(1)(ii) through (b)(1)(iv) to maintain current manufacturers' specifications which substantiate this claim. These records shall be kept onsite for at least three years and be made available to the District upon request.

(2) Specified Adhesive Material Application Operations

The provisions of this rule shall not apply to the following adhesive material application operations:

(i) Tire repair operations, provided a label on the adhesive being used states "For Tire Repair Only."

(ii) Assembly and manufacture of undersea-based weapon systems.

(iii) Testing or evaluating of adhesive materials in any quality assurance or analytical laboratory.

(iv) Plastic welding products used to manufacture medical devices.

(3) Small Usage of Adhesive Materials

The provisions of this rule, except for the requirements of Subsection (d)(1)(i), shall not apply to any stationary source which uses less than 55 gallons per calendar year of all adhesive materials specified in Subsections (d)(1)(ii) through (d)(1)(iv) and (d)(2). Any person claiming this exemption shall maintain monthly purchase and monthly or daily usage records of adhesive materials. These records shall be maintained onsite for at least three years and be made available to the District upon request.

(4) Non-Compliant Adhesive Material Usage

The provisions of Subsections (d)(1)(ii) through (d)(1)(iv), (d)(2), and (d)(3) shall not apply to adhesive materials, surface preparation, stripping, and cleanup materials, and adhesive bonding agents used in volumes less than 55 gallons per calendar year provided

that a total of less than 55 gallons in the same calendar year of all such non-compliant materials are used at the stationary source. Any person claiming this exemption shall maintain records according to the applicable requirements of Section (f).

(c) **DEFINITIONS**

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

(1) **"ABS (Acrylonitrile-Butadiene-Styrene) Welding Adhesive"** means an adhesive material specified by the manufacturer to weld ABS plastic pipe.

(2) **"Adhesive"** means a substance that is used to bond one surface to another surface by attachment.

(3) **"Adhesive Bonding Agent"** means a solvent applied to a substrate after the application of an adhesive, to enhance bonding.

(4) **"Adhesive Material"** means an adhesive, sealant, adhesive primer, or sealant primer.

(5) **"Adhesive Primer"** means any product specified by the manufacturer to be applied to a substrate, prior to the application of an adhesive, to enhance the bonding surface.

(6) **"Aerosol Adhesive"** means an adhesive packaged as an aerosol product in which the spray mechanism is permanently housed in a non-refillable can designed for hand-held application without the need for ancillary hoses or spray equipment.

(7) **"Aircraft Float System"** means any utility float, emergency float, evacuation slide, or airborne life raft manufactured for use onboard aircraft.

(8) **"Architectural Sealant"** means a sealant specified by the manufacturer to be applied to stationary structures, including mobile homes, and their appurtenances. Appurtenances to an architectural structure include, but are not limited to: hand railings, cabinets, bathroom and kitchen fixtures, fences, rain gutters and downspouts, and windows.

(9) **"Architectural Sealant Primer"** means a sealant primer specified by the manufacturer to be applied to stationary structures, including mobile homes, and their appurtenances, prior to the application of a sealant, to enhance the bonding surface. Appurtenances to an architectural structure include, but are not limited to: hand railings, cabinets, bathroom and kitchen fixtures, fences, rain gutters and downspouts, and windows.

(10) **"Automotive Glass Adhesive Primer"** means an adhesive primer specified by the manufacturer to be applied to automotive glass to improve adhesion to the pinch weld and block ultraviolet light, prior to application of an adhesive.

(11) **"Ceramic Tile Installation Adhesive"** is an adhesive specified by the manufacturer to be used for the installation of ceramic tiles.

(12) **"Computer Diskette Jacket Manufacturing Adhesive"** means an adhesive specified by the manufacturer to glue the fold-over flaps to the body of a vinyl computer diskette jacket.

(13) **"Contact Adhesive - General"** means an adhesive specified by the manufacturer to form an instantaneous bond that cannot be repositioned once the substrates, on which the adhesive has been applied and allowed to dry, are brought together using momentary pressure.

(14) **"Contact Adhesive - Special"** means a contact adhesive specified by the manufacturer to be used for the bonding of non-porous substrates to each other, the bonding of decorative laminate in postforming application, or for the bonding of decorative laminate to metal, melamine-covered board, or curved surfaces, or when used to bond any substrate to metal, rubber, flexible vinyl, rigid plastic, or wood veneer. An adhesive which also meets the definition of Elastomeric Adhesive, as defined in this rule, shall not be considered a contact adhesive.

(15) **"Cove Base Installation Adhesive"** is an adhesive specified by the manufacturer for the installation of cove base (or wall base), which is generally made of vinyl or rubber, on a wall or vertical surface at floor level.

(16) **"CPVC (Chlorinated Polyvinyl Chloride) Welding Adhesive"** means an adhesive specified by the manufacturer for the welding of CPVC plastic pipe.

(17) **"Elastomeric Adhesive"** means a rubber or thermoplastic based adhesive specified by the manufacturer to be used in the manufacture of: life preserving equipment including, but not limited to, aircraft float systems, life rafts, and life jackets; or other personal or equipment protection products.

(18) **"Exempt Compound"** means the same as defined in Rule 2.

(19) **"Indoor Floor Covering Installation/Repair Adhesive"** means an adhesive specified by the manufacturer for the installation or repair of indoor floor coverings including, but not limited to, wood flooring, carpet, resilient tile, vinyl backed carpet, linoleum or artificial grass. This definition does not apply to ceramic tile installation adhesives or perimeter bonding adhesives.

(20) **"Low-Solids Adhesive Material"** means any adhesive material that contains 120 grams or less of solids per liter of material.

(21) **"Marine Deck Sealant/Primer"** means a sealant or sealant primer specified by the manufacturer to be applied to wooden marine decks.

(22) **"Metal To Elastomer Molding Or Casting Adhesive"** means an adhesive specified by the manufacturer to bond metal to rubber or urethane elastomers through a heated molding or casting process in order to fabricate products such as rollers and wheels.

(23) **"Multipurpose Construction Installation/Repair Adhesive"** means an adhesive specified by the manufacturer for the installation or repair of various construction materials, including, but not limited to, drywall, subfloor, panel, ceiling tile, and acoustical tile.

(24) **"Multi-Unit Package"** means a single package which includes two or more separately contained components of a multi-component adhesive material.

(25) **"Natural Gas Pipeline Tape Adhesive Primer"** means an adhesive primer specified by the manufacturer to be applied to underground natural gas pipelines prior to the application of a natural gas pipeline protective tape.

(26) **"Non-membrane Roof Installation/Repair Adhesive/Sealant"** means an adhesive or sealant specified by the manufacturer for the installation or repair of non-membrane roofs and which is not specified for the installation of prefabricated single-ply flexible roofing membrane. This definition includes plastic or asphalt roof cement and cold application cement.

(27) **"Outdoor Floor Covering Installation/Repair Adhesive"** means an adhesive specified by the manufacturer for the installation or repair of floor covering that is not in an enclosure and is exposed to ambient weather conditions during normal use.

(28) **"Perimeter Bonding Adhesive"** means an adhesive specified by the manufacturer to be used for application to the perimeter of vinyl backed sheet flooring installed onto non-porous substrates such as flexible vinyl.

(29) **"Plastic Cement Welding Adhesive"** means an adhesive made of resins and solvents that is formulated to dissolve the surfaces of plastic to form a bond between mating surfaces.

(30) **"Plastic Cement Welding Adhesive Primer"** means an adhesive primer specified by the manufacturer to prepare plastic substrates prior to the application of an adhesive for bonding or welding.

(31) **"Porous Material"** means a substance that has small, often microscopic, pores in which fluids may be absorbed or discharged. Such materials include, but are not limited to, wood, paper and corrugated paperboard.

(32) **"PVC (Polyvinyl Chloride) Welding Adhesive"** means an adhesive specified by the manufacturer for the welding of PVC plastic pipe.

(33) **"Reactive Diluent"** means a liquid reactant that is part of an uncured adhesive material and that reacts during the curing process to become part of the solid adhesive material.

(34) **"Roadway Sealant"** means a sealant specified by the manufacturer to be applied to public streets, highways and other surfaces, including, but not limited to, curbs, berms, driveways, and parking lots.

(35) **"Rubber"** means a natural or manmade elastomer, including, but not limited to, styrene-butadiene rubber (SBR), polychloroprene (neoprene), butyl rubber, nitrile rubber, chlorosulfonated polyethylene (CSM), and ethylene-propylene diene terpolymer (EPDM).

(36) **"Sealant"** means a material that is formulated primarily to fill, seal, water-proof, or weatherproof gaps or joints between two surfaces. Sealants include caulk materials. Sealants do not include sealers.

(37) **"Sealant Primer"** means any product specified by the manufacturer to be applied to a substrate, prior to the application of a sealant, to enhance the bonding surface.

(38) **"Sealer"** means a coating formulated for and applied to substrates to prevent subsequent coatings from being absorbed by the substrate or to prevent harm to subsequent coatings by materials in the substrate.

(39) **"Self-Curing Adhesive Material with Reactive Diluents"** means a cyanoacrylate or silicone-based adhesive material with a reactive diluent content of at least 95% by weight.

(40) **"Sheet Rubber Lining Installation Adhesive"** means an adhesive specified by the manufacturer to be used for sheet rubber lining applied to the interior of tanks used for storage or transportation of corrosive liquids.

(41) **"Single-Ply Roof Membrane"** means single-thickness sheets of rubber, usually EPDM (ethylene-propylene diene terpolymer), that are applied in a single layer to a building roof.

(42) **"Single-Ply Roof Membrane Installation/Repair Adhesive/Primer"** means an adhesive or adhesive primer specified by the manufacturer to be used for the installation or repair of single-ply roof membrane.

(43) **"Single-Ply Roof Membrane Sealant"** means a sealant specified by the manufacturer to be applied to single-ply roof membrane.

(44) **"Structural Glazing Adhesive"** means an adhesive specified by the manufacturer to attach glass, ceramic, metal, stone or composite panels to exterior building frames.

(45) **"Thin Metal Laminating Adhesive"** means an adhesive specified by the manufacturer to bond multiple layers of metal to metal, or metal to plastic, in the production of electronic or magnetic components in which the thickness of the bond line(s) is less than 0.25 mils.

(46) **"Tire Retread Adhesive"** means an adhesive specified by the manufacturer to be applied to the back of pre-cured tread rubber and to the casing and cushion rubber in the assembly of retread tires. It may also be used to seal buffed tire casings to prevent oxidation while the tire is being prepared for a new tread.

(47) **"Traffic Marking Tape"** means a pre-formed reflective film specified by the manufacturer to be applied to public streets, highways, and other surfaces including, but not limited to, curbs, berms, driveways, and parking lots.

(48) **"Traffic Marking Tape Adhesive Primer"** means any adhesive primer specified by the manufacturer to be applied to surfaces prior to the installation of traffic marking tape.

(49) **"Volatile Organic Compound (VOC)"** means the same as in Rule 2.

(50) **"VOC Content Per Volume of Adhesive Material, Less Water and Exempt Compounds"** means the weight of VOC per combined volume of VOC and adhesive material solids and is calculated by the following equation:

$$C_{\text{voc}} = (W_s - W_w - W_{\text{es}}) / (V_m - V_w - V_{\text{es}})$$

where:

C_{voc}	=	VOC content per volume of adhesive material, less water and exempt compounds
W_s	=	weight of volatile compounds including water and exempt compounds
W_w	=	weight of water
W_{es}	=	weight of exempt compounds
V_m	=	volume of adhesive material including water and exempt compounds
V_w	=	volume of water
V_{es}	=	volume of exempt compounds

(51) **"VOC Content Per Volume of Material"** means the weight of VOC per volume of material and is calculated by the following equation:

$$C_{m\text{voc}} = (W_s - W_w - W_{es}) / (V_m)$$

where:

$C_{m\text{voc}}$	=	VOC content per volume of material
W_s	=	weight of volatile compounds including water and exempt compounds
W_w	=	weight of water
W_{es}	=	weight of exempt compounds
V_m	=	volume of material including water and exempt compounds

(52) **"Waterproof Resorcinol Glue"** means a two-part, resorcinol-resin-based adhesive specified by the manufacturer for applications where the bond line must be resistant to continuous immersion in fresh or salt water.

(d) **STANDARDS**

The VOC content of low-solids adhesive materials shall be calculated per volume of adhesive material, as applied. The VOC content of all other adhesive materials, except for aerosol adhesives, shall be calculated per volume of adhesive material, as applied, less water and exempt compounds.

(1) A person shall not apply any adhesive material specified below with a VOC content in excess of the following limits:

(i) GENERAL ADHESIVE MATERIALS

(A) Architectural Products	<u>VOC LIMITS</u> <u>(grams/liter)</u>
Architectural sealant	250
Architectural sealant primer for:	
-Non-porous materials	250
-Porous materials	775
Ceramic tile installation adhesive	130
Cove base installation adhesive	150
Indoor floor covering installation/repair adhesive	150
Multipurpose construction installation/repair adhesive	200
Non-membrane roof installation/repair adhesive/sealant	300
Outdoor floor covering installation/repair adhesive	250
Perimeter bonding adhesive	660
Roadway sealant	250
Single-ply roof membrane installation/repair adhesive/ primer	250
Single-ply roof membrane sealant	450
Structural glazing adhesive	100
Traffic marking tape adhesive primer	150
(B) Plastic Welding Products	
ABS welding adhesive	400
CPVC welding adhesive	490
PVC welding adhesive	510
Plastic cement welding adhesive primer	650
Other plastic cement welding adhesives	510

(ii) <u>SPECIALTY ADHESIVE MATERIALS</u>	<u>VOC LIMITS</u> <u>(grams/liter)</u>
Automotive glass adhesive primer	700
Computer diskette jacket manufacturing adhesive	850
Contact adhesive	
-General	540
-Special	540
-General - Effective (3 years after date of adoption)	250
-Special - Effective (3 years after date of adoption)	400
Elastomeric adhesive	750
Marine deck sealant/primer	760
Metal to elastomer molding or casting adhesive	850
Natural gas pipeline tape adhesive primer	600
Sheet rubber lining installation adhesive	850
Thin metal laminating adhesive	780
Tire retread adhesive	100
Waterproof resorcinol glue	170

If more than one VOC limit provided in Subsections (d)(1)(i) or (d)(1)(ii) is applicable, the most stringent VOC limit shall apply.

(iii) SUBSTRATE-SPECIFIC ADHESIVES

If an adhesive is not listed in Subsection (d)(1)(i) or (d)(1)(ii), the following VOC limits are applicable on a substrate-specific basis.

Adhesives applied onto:	<u>VOC LIMITS</u> <u>(grams/liter)</u>
Fiberglass	200
Metal	30
Porous material	120
Other substrates	250

If an adhesive is used to bond together two or more substrates listed in (d)(1)(iii), the highest applicable substrate-specific VOC limit shall apply.

(iv) ALL OTHER ADHESIVE MATERIALS

If an adhesive material or specific substrate is not listed in Subsections (d)(1)(i) through (d)(1)(iii) above, the following VOC limits are applicable.

	<u>VOC LIMITS</u> <u>(grams/liter)</u>
Adhesive primers	250
Sealants	420
Sealant primers	750

(2) Aerosol Adhesives

A person shall not use any aerosol adhesive with a VOC content greater than 75 percent by weight, including the propellant.

(3) Surface Preparation, Stripping, and Cleanup Materials, and Adhesive Bonding Agents

A person shall not use VOC containing materials for surface preparation, stripping, cleanup or as an adhesive bonding agent unless:

- (i) The material contains 70 grams or less of VOC per liter of material; or
- (ii) The material has an initial boiling point of 190°C (374°F) or greater; or
- (iii) The material has a total VOC vapor pressure of 45 mm Hg or less, at 20°C (68°F).

(4) Cleaning of Application Equipment

A person shall not use VOC containing materials for the cleaning of application equipment used in operations subject to this rule unless:

- (i) The material contains 70 grams or less of VOC per liter of material; or
- (ii) The material has an initial boiling point of 190°C (374 °F) or greater; or
- (iii) The material has a total VOC vapor pressure of 45 mm Hg or less, at 20°C (68 °F); or
- (iv) The cleaning material is flushed or rinsed through the application equipment in a contained manner that will minimize evaporation into the atmosphere; or
- (v) The application equipment or equipment parts are cleaned in a container which is open only when being accessed for adding, cleaning, or removing application equipment or when cleaning material is being added, provided the cleaned equipment or equipment parts are drained to the container until dripping ceases; or
- (vi) A system is used that totally encloses the component parts being cleaned during the washing, rinsing, and draining processes; or
- (vii) Other application equipment cleaning methods are used that are demonstrated to be as effective as any of the equipment described above in minimizing the VOC emissions to the atmosphere, provided that the method has been tested and approved in writing by the Air Pollution Control Officer prior to use.

(5) Prohibition of Specification

A person shall not specify the application of an adhesive material subject to this rule for any operation in San Diego County if such application results in a violation of any provision of this rule. This prohibition is applicable to any written or oral contract under the terms of which any adhesive material is applied to any component within San Diego County.

(6) Prohibition of Sale

A person shall not supply, sell or offer for sale any adhesive material listed under Subsection (d)(1)(i) which, at the time of sale, exceeds the VOC limits listed. This provision only applies to products that are supplied to or sold to persons for application within San Diego County.

(e) CONTROL EQUIPMENT

(1) In lieu of complying with the provisions of Subsections (d)(1), (d)(2), (d)(3) or (d)(4) of this rule, a person may use 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 organic gaseous emissions, including emissions associated with applicable adhesive material application, equipment cleaning, and surface preparation operations, and transports the captured emissions to an air pollution control device; and

(iii) Has a combined emissions capture and control device efficiency of at least 85 percent by weight.

(2) A person electing to use control equipment pursuant to Section (e)(1) shall submit to the Air Pollution Control Officer for approval an Operation and Maintenance plan for the proposed emission control device and emission collection system and receive approval prior to operation of the control equipment. Thereafter, the plan can be modified with Air Pollution Control Officer approval as necessary to ensure compliance. Such plan shall:

(i) Identify all key system operating parameters. Key system operating parameters are those necessary to ensure compliance with Subsection (e)(1)(iii) such as temperature, pressure, and/or flow rate; and

(ii) Include proposed inspection schedules, anticipated ongoing maintenance and proposed recordkeeping practices regarding the key system operating parameters.

(3) Upon approval of the Air Pollution Control Officer, a person subject to the requirements of Section (e) shall implement the Operation and Maintenance plan and shall comply with the provisions of the approved plan thereafter.

(f) RECORDKEEPING

All records required by this rule shall be retained onsite for at least three years and shall be made available to the District upon request.

(1) Any person subject to the provisions of Subsections (d)(1)(ii) through (d)(1)(iv), (d)(2), (d)(3) or (d)(4) of this rule shall maintain the following records:

(i) Maintain a current list of each adhesive material, adhesive bonding agent, stripping, surface preparation, and cleaning material used which provides all of the data necessary to evaluate compliance, including but not limited to:

(A) the category of adhesive material as specified in Subsection (d)(1);

(B) manufacturer name and identification for each adhesive material or its components, adhesive bonding agent, stripping, surface preparation, and cleaning material;

(C) mix ratio of components; and

(D) VOC content, vapor pressure and/or initial boiling point, as applicable, for each adhesive material, adhesive bonding agent, stripping, surface preparation, and cleaning material; and

(ii) Maintain daily or monthly records of the amount of each adhesive material used; and

(iii) Maintain monthly inventory (dispensing) records for each solvent used as an adhesive bonding agent, or for stripping, surface preparation, or cleaning.

(2) Any person using control equipment pursuant to Section (e) of this rule shall:

(i) Maintain records in accordance with Subsection (f)(1); and

(ii) Maintain daily records of key system operating parameters as approved in the Operation and Maintenance plan. Such records shall be sufficient to document continuous compliance with Subsection (e)(1)(iii) during periods of emission producing activities.

(g) TEST METHODS

(1) Measurement of the VOC content of all non-aerosol adhesive materials, adhesive bonding agent, surface preparation, stripping, and cleaning materials subject to Subsections (d)(1), (d)(3) and/or (d)(4) of this rule, shall be conducted in accordance with Environmental Protection Agency (EPA) Test Method 24 (40 CFR Part 60, Appendix A).

(2) Measurement of the VOC content of aerosol adhesives subject to Subsection (d)(2) shall be determined using Air Resources Board (ARB) Method 310, as it exists on (*date of adoption*).

(3) Measurement of the VOC content of any plastic welding cement adhesive material subject to Subsection (d)(1)(i)(B) shall be determined using South Coast Air Quality Management District's Method 316A, as it exists on (*date of adoption*).

(4) Calculation of total VOC vapor pressure for materials subject to Subsections (d)(3)(iii) and/or (d)(4)(iii) of this rule shall be conducted in accordance with the District's "Procedures for Estimating the Vapor Pressure of VOC Mixtures." If the vapor pressure of the liquid mixture, as calculated by this procedure, exceeds the limits specified in Subsections (d)(3)(iii) and/or (d)(4)(iii), the vapor pressure shall be determined in accordance with ASTM Standard Test Method D2879-96, or its most current version. The solvent composition shall be determined using ASTM Standard Practice E260-96, or its most current version. The fraction of water and exempt compounds in the liquid phase shall be determined by using ASTM Standard Test Methods D3792-91 and D4457-85, or their most current versions and shall be used to calculate the partial pressure of water and exempt compounds. The results of vapor pressure measurements obtained using ASTM Test Method D2879-96, or its most current version shall be corrected for partial pressure of water and exempt compounds.

(5) Measurement of the initial boiling point for materials subject to Subsection (d)(3)(ii) and/or (d)(4)(ii) of this rule shall be conducted in accordance with ASTM Standard Test Method D1078-95, or its most current version.

(6) Measurement of the emission collection system capture efficiency subject to Subsection (e)(1)(iii) of this rule shall be determined according to EPA's technical document, "Guidelines for Determining Capture Efficiency," dated January 9, 1995, using a protocol approved by the Air Pollution Control Officer. Subsequent to the initial compliance demonstration period, applicable key system operating parameters, as approved by the Air Pollution Control Officer, may be used as verification that capture efficiency has not diminished.

(7) Measurement of control device efficiency subject to Subsection (e)(1)(iii) of this rule shall be conducted with EPA Methods 18 and/or 25A (40 CFR 60) and in accordance with a protocol approved by the Air Pollution Control Officer.

(8) Measurement of solvent losses from alternative application cleaning equipment subject to Subsection (d)(4)(vii) shall be conducted and reported in accordance with the South Coast Air Quality Management District's "General Test Method for Determining Solvent Losses from Spray Gun Cleaning Systems," as it exists on *(date of adoption)*.

(9) Measurement of the solids content of adhesive materials pursuant to Subsection (c)(20) shall be conducted in accordance with EPA Test Method 24 (40 CFR 60, Appendix A).

(10) Measurement of the VOC content of adhesive materials pursuant to Subsection (c)(39) shall be conducted in accordance with South Coast Air Quality Management District's Method 316B, as it exists on *(date of adoption)*.

(h) COMPLIANCE SCHEDULE

(1) Any person operating existing equipment and electing to use control equipment to comply with one or more of Subsections (d)(1) through (d)(4) requirements of this rule shall meet the following increments of progress:

(i) By *(6 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 *(18 months after date of adoption)*, demonstrate compliance with Section (e).

(2) Any person installing new equipment who is electing to use control equipment to comply with one or more of Subsections (d)(1) through (d)(4) requirements of this rule shall comply with the provisions of Section (e) at startup.

IT IS FURTHER RESOLVED AND ORDERED that the subject addition of Rule 67.21 to Regulation IV shall take effect upon adoption.

PASSED AND ADOPTED by the Air Pollution Control Board of the San Diego County Air Pollution Control District, State of California, this 16th day of December, 1998 by the following votes:

AYES: Cox, Jacob, Slater, Roberts, Horn
NOES: None
ABSENT: None

APPROVED AS TO FORM AND LEGALITY
COUNTY COUNSEL

BY *Dutton*
DEPUTY

STATE OF CALIFORNIA)
County of San Diego)^{SS}

I hereby certify that the foregoing is a full, true and correct copy of the Original entered in the Minutes of the Board of Supervisors.

THOMAS J. PASTUSZKA
Clerk of the Board of Supervisors

By *Adair Gomez*
Adair Gomez, Deputy



Resolution No. 98-360
12/16/98 (APCD 3)

SOCIOECONOMIC IMPACT ASSESSMENT

**PROPOSED RULE 67.21 -
ADHESIVE MATERIALS
APPLICATION OPERATIONS**

OCTOBER 1998

Prepared for

**San Diego County Air Pollution Control District
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Prepared by

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EXECUTIVE SUMMARY

This report presents the results of a Socioeconomic Impact Assessment (SIA) of the San Diego County Air Pollution Control District proposed new Rule 67.21 - Adhesive Material Application Operations. Rule 67.21 implements best available retrofit control technology (BARCT) requirements of the California Health and Safety Code.

The purpose of the rule is to limit emissions of volatile organic compounds (VOC) from adhesive materials (i.e., adhesives, sealants, adhesive, and sealant primers) application operations. The rule imposes limitations on the VOC content of adhesive materials, adhesive aerosols, adhesive bonding agents, and of surface preparation, stripping and cleaning materials. If implemented, the rule will reduce VOC emissions in San Diego County by about 276 tons per year. The cost-effectiveness of the rule is comparable to other VOC control rules adopted by the District (between \$1 and \$3 per pound of VOC's).

The rule will affect about 84 permitted sources in San Diego County that belong to a variety of industries such as furniture manufacturing, automotive repair, rubber products manufacturing, etc. In addition, the rule will affect about 5000 businesses and individual contractors involved in building construction, maintenance, and repair such as plumbing, roofing, floor and carpeting installation and other on-site construction/repair businesses. The vast majority of these companies are small businesses.

It is anticipated that the rule will not have a significant socioeconomic impact on the affected businesses. There are two major factors minimizing possible adverse socioeconomic impacts. The first is the existence of similar rules regulating the sale and use of adhesive products in other California air districts, especially in the South Coast air district adjacent to San Diego County. The second is the availability of adhesive products complying with the proposed rule standards.

Almost half of permitted businesses are already in compliance with the proposed rule requirements. The majority of non-permitted businesses are also using complying materials according to responses from the manufacturers and distributors of adhesive materials. Most companies that will be required to switch to low VOC content adhesive materials will be able to recoup any additional compliance costs in a short period of time because complying materials typically have higher solid contents, providing more coverage and decreasing usage of adhesive materials.

The District has also attempted to minimize potential adverse socioeconomic impacts for some specialty-use operations. The proposed rule was revised, after consultations with the affected businesses, to include a definition and VOC limit for a specialty-use adhesive because low-VOC adhesives are not available and add-on controls are not cost-effective for these specific processes.

1. INTRODUCTION

Developing effective air quality management strategies must consider the social and economic costs of regulations as well as the air quality benefits. Recognizing this, in 1991 the California legislature adopted a new law (Health and Safety Code Section 40728.5) requiring air pollution control districts with populations of 500,000 or more to perform socioeconomic impact assessments when adopting, amending, or repealing rules or regulations that will significantly affect air quality or emissions limitations.

The Health and Safety Code specifies the following elements to be included in the socioeconomic impact assessment:

1. The necessity of adopting, amending, or repealing the rule or regulation in order to attain state and federal ambient air quality standards.
2. The type of industries or business, including small business, affected by the rule or regulation.
3. The range of probable costs, including costs to industry or business, including small business, of the rule or regulation.
4. The emission reduction potential of the rule or regulation.

The Health and Safety Code also states that rules mandated by state or federal statutes, regulations or applicable guidance documents, need not consider the regional impacts on economy beyond the affected industry, or the availability and cost-effectiveness of alternatives in the socioeconomic impact assessment (SIA).

This report presents the results of a socioeconomic impact assessment of San Diego County Air Pollution Control District's (District) proposed Rule 67.21-Adhesive Material Application Operations.

2. NECESSITY OF ADOPTING RULE 67.21

San Diego County has not attained the National and State Ambient Air Quality Standards for ozone and is classified as a serious ozone non-attainment area. Both federal and state laws require the District to implement rules that regulate emissions of ozone precursors - volatile organic compounds (VOCs) and nitrogen oxides. In addition, the California Clean Air Act requires serious ozone non-attainment areas to reduce VOC emissions from existing stationary sources by implementing best available retrofit control technology (BARCT). BARCT is defined as an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source.

Proposed Rule 67.21 will control VOC emissions from application of adhesive materials and implement BARCT requirements of the California Health and Safety Code. The rule is consistent with the Reasonably Available Control Technology/Best Available Retrofit Control Technology (RACT/BARCT) Determination for Adhesives and Sealants developed by the Air Resources Board in cooperation with the Adhesive Committee of the California Air Pollution Control Officers Association. Rules similar to or more stringent than Rule 67.21 have been adopted by many other air districts in California including the Bay Area Air Quality Management District, South Coast Air

Quality Management District (AQMD), San Joaquin Valley Unified Air Pollution Control District, and Ventura County Air Pollution Control District.

3. RULE 67.21 REQUIREMENTS

Proposed Rule 67.21 is designed to limit VOC emissions from industrial and commercial use of adhesive materials (i.e., adhesives, sealants, and adhesive or sealant primers) and cleaning processes and materials associated with these activities. The proposed rule will also apply to any individual supplying, selling, or offering for sale plastic welding products and adhesive materials generally used in architectural construction or repair. The rule will become effective six months after the date of adoption. Specifically, Rule 67.21 will:

- Establish VOC content limits for a large variety of adhesive materials. All adhesive materials subject to the proposed standards are separated into four broad categories: general adhesive materials, specialty adhesive materials, substrate-specific adhesive materials, and others. Each category includes several sub-categories of adhesive materials based on application purposes, types of material being bonded, or other common characteristics, together with the VOC content limit for each sub-category.
- Limits the VOC weight percent content for aerosol adhesives.
- Requires the use of materials with a low VOC content, high boiling point or low vapor pressure for adhesive bonding agents, surface preparation, stripping and cleanup operations associated with the application of adhesive materials and cleaning of adhesive application equipment.
- Provides other options for cleaning of adhesive application equipment.
- Prohibits soliciting or specifying the application of adhesive materials not complying with the rule standards.
- Prohibits the sale of general application adhesive materials (architectural and solvent welding) exceeding allowable VOC content limits. This prohibition applies only to products sold for use within San Diego County.
- Specifies requirements and a compliance schedule if an owner or operator chooses to use air pollution control equipment to comply with the proposed rule standards.
- Requires facilities to keep a current list of all adhesive and cleaning materials and adhesive bonding agents used and specifies the information to be included in this list.
- Requires facilities to keep daily or monthly records of the amount of each adhesive material used and monthly inventory (dispensing) records for each solvent used as an adhesive bonding agent, or for surface preparation, stripping, or cleaning.
- Specifies test methods for determining compliance.

The proposed rule exempts adhesive materials used in tire repair operations, assembly and manufacture of undersea weapon systems, and testing and evaluating procedures conducted in quality assurance or analytical laboratories. Self-curing adhesive materials, adhesive materials containing less than 20 grams of VOC per liter, and certain adhesive materials and aerosol

adhesives not subject to the prohibition of sale and sold in packages containing 16 fluid ounces or less, are also exempt from the proposed rule.

Small operators using less than 55 gallons of adhesive materials in a calendar year are exempt from the rules emission limits but must keep records to demonstrate their eligibility for the exemption. In addition, the proposed rule allows the use of up to 55 gallons per calendar year of non-complying adhesive materials, adhesive bonding agents, surface preparation, stripping and cleaning materials.

4. INDUSTRY TRENDS

A. ADHESIVE MATERIAL MANUFACTURERS

According to adhesive manufacturing industry representatives, the technology and materials used in the adhesive and sealant industry have undergone tremendous changes over the last decade. Bay Area Air Quality Management District staff, Adhesive and Sealant Council staff, and other representatives from manufacturers, resellers, and user groups provided insightful information on current and future industry trends.

The prevalent trend in the adhesive and sealant manufacturing industry is towards lowering the VOC contents in adhesive materials. This trend is due to a combination of factors. One of the main factors has been air pollution control regulations. Since the first rule regulating adhesive materials was adopted by the South Coast Air Quality Management District in 1989, adhesive and sealant manufacturers have been using innovative technologies, such as water-based and high-solid adhesives and sealants to provide materials that would meet lower VOC content requirements.

In addition, the Air Resources Board, in cooperation with the Adhesive Committee of the California Air Pollution Control Officers Association, developed the state-wide RACT/ BARCT Determination for Adhesives and Sealants. The adhesive and sealant manufacturing industry actively participated in developing this guidance document. The majority of the VOC content limits reflect state-of-the-art technology.

The decreases in the VOC content of adhesives and sealants is also due in part to concerns regarding health risks and general work place safety issues, since many VOCs are also hazardous (toxic) air contaminants. Fire hazard prevention, public awareness of environmental issues, and public health matters have also contributed to the ongoing changes. Some businesses have voluntarily switched to low VOC content adhesive materials with the notion that both their facilities and products are safer and environmentally friendly.

B. ADHESIVE MATERIAL USERS

Although the various industries affected by this rule have different business environments and economic cycles, many diverse end-users tend to adapt to new technologies and processes. With improved technologies and innovative products, many users have been rearranging and improving their production processes using new adhesive materials. For example, in the San Francisco Bay Area, some cabinet manufacturing companies were able to devise better production processes when they were required to switch to lower VOC content adhesives. Adhesive user representatives have expressed the opinion that many companies have been able to improve their efficiency by switching to the low VOC content adhesives. Many enterprising businesses are adapting to these new technologies while maintaining, and sometimes increasing, their profits.

This ongoing trend to use lower VOC content adhesives is also apparent in the San Diego area. As noted earlier, the District's permit files show that about one-half of permitted sites (41 of 84) are already using compliant-adhesive materials. This trend is expected to continue.

Similarly, many non-permitted adhesive material operations (approximately 80%) in the county are already using compliant-adhesive materials. This trend is partly because of the region's proximity to the South Coast Air Basin which represents a much larger market than San Diego County for adhesive and sealant manufacturers. Some industry representatives call this phenomenon a "trickle down" effect of the South Coast air district rule. Similar rules adopted in other air districts in California also played an important role in industry trends to use low VOC content materials.

5. INDUSTRIES AFFECTED BY RULE 67.21

Proposed Rule 67.21 will affect many diverse industrial sectors in San Diego County including construction, repair services, various manufacturing segments, and wholesale/distribution vendors of adhesive materials. The majority of businesses directly affected by the rule will be those who use adhesive products in their daily operations. End-users of adhesive materials are in, but not limited to, the on-site construction sector (Standard Industrial Classification (SIC) 15), manufacturing sector (SIC 20 - SIC 39), and other specialty service sectors such as auto glass repair (SIC 7536), and tire re-treading (SIC 7534). Distributors, wholesale vendors, and other suppliers of the regulated products are expected to experience insignificant direct effects from the rule.

Users facing direct impacts from proposed Rule 67.21 are separated into two broad categories. The first is comprised of stationary sources (representing a variety of industries) that are currently permitted by the District to use adhesive materials in specific manufacturing operations. Any adhesive application operation using more than 20 gallons of adhesives and sealants per year is required to obtain a District permit. The majority of adhesive materials used in these operations are specified as "Specialty Adhesive Materials," "Substrate Specific Adhesives," or "All Other Adhesive Materials."

The second category consists of non-permitted operations using adhesive materials in on-site construction, flooring, roofing, repairs, etc. These materials are specified as "General Adhesive Materials - Architectural Products and Plastic Welding Products." In addition, non-permitted adhesive application operations may be conducted at stationary sources for maintenance and repair that are incidental to the facility's major activity. Such operations are also included in this second category.

A. PERMITTED SOURCES

According to the District's permit files, 84 permitted sources in San Diego County will be subject to Rule 67.21. Table 1 provides the SIC codes associated with 56 of the industries represented by these 84 sources.

TABLE 1. Affected Industries

SIC Code	Industry Designation
15:	Building construction - general contractors and operative builders
17:	Construction - special trade contractors
23:	Apparel and other finished products made from fabrics and similar materials
24:	Lumber and wood products, except furniture
25:	Furniture and fixtures
26:	Paper and allied products
30:	Rubber and miscellaneous plastic products
31:	Leather and leather products
32:	Stone, clay, glass, and concrete products
34:	Fabricated metal products, except machinery and transportation equipment
35:	Industrial and commercial machinery and computer equipment
36:	Electronic and other electrical equipment and components, except computer equipment
37:	Transportation equipment
38:	Measuring, analyzing, controlling instruments; photographic, medical optical goods; watches
39:	Miscellaneous manufacturing industries
55:	Automotive dealers, gasoline service stations
57:	Home furniture, furnishings, and equipment stores
75:	Automotive repair, services, and parking
76:	Miscellaneous repair services
99:	Nonclassifiable establishments

For the purposes of this assessment, these facilities were separated into three groups: small, medium, and large, depending on their annual adhesive usage. It was assumed facilities within each group were likely to have similar equipment requirements, compliance options and costs. The District permit files were used to determine which facilities already meet the VOC limits of proposed Rule 67.21. The District found that 41 facilities use compliant materials, 27 facilities are using non-compliant materials, and 16 facilities will be exempt from the VOC content limits of the rule.

To identify how different types of businesses within a given group would be affected by the rule, facilities were then sub-grouped based on similar economic characteristics such as the number of employees. The Southern California Business Directory published by American Business Directories and direct contacts with a number of facilities provided the basis for employment size information. Because it was not possible to obtain employment information on all of the permitted sources, the figures represent a sample of 46 of the 84 affected permitted facilities.

California Health and Safety Code Sections 42323(a)(1) and (a)(2) specify a small business as any business defined as such under the federal Small Business Act (SBA) and which also has fewer than 100 employees. As shown in Table 2, most affected permitted facilities in San Diego County are small businesses, representing about 70% of the 46 sources sampled in this report.

TABLE 2. Business Size Distribution for Permitted Sources in San Diego County*

ADHESIVE MATERIALS USAGE (gal/year)	EMPLOYMENT SIZE		
	Small Business		Large Business
	Number of People Employed		
	1-19	20-99	>100
Small (55-199)	9	2	1
Medium (200-599)	7	4	6
Large (>600)	5	5	7
Total	21	11	14

*Sample Size - 46 facilities subject to Rule 67.21 emission standards

B. NON-PERMITTED SOURCES

Non-permitted sources were assumed to be businesses and individual contractors employed in on-site construction, repair, and service sectors. According to County Business Patterns, in 1995 there were over 45,000 persons employed in the on-site construction related trades. In 1995, while San Diego County had nearly 5000 businesses in the construction sector, there were only 45 firms that employed more than 100 workers in their businesses. That is less than 1% of all businesses in the construction industry. Similar to permitted sources, non-permitted sources using adhesive materials are mostly small businesses (see Table 3). The potentially-affected businesses are mostly contractors, both general and specialty professionals working in plumbing, roofing, floor installation, and other on-site construction/repair.

TABLE 3. Business Size Distribution for Non-Permitted Sources (Construction Industry) in San Diego County, 1995

SIC code	CONSTRUCTION INDUSTRY TYPE	Employees / Number Of Businesses				
		1-19	20-99	100-499	>499	TOTAL
15	General Contractors and operative builders	1,335	99	12	1	1,447
16	Heavy construction, except building	157	34	9	0	200
17	Special trade contractors	2,903	318	23	0	3,244
	TOTAL	4,395	451	44	1	4,891

Like many industries in the region, construction trades depend on local, regional, and national economic conditions. Businesses are cyclical as economies have ups and downs. According to the San Diego Association of Governments (SANDAG), the construction sector experienced some decline since 1990 but is growing again and is expected to see employment growth in the future.

6. VOC EMISSIONS FROM THE USE OF ADHESIVE MATERIALS IN SAN DIEGO COUNTY

A. PERMITTED SOURCES

According to District permit files, there are 84 permitted sources emitting approximately 71 tons of VOC per year in San Diego County subject to proposed Rule 67.21. The emissions were calculated based on information obtained from permit files and a telephone survey.

B. NON-PERMITTED SOURCES

The usage of architectural and plastic welding adhesive materials in San Diego County was estimated based on an economic indicator of the County's share of total national activity by end-use industry sector. End-use application categories and associated national usage data for adhesive materials were taken from the Rauch Guide to the U.S. Adhesives & Sealant Industry (1995-96 Edition). Four end-use categories were identified that comprise all architectural adhesives and sealants: (1) roofing, (2) flooring, (3) piping, and (4) other on-site construction applications. Employment share within the corresponding end-user industries was determined to be the most useful indicator of regional share of national usage (roofing (SIC 176), flooring (SIC 1752), piping (SIC 171), and other (SIC 15-17)). San Diego County usage of adhesive materials was obtained by multiplying the national usage figure by the ratios of San Diego County to United States employment in each end-use application category. For comparison purposes, adhesive material usage was also estimated by examining the population ratios of San Diego County to the United States as a whole (the approach used by the Bay Area AQMD in their emission inventory analysis).

The estimates of San Diego County adhesive materials usage are in the third and fourth columns of Table 4. They are based on the ratio of employment and population shares, respectively, for San Diego County to the United States for each end-use application category. San Diego County contains roughly one percent of the United States population. The table categorizes adhesives and sealants by their end-use similar to proposed Rule 67.21 and presents national usage of adhesive materials (in millions of pounds) by end-use as provided by the Rauch Guide.

TABLE 4. Estimated General Adhesive Material Usage in San Diego County, 1995

Adhesive Material End Use and Corresponding Rule Category	National Usage (million lbs)	Estimated San Diego County Usage	
		Based on Employment Share ¹ (million lbs)	Based on Population Share ² (million lbs)
Roofing (SIC 176) Non-membrane roof installation/repair adhesive Single-ply roof membrane installation/repair adhesive Single-ply roof membrane installation/repair adhesive primer Single-ply roof membrane sealant	45	0.3816	0.4641
Flooring (SIC 1752) Ceramic tile installation adhesive Indoor floor covering installation repair Cove base installation adhesive Outdoor flooring	200	3.6525	2.0625
Piping (SIC 171) ABS welding adhesive CPVC welding adhesive Plastic cement welding adhesive primer PVC welding adhesive	50	0.3357	0.5156
Other ³ - On-site Construction (SIC 15-17) Multipurpose construction adhesive Structural glazing adhesive Architectural sealant Architectural sealant primer	2205	20.3663	22.7394
TOTAL GENERAL ADHESIVE MATERIAL USAGE		24.7362	25.7816

¹ Employment figures for the United States and San Diego are for 1995.

² Population figures for the United States and San Diego County are for 1995.

³ Rauch figure is On-site Construction 1995 total minus flooring, piping, and roofing end-use sub-totals.

Sources: Rauch Guide (1996), Impact Marketing.
 County Business Patterns 1995, United States, US Bureau of the Census.
 Regional Economic Information System, Bureau of Economic Analysis.
 Department of Finance, California 1998.

It should be noted that the method using employment shares, which is based on the intensity of economic activity in specific sectors, results in more accurate estimates of adhesive usage and was used in subsequent emission estimates.

In interviews with distributors and manufacturers of architectural adhesives, it was learned that many construction firms are already using compliant materials. Therefore, in estimating emissions for each end-use category, it was necessary to determine the share and an emission factor for both compliant and non-compliant materials.

The contacted distributors were asked what percentage of their products (in four pre-defined categories) currently comply with the proposed rule. They were also asked to name their top selling products' names, formulators' name, container size, and VOC content in both compliant and non-compliant categories. Though not every distributor answered all questions, many provided helpful information used in this analysis. For each adhesive material type, the percentage of compliant material in use was determined and an average VOC content was calculated for

compliant and non-compliant products in each category. Fifteen distributors were contacted, and 20 products were identified as their top selling products for the four pre-defined adhesive categories. It was assumed that 100% of the VOC in the material is emitted and, thus, VOC content equals the emission factor.

Table 5 summarizes the compliant and non-compliant adhesive material usage and VOC emissions from non-permitted sources using adhesive materials categorized as "General Adhesive Materials" in Rule 67.21.

Table 5. VOC Emissions from Non-Permitted Sources in San Diego County

Adhesive Material End-Use and Corresponding Rule Categories	Adhesive Material Usage (Wt. %)		VOC Emissions (tons/year)			VOC Emission Reductions (tons/year)
	Compliant Material	Non-Compliant Material	Compliant Material	Non-Compliant Materials	Total	Total
Roofing (SIC 176) Non-membrane roof installation/repair adhesive Single-ply roof membrane installation/repair adhesive Single-ply roof membrane installation/repair adhesive primer Single-ply roof membrane sealant	95	5	48.5	3.7	52.2	1
Flooring (SIC 1752) Ceramic tile installation adhesive Indoor floor covering installation repair Cove base installation adhesive Outdoor flooring	75	25	50.0	152.6	202.6	88
Piping (SIC 171) ABS welding adhesive CPVC welding adhesive Plastic cement welding adhesive primer PVC welding adhesive	93	7	49.8	5.9	55.7	1
Other - On-site Construction (SIC 15-17) Multipurpose construction adhesive Structural glazing adhesive Architectural sealant Architectural sealant primer All others not identified above	90	10	812.8	383.8	1196.6	168
TOTAL VOC EMISSIONS	n/a	n/a			1507	258

The total estimated VOC emissions from all permitted and non-permitted adhesive material application operations in San Diego County are approximately 1,578 tons per year.

7. ANTICIPATED EMISSION REDUCTIONS

The data presented in Tables 4 and 5 on the use of non-complying adhesive materials and their VOC content were used to calculate the emission reductions from non-permitted sources. The VOC content of compliant products was assumed to be the maximum allowable VOC content for each adhesive specified in Rule 67.21. The percent usage for each sub-category of materials within each end-use category listed in Table 5 was estimated based on good engineering judgment. The calculated VOC emission reductions from implementing Rule 67.21 among non-permitted sources are approximately 258 tons per year, or 17% of current emissions.

For permitted sources, the emission reductions were calculated using District data including a telephone survey on the usage and VOC content of non-compliant materials. The VOC content of compliant products was assumed to be the maximum allowable VOC content for each adhesive material specified in Rule 67.21. VOC emission reductions from these sources were estimated to be approximately 18 tons per year, or 25% of current emissions. Overall, the rule will result in approximately 276 tons per year of VOC emission reductions, or 17.5% of total current emissions.

8. ECONOMIC IMPACTS OF RULE 67.21

The cost estimates listed below were developed through discussions with adhesive and sealant vendors, manufacturers, suppliers, and District staff. While it is possible a facility might incur costs higher than those estimated below, these costs reflect a conservatively-high estimate of any marginal costs a business would incur. The economic impact of the rule was assessed separately for permitted and non-permitted sources.

A. PERMITTED SOURCES - COMPLIANCE COSTS

Complying Adhesive Materials

Permitted sources can comply with the VOC limits in the rule by using alternative low VOC containing adhesives. Sources may choose from several alternatives such as polyvinyl acetate adhesives, reactive polyurethane adhesives, water-based and high-solids, solvent-based adhesives. For this cost impact analysis, only water-based and high-solids, solvent-based adhesives were considered due to their wide spread use among the 41 companies using compliant-adhesive materials.

Many compliant water-based materials contain significantly more solids per unit volume than conventional adhesives. Although some of these products are more expensive, they provide greater coverage and, consequently, smaller quantities are needed to complete the same job. As a result, the overall material costs of switching to compliant water-based adhesive products are not expected to be significantly different.

High-solids, solvent-based adhesives are also a favorable alternative. These adhesives contain exempt solvents (e.g., acetone) and have a solids content up to 60%. Since these products are similar to traditional solvent-based adhesives in all measures of performance, only minimal adverse technical impacts are expected. As in the case of water-based content products, high-solids, solvent-based products are expected to provide more coverage and require less material. Therefore, their usage is not expected to result in any significant cost impacts.

Cost of Equipment

The use of water-based products tend to create mists which result in overspray. Therefore, the installation of a spray booth or rearrangement of workspace may be required. Many large and

medium-size facilities already have spray booths. For a small facility, installing a spray booth may represent a significant expense. Small facilities currently without a spray booth are expected to comply with the rule by rearranging their work area, rather than installing a new spray booth.

Drying time for water-based products may be twice as long as for solvent-based products. Purchasing additional drying equipment, loss of productivity, and cost of training personnel may result in additional costs for a facility switching from a solvent-based adhesive to a water-based adhesive. Some facilities may also need to retrofit spray equipment to accommodate the higher solids content of new materials.

In addition, some shops that work with difficult-to-bond substrates may be able to comply with Rule 67.21 by installing two-part, co-sprayed systems using water-based adhesives. This type of system is currently being used successfully in place of solvent-based adhesives for the bonding of such substrates. The purchase of new adhesive spray guns will be required to use the two-part, co-sprayed system.

As discussed above, it is unlikely that any facility currently without a spray booth will be forced to install one to comply with the proposed rule. Therefore, the purchase of new spray equipment represents the most significant cost of switching to alternative, compliant-adhesive materials. It is estimated that this cost will range from \$1,400 to \$2,500.

Operation and Maintenance (O&M)

With the introduction of new spray equipment, additional maintenance and operational costs are expected to follow. Because of overspray and misting problems associated with water-based adhesives, affected businesses may rearrange their work space layout so that the quality of products is not compromised. That may result in somewhat increased maintenance and cleanup costs. However, many contacted facilities anticipate small or no additional costs associated with operation and maintenance.

Recordkeeping

Costs associated with recordkeeping are a function of the characteristics of a particular business. The costs of recordkeeping will depend on the variety of materials used, efficiency with which records are kept, and the hourly rate of persons maintaining records. Most permitted facilities already maintain daily or monthly records of VOC containing materials usage to show compliance with other District rules or permit conditions. These records include most of the information necessary to verify compliance with Rule 67.21. Therefore, the cost of additional recordkeeping required by Rule 67.21 is assumed to be insignificant.

Waste Disposal

Costs associated with waste disposal, too, are a function of a particular business' production, efficiency, rates of personnel, and more. As most companies already face waste disposal costs, there are no additional waste disposal costs expected from switching to compliant materials.

Training/Labor

For the purposes of this analysis, it is estimated that at least one employee will need training once a year for eight hours. This is to ensure proper use of new adhesive materials and equipment. Assuming \$10 an hour as the wage rate, minimum training costs are \$80 per year. In some cases, the adhesive distributor may provide free training on the use of new spray equipment and application of new adhesive materials.

Add-on Control Equipment

Complying with Rule 67.21 by using add-on emission control equipment is also technically feasible. However, it is not expected that any facility in San Diego County will use this option due to very high capital and operating costs of add-on equipment and the availability of low VOC content adhesive materials as an alternative compliance method.

B. PERMITTED SOURCES - CALCULATION METHODOLOGY

According to the District's permit files, 27 facilities currently use non-compliant adhesive materials. They were divided into three groups based on the annual consumption of adhesive materials at each facility: small (55-199 gallons per year), medium (200-599 gallons per year), and large (600+ gallons per year). Facilities using less than 55 gallons of adhesive materials per year are exempt from rule requirements. The total capital and operating costs were calculated for each group based on equipment needs of specific shops and cost estimates developed by District staff. For each size facility, two different compliance options were considered: use of water-based adhesives and high-solids, solvent-based adhesives.

Table 6 provides an overall summary of costs and cost-effectiveness for these sources. Tables 7 through 9 present results of cost calculations for each usage size of affected permitted sources in San Diego County.

TABLE 6. Cost Impact Analysis Summary For Permitted Sources

	SMALL USAGE		MEDIUM USAGE		LARGE USAGE	
	[55 - 199 gallons]		[200 - 599 gallons]		[600 gallons and over]	
	Solvent-based	Water-based	Solvent-based	Water-based	Solvent-based	Water-based
VOC Emission Reductions per Facility (lb/yr)	116	217	388	1,225	834	2,217
Capital Cost per Facility (\$)	1,400	2,100	1,400	2,000	1,600	2,500
Cost - Effectiveness (\$/lb VOC Reduced) <Savings>	1.64	3.22	<1.11>	0.05	<8.82>	<1.74>
Additional Cost per sq. ft. of Substrate Bonded (¢/sq.ft.) <Savings>	2	5	None	3	<4>	<2>

Small Usage Facilities

There are 21 small facilities that will be subject to the proposed Rule 67.21 emission standards, 10 of which are already in compliance. Eleven facilities currently use high VOC content materials and will be affected by the lower VOC requirements of the proposed rule. Since contact adhesives were predominantly used among the small usage group (eight facilities), the cost impact analysis is based on facilities switching to compliant water-based or high-solids, solvent-based contact adhesives.

TABLE 7. Direct Cost Impact on Small Usage Facilities

	High-Solids Solvent-Based (\$)	Water-Based (2-part co-sprayed) (\$)
CAPITAL COSTS		
Spray Equipment	1,400	2,100
Population Capital Costs*	15,400	23,100
ANNUALIZED COSTS		
Capital Costs (equipment)	370	554
Training	80	80
Additional O&M	0	55
Cleanup Costs	0	60
Current Adhesive	(600)	(600)
New Adhesive	340	550
Total Annualized Costs	190	699
Population Annualized Costs*	2,090	7,689

* Estimated total if all 11 small usage facilities using non-compliant adhesives switch to either water-based or high-solids, solvent-based adhesives. It is assumed that the cost for users of other adhesive materials will be similar to those for contact adhesive users.

For all 11 potentially-affected businesses, the total capital costs are estimated to range from \$15,400 to \$23,100. The total annual compliance costs, including annualized capital costs, are estimated to range from \$2,090 to \$7,689, with a cost-effectiveness range between \$1.60 - \$3.20 per pound VOC reduced. It should be noted that the higher cost of switching to water-based adhesives represents the worst possible case because cheaper high-solids, solvent-based contact adhesives utilizing exempt solvents are often available. Overall, the direct cost impact for the 11 small usage facilities is expected to be minimal.

Medium Usage Facilities

There are 23 medium facilities that will be subject to the proposed Rule 67.21 emissions standards, 15 of which are in compliance. The remaining eight facilities use several types of adhesives. The cost impact analysis is based on facilities switching from a contact adhesive to a high-solids, solvent-based adhesive and from a specialty adhesive to a water-based (2-part, co-sprayed) adhesive.

TABLE 8. Direct Cost Impact on Medium Usage Facilities

	High-Solids Solvent-Based (\$)	Water-Based (\$)
CAPITAL COSTS		
Spray Equipment	1,400	2,000
Population Capital Costs*	11,200	16,000
ANNUALIZED COSTS		
Capital Costs (equipment)	370	528
Training	80	320
Additional O&M	0	0
Cleanup Costs	0	0
Current Adhesive	(2,000)	(1,725)
New Adhesive	1,120	1,050
Misc. Savings	0	(117)
Total Annualized Costs	(430)	56
Population Annualized Costs*	(3,440)	448

* Estimated total if all 8 medium usage facilities using non-compliant adhesives switch to either water-based or high-solids solvent adhesives. It is assumed that the cost for users of other adhesive materials will be similar to those used for this analysis.

For all eight potentially-affected businesses, the total capital costs are estimated to range from \$11,200 - \$16,000. The total annual compliance costs, including annualized capital costs, are estimated to range from savings of \$3,440 to a cost of \$448, with a cost-effectiveness range from savings of \$1.10 to a cost of \$0.05 per pound of VOC reduced. At this usage level, after making initial capital investments in equipment, savings can be realized because complying high-solids materials provide greater coverage per unit volume than typical non-compliant materials. The actual amount of likely savings or costs would depend on the particular practices of each facility and their adhesive usage level. Overall, the direct cost impact for the eight medium usage facilities is expected to be minimal.

Large Usage Facilities

There are 23 large facilities, 16 of which comply with the proposed Rule 67.21 requirements. A generic facility using contact adhesive was used to estimate the direct cost impacts.

TABLE 9. Direct Cost Impact on Large Usage Facilities

	High-Solids Solvent-Based (\$)	Water-Based (2-part co-sprayed) (\$)
CAPITAL COSTS		
Spray Equipment	1,600	2,500
Population Capital Costs*	11,200	17,500
ANNUALIZED COSTS		
Capital Costs (equipment)	422	660
Training	80	160
Additional O&M	0	0
Spray Equipment	0	250
Spray Booth	0	1,100
Current Adhesive	(11,880)	(11,880)
New Adhesive	4,023	5,852
Misc. Savings	0	0
Total Annualized Costs	(7,355)	(3,858)
Population Annualized Costs*	(51,485)	(27,006)

* Estimated total if all 7 large usage facilities using non-compliant adhesives switch to either water-based or high-solids, solvent-based adhesives. It is assumed that the cost for users of other adhesive materials will be similar to those for contact adhesive users.

For all seven potentially-affected businesses, the total capital costs are estimated to range from \$11,200 to \$17,500. The total annual compliance costs, including annualized capital costs, are estimated to range from a savings of \$27,006 to \$51,485, with the cost-effectiveness ranging from a savings of \$8.80 to \$1.70. Similar to medium size facilities, overall savings can be realized because the majority of complying adhesives have a higher solids content and, therefore, provide more coverage. Thus, after making initial capital investment in the purchase of new spray equipment, savings will result from significantly less usage of compliant adhesive materials.

The actual amount of likely savings or costs would depend on the particular practices of each facility and their adhesive usage level. Because information necessary to assess direct costs impacts on other potentially affected facilities (substrate-specific adhesive users) was not available at the time of this analysis, it is unclear whether these facilities would actually realize savings. However, District permit file information shows that there are other local facilities using similar substrate-specific adhesives (two complying facilities use metal substrate-specific and 13 complying facilities use porous-wood substrate-specific adhesives) which comply with the proposed VOC content limits. This would indicate that any negative compliance cost impacts are insignificant.

C. NON-PERMITTED SOURCES - COMPLIANCE COSTS AND CALCULATION METHODOLOGY

Non-permitted sources that perform on-site construction and repairs such as plumbing, roofing, and flooring will be able to comply with proposed Rule 67.21 by simply switching to lower VOC content products. Typically, these sources do not use spray guns, therefore, no additional costs associated with application equipment, personnel training, recordkeeping, or waste disposal are expected.

The use of low VOC content products is not expected to be more costly or present any technical difficulties. Based on interviews with the industry representatives and vendors in the area, it is clear that low VOC products are widely available and are already used by a majority of local contractors. Industry representatives are of an opinion that there is little price difference between compliant and non-compliant materials. For example, according to industry representatives, the price differentials loosely translate to a rather insignificant amount to an average plumber (less than \$0.50 a month). Therefore, the additional cost of compliant materials for non-permitted sources is assumed to be insignificant.

9. OVERALL SIGNIFICANCE OF THE ECONOMIC IMPACTS OF RULE 67.21

The overall significance of the economic impacts of Rule 67.21 was evaluated on the basis of business responses to compliance costs and competitive impacts.

A. INDUSTRY RESPONSE TO PROBABLE COMPLIANCE COSTS

In order to determine the business responses to potential compliance costs from the proposed rule, a number of businesses were contacted. Respondents were asked about their businesses' background information and how they expect their business processes to change under various compliance scenarios. Out of 26 facilities that were contacted, 10 chose to respond to the survey effort. In addition, 15 vendors and distributors of adhesive products in San Diego County were contacted in order to assess potential impact of the proposed rule on non-permitted users.

The 10 facilities that responded to the survey represent a cross section of the San Diego County economy. Primary SIC codes of nine companies were identified. As Table 10 shows, six unique, two-digit SIC codes are necessary to describe the nine facilities.

TABLE 10. Contacted Permitted Facilities Currently Not Complying with Rule 67.21 Requirements

Usage Level	SIC Code and Industry Classification	Employment Size
small	39: Miscellaneous manufacturing industries	Not Available
small	15: Building construction - general contractors and operative builders	14
small	25: Furniture and fixtures	60
small	39: Miscellaneous manufacturing industries	350
small	75: Automotive repair, services, and parking	4
small	75: Automotive repair, services, and parking	3
medium	37: Transportation equipment	4,000
large	37: Transportation equipment	40
large	17: Construction - special trade contractors	150

The typical business response is based on incurring some level of costs and reacting to those costs in various ways. Firms may choose to either raise fees/prices to offset all or part of the increased production costs. Some other options include reduction of production, staffing level, expenditure, capital investment, and other. For firms raising prices, it is assumed that the costs are passed on to the customers; and the impacts of the rule are not on the businesses but rather on the regional economy as a whole. Those absorbing all of or a part of the costs will incur direct expenses for equipment and materials or indirect costs in increased labor. The magnitude of these costs is dependent on the individual characteristics of a given facility. In the short run, businesses are not expected to recover any loss of profits associated with absorbing increased costs. In the long run, it is assumed that any loss of profits absorbed by the affected businesses will be dissipated to the regional economy by market price adjustments.

The impact resulting from shops raising prices is not expected to be significant because the percentage increase in their operating costs is not likely to be substantial. Based on business responses, not many firms are likely to increase prices. According to responses from 10 non-compliant facilities, it is anticipated that very few would actually increase prices to offset some or all of the potential compliance costs. Only one firm indicated that it would be willing to increase prices if faced with significant compliance costs. For many businesses, raising prices will result in a loss of business, which in turn is likely to result in a bigger profit loss than would occur due to absorbing increased regulatory costs.

As expected, most respondents expressed mild dissatisfaction with the proposed rule. They were also suspicious of the District's estimated compliance costs and savings figures. However, information necessary to dispute the District's estimates was not provided. Based on the District's estimates, the affected businesses are expected to face relatively small costs or potential savings. Conversations with other districts' staff members and industry representatives also suggest that the potential impacts will be insignificant and most businesses will be able to make smooth transitions to the use lower VOC adhesive materials.

All 11 facilities with small adhesive usage were contacted by Jack Faucett Associates (JFA), and seven businesses chose to participate in the survey. Four businesses replied that when faced with additional compliance costs, they would absorb the costs by either reducing spending or reducing profits. All reported about average profitability in their industries and would stay in business.

One small usage facility replied that the production facility would "most likely" relocate elsewhere if faced with additional compliance costs (annualized costs range from \$190 - \$699). Such a drastic measure is not expected because the cost estimates are relatively small and this facility is not a small business. Also, this facility reported a very small usage level of adhesives in its production operation. This suggests that actual compliance costs faced by this business are likely to be even smaller than the estimated cost and, therefore, unlikely to cause a relocation.

Only one medium usage facility chose to participate in the survey. This company reported that it is a large firm employing over 4,000, and its adhesive materials operations were not a significant element in their overall production process. Faced with hypothetical compliance costs, it would choose to absorb it by unspecified means. It is likely that this firm would absorb any costs by lowering its profits. According to cost impact estimates, this company is not expected to incur costs. Rather, this company is likely to realize a small amount of savings. Though it is unclear whether this firm will incur costs or realize savings, overall impacts are not expected to be significant.

Only two large usage facilities chose to participate in the survey. The District's cost estimates indicate that large users are not likely to face costs but realize savings. Both respondents to the JFA survey disagreed with the cost/savings estimates performed by the District. However, it was not possible to gather any evidence that suggests otherwise.

One large usage facility reported that it would be difficult to comply with the proposed rule. This represents a general feeling of discontent among businesses faced with many regulations. However, this is not necessarily directed to specific costs/savings estimates. This company is not a small business and is not in a unique industry. In fact, several competing firms in the same industry are already complying with the proposed rule. It is important to point out that a large adhesive user such as this company is expected to realize savings from compliance. If faced with any hypothetical and unlikely additional compliance costs, the respondent would reduce production, transfer operations elsewhere, or reduce operating staffing. Such drastic measures may be attributed to the firm's profitability. The facility reported that it was only marginally profitable and losing money. The rule is unlikely to impose any significant costs on this business. It is, however, possible for this firm to reap potential benefits in savings by complying with the rule. Many other market forces outside the District's control may be affecting this business.

The other large usage facility participating in the survey also responded to the costs/savings estimates with a high degree of skepticism. The respondent was certain that there would not be any savings. However, the facility would absorb any compliance costs it may incur. This is a small business with less than 50 employees, and reported about average profitability. For this particular company, most of expenses associated with compliance would be from equipment changes. The larger the level of adhesive usage, the more likely the businesses would save because high-solids content materials tend to provide greater coverage. Though it is unclear whether this firm will experience overall savings or costs, it appears that the impacts will be relatively small (in savings or in costs).

Of the 10 respondents, five represented small businesses. Although more small entities replied to the JFA survey, they are not expected to face significant impacts from the proposed rule. Most hinted that they would absorb any likely costs associated with rule compliance. All businesses are likely to face relatively small costs or savings and are likely to stay in business.

Non-permitted sources were difficult to contact because they tend to be independent contractors who are on-site during business hours. Numerous suppliers and industry representatives were contacted more than once in order to collect relevant facts. Fifteen suppliers and a handful of manufacturers provided assistance and valuable information. Most vendors reported that nearly all the products they distribute are already in compliance. Four distributors sell products that comply with South Coast AQMD regulations, which are more stringent than proposed Rule 67.21. Seven wholesalers replied that they distribute mostly (if not all) compliant, low VOC content products. The remaining four suppliers who were contacted could not provide quantitative data but reported that their best selling products are compliant, low VOC content products.

Similar to the impact on permitted sources, the rule's impact on non-permitted sources is expected to be little or none. The impact resulting from businesses raising prices is not expected to be significant because the percentage increase is not likely to be substantial. Based on the survey, not many businesses are likely to increase prices. According to responses from 15 adhesive distributors, it is anticipated that very few would actually increase prices to offset some or all of the potential compliance costs. That is because a majority of non-permitted end-users of adhesive materials have already switched to compliant materials. As discussed earlier, most suppliers already distribute low VOC content adhesives and sealants. All interviewed suppliers anticipated neither a significant change in their customers' (professional contractor) behaviors nor significant

changes in pricing. Should there be any price increases, such increases would effectively translate to less than \$0.50 a month for an average plumber. It is unlikely that the adoption of the Rule 67.21 would have any significant impact on non-permitted end-users.

B. IMPACT OF COMPLIANCE COSTS ON COMPETITIVENESS

Rule 67.21 is likely to have little impact on competitiveness among permitted sources. From the District's permit files, it is apparent that roughly one-half of permitted sources already comply with the rule. Just as the 27 non-compliant sources represent a variety of industry sectors, the 41 complying facilities are in similar industries as the 27, providing direct local competition. There are, however, a few facilities with their competition outside California. These facilities are expected to absorb any compliance costs they may incur.

Rule 67.21 will also likely have minimal impacts on competitiveness among non-permitted sources involved in the on-site construction, repair, and services industries in San Diego County. Work in such industries tends to be locally oriented. Customers of many plumbers, roofers, and other professionals look for local businesses that are able to come to job sites at short notice. This is confirmed by the Regional Purchase Coefficient (RPC) obtained from the IMPLAN data. IMPLAN is a regional input/output model used in economic impact analysis. Data used in the model comes from 30-40 different state and federal government sources. Data includes Employment, Value added, Output, and Final demands. The RPC estimates the gross regional commodity demand which is satisfied by local commodities. The RPC for the residential and non-residential construction industries in San Diego is 0.99 which implies that nearly all of the demand for the construction sector is satisfied locally. Since all construction businesses in San Diego will face similar compliance costs, any costs can be more easily passed onto customers without negative competitive impacts. In any event, compliance costs are expected to be so low as to result in imperceptible changes in contractors' prices.

10. COST-EFFECTIVENESS OF THE PROPOSED RULE

Because many diverse industries will potentially be affected by the proposed Rule 67.21 requirements, it is reasonable to provide a cost-effectiveness range. The District estimates that the cost-effectiveness of the rule will range between \$8.80 (savings) to \$3.20 per pound of VOC reduced. This is comparable to the estimated cost-effectiveness values determined for other recently adopted VOC control rules (\$0.60 - \$2.50). The cost-effectiveness of the rule for an individual business will vary depending on the size of the affected business, equipment upgrades necessary to use compliant materials, and material savings from using high-solid content adhesives. As noted earlier, savings in most cases would be realized at larger usage levels.

11. RULE BENEFITS

The District estimates that Rule 67.21 will significantly reduce VOCs emitted to the atmosphere. The overall VOC emission reductions from adhesive materials operations is expected to be about 276 tons per year, or approximately 17.5% of total current emissions.

In addition, because many adhesive materials with lower VOC content also have a high-solid content, they provide greater coverage than conventional products and result in smaller amounts of material usage. This will also reduce the amount of hazardous wastes generated.

A more complete cost/benefit analysis would include a quantitative evaluation of the direct health benefits to individuals in contact with pollutants, the health benefits realized to local residents from breathing cleaner air. However, this is a complex undertaking beyond the scope of this report.

12. CONCLUSIONS

The predominant industry trend in adhesives and sealant manufacturing industry is to produce products with a lower VOC content. This trend is in large part due to air quality regulations. It is also driven by a combination of factors such as public health issues, fire risks, and workers' health matters. In addition, a score of disparate industrial sectors that use adhesives in their business operations must, and have been, adapting to such changes. Many companies have voluntarily followed this trend and have demonstrated that meeting lower VOC limits can be beneficial to their businesses. Approximately one-half of all permitted sources in San Diego County are currently using adhesive materials that comply with proposed Rule 67.21 requirements.

Rule 67.21 related costs to businesses are directly correlated to their equipment needs and usage level. The businesses that already have most of the needed equipment will face much lower additional compliance costs than those needing to purchase new spray equipment. The facilities with large usage volume would spend less in material costs as high-solids, low VOC content materials provide greater coverage per gallon. In most cases, compliance costs will be absorbed by the businesses. If the business responses are accurate, the most significant rule impact would be the possibility of some businesses reducing production and transferring their operation outside San Diego County. At least one marginally-profitable firm indicated the costs associated with Rule 67.21 may have a significant financial impact. One firm indicated that it might choose to transfer its operation elsewhere in the nation. However, the requirements of Rule 67.21 are not solely responsible for these firms' financial difficulties. Many other companies have already adapted to changing trends in the adhesives industry. This rule is not expected to pose any significant impact on most businesses in San Diego County.

COMPARATIVE ANALYSIS
RULE 67.21 - ADHESIVE MATERIAL
APPLICATION OPERATIONS

STATUTORY REQUIREMENTS

Prior to adopting, amending, or repealing a rule or regulation, California Health and Safety Code Section 40727 requires findings of necessity, authority, clarity, consistency, non-duplication, and reference. As part of the consistency finding to ensure proposed rule requirements do not conflict with or contradict other District or federal regulations, Health and Safety Code Section 40727.2 (a) requires the District to perform a written analysis identifying and comparing the air pollution control standards and other provisions of proposed new Rule 67.21 with existing or proposed District rules and guidelines and existing federal rules, requirements, and guidelines applying to the same source category.

ANALYSIS

There are no applicable existing or proposed federal requirements for adhesive material application operations. Currently, they are regulated by District Rule 66 (Organic Solvents). Once new Rule 67.21 becomes effective, Rule 66 will no longer apply to operations subject to Rule 67.21. Rule 67.21 satisfies Best Available Retrofit Control Technology (BARCT) requirements of the Health and Safety Code. The District does not intend to submit Rule 67.21 to be included in the federal State Implementation Plan (FSIP). Thus, Rule 67.21 will not be a federally-applicable or enforceable requirement.

CONCLUSION

The District prepared a Comparative Analysis of the proposed rule with existing Rule 66 and emission control standards representing Best Available Control Technology for adhesive material application operations subject to new Rule 67.21. The applicability, exemptions, emission limits, recordkeeping, and test methods were compared (Table 1). The analysis shows the applicability, exemptions, and emission limits of new Rule 67.21 are more stringent than Rule 66 but recordkeeping and test method requirements are the same. New Rule 67.21 is the same as BACT in all areas except applicability. The rule will apply to more sources than will BACT. There are no conflicts or contradictions between new Rule 67.21 and Rule 66 or BACT for adhesive application operations.

TABLE 1
DETAILED COMPARISON - RULE 67.21

		REGULATIONS	
ITEMS for COMPARISON	PROPOSED RULE 67.21	RULE 66*	BEST AVAILABLE CONTROL TECHNOLOGY
APPLICABILITY	All Adhesive Material Application Operations.	All miscellaneous organic material usage not subject to any other prohibitory rules.	Sources which emit >10 lb/day of VOC.
EXEMPTIONS	Various, including small usage, small size containers, and low VOC content.	None	N/A
VOC CONTENT STANDARDS	1) VOC content limit in g/l, for various categories of adhesive materials and solvents. 2) Sales prohibition for General Adhesive Materials.	None	Same as VOC content in proposed Rule 67.21.
ADD-ON EMISSION CONTROL REQUIREMENTS	Capture and control efficiency ≥85% by weight, as an alternative to complying with VOC content limits.	Capture and control efficiency ≥85% by wt. if: 1) Emissions >15 lb/day of organic materials which come in contact with a flame or exposed to temp. exceeding 200°F. 2) Emissions >40 lb/day of photochemically reactive compounds. 3) Emissions >3000 lb/day of non-photochemically reactive organic materials.	Same as in proposed Rule 67.21 for sources using >20 gal/yr of adhesives, a case-by-case determination of applicable add-on control requirements based on the District's cost-effectiveness guidance is required.
RECORDKEEPING	1) Three years. 2) Maintain current list of adhesive materials used. 3) Daily or monthly for adhesive materials and monthly solvent dispensing records.	Same as in proposed Rule 67.21.	Same as in proposed Rule 67.21.
TEST METHODS	Various methods including VOC content, vapor pressure, boiling point, and capture efficiency.	Various methods including VOC content, photochemical reactivity, boiling point, and capture efficiency.	Same as in proposed Rule 67.21.

* Once Rule 67.21 becomes effective, Rule 66 will no longer apply to adhesive material application operations subject to Rule 67.21.

INCREMENTAL COST-EFFECTIVENESS ESTIMATES

RULE 67.21 - ADHESIVE MATERIAL APPLICATION OPERATIONS

STATUTORY REQUIREMENTS

To ensure alternative methods of complying with emission control, recordkeeping, and reporting requirements of proposed rules are considered, California Health and Safety Code Section 40920.6 requires the District to perform an incremental cost analysis prior to adopting rules to meet Best Available Retrofit Control Technology (BARCT) requirements. To perform this analysis, the District must identify one or more control options achieving the emission reduction objectives for the rule, determine the absolute cost-effectiveness for each option, and calculate the incremental cost-effectiveness between options. To determine incremental cost-effectiveness, the District must calculate the difference in dollar costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control option compared to the next less expensive control option.

Proposed Rule 67.21 implements state BARCT requirements. It applies to the same sources, sets the same VOC content and emission limits, and contains the same exemptions and recordkeeping requirements as the Air Resources Board's BARCT guidance for adhesive material application operations. The only alternative for permitted sources would be installing add-on control equipment. This option is considered economically feasible only for large facilities using 600 gallons per year or more of adhesive materials because the resulting cost-effectiveness is the same or less than the cost-effectiveness of other recently adopted rules (between \$1 and \$3 per pound of VOC's reduced). Using of add-on control equipment is not economically feasible for smaller permitted sources because the cost-effectiveness for such sources is greater than the cost-effectiveness of other recently adopted rules. There are no alternative control options for non-permitted adhesive application sources that work at many job-sites throughout the County (i.e., construction-related activities) because add-on controls are not available and would have a cost-effectiveness much greater than the cost-effectiveness of other recently adopted rules.

The absolute and incremental cost-effectiveness of the add-on emission control option for large permitted stationary sources were calculated assuming 600 gallons per year usage of adhesive materials and a carbon adsorber with a combined collection and control efficiency of 85% would be installed in lieu of complying with the VOC content limits of the proposed rule.

Table 1 provides the results of the analysis of VOC emission reductions, annual capital and operational costs, and absolute and incremental cost-effectiveness for this option. For comparison, the same values were calculated for a similar facility that complies by using low VOC adhesive materials. The analysis shows the absolute cost-effectiveness of the alternative option (add-on control equipment) is much higher than complying with low VOC adhesives (a cost of \$10/lb of VOC reduced vs savings of \$1.7/lb of VOC reduced). The incremental cost-effectiveness of reducing an additional 4.3 tons of VOC per year is significantly higher, \$46 per pound.

Accordingly, proposed Rule 67.21 implements the most cost-effective alternative. It results in minimal costs to affected sources and in many cases provides savings. The proposed rule allows the add-on control option but is not expected to be used.

Table 1. Absolute and Incremental Cost-Effectiveness of Potential Control Options for Rule 67.21.

Options	VOC Emissions (tons/yr.)	VOC Emission Reductions (tons/yr.)	Annual Cost <savings>*	Absolute Cost-Effectiveness <savings> (\$/lb of VOC reduced)	Incremental Cost-Effectiveness <savings> (\$/lb VOC reduced)
1 Proposed Rule/Use of low-VOC materials	20.7	13.3	<\$46,280>	<1.7>	<1.7>
2 Add-on Emission Control	20.7	17.6	\$352,000	10.0	46.3

* Annual savings may be realized if a source can use complying materials with a higher solids' content. High solids materials will provide more coverage resulting in less material used and a reduction in labor cost.

**AIR POLLUTION CONTROL DISTRICT
SAN DIEGO COUNTY**

NEW RULE 67.21 - ADHESIVE MATERIAL APPLICATION OPERATIONS

WORKSHOP REPORT

A workshop notice was mailed to all companies and government agencies in San Diego County that may be subject to the proposed new Rule 67.21 - Adhesive Material Application Operations. Notices were also mailed to all Economic Development Corporations and Chambers of Commerce in San Diego County, the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (ARB), and other interested parties.

The workshop was held on April 29, 1998, and was attended by 18 people. Written comments were also received. The comments and District responses are provided below:

1. WORKSHOP COMMENT

Subsection (b)(1)(i) exempts "single or multi-unit packages having an aggregate net weight of one pound or less, or containing an aggregate of 16 fluid ounces or less." The phrase "multi-unit package" should be clarified.

DISTRICT RESPONSE

The District agrees. A definition of a multi-unit package has been added to Section (c).

2. WORKSHOP COMMENT

Subsection (b)(3) provides an exemption for stationary sources using small quantities of adhesive materials. The exemption limit of 55 gallons should also include the use of any associated surface preparation, stripping and cleanup materials.

DISTRICT RESPONSE

The District disagrees. The 55-gallon limit specified in Subsection (b)(3) only applies to adhesive material usage. It is not necessary to include surface preparation, stripping and cleaning materials in this limit because any small facility using this exemption is already exempt from rule requirements related to such materials. Therefore, the facility is not precluded from using necessary amounts of non-compliant surface preparation, stripping or cleaning materials.

3. WORKSHOP COMMENT

Subsection (b)(3) provides an exemption for adhesive material usage below 55 gallons per consecutive 12-month period. Were all facilities subject to proposed Rule 67.21 provided notice of this workshop?

DISTRICT RESPONSE

Yes. All facilities holding District permits for adhesive application operations were mailed a workshop notice for proposed Rule 67.21. District permit requirements apply to all sources with adhesive material use of 20 gallons or more per year.

4. WORKSHOP COMMENT

If a facility claims an exemption under Subsection (b)(3), will it be subject to the recordkeeping requirements of Section (f)?

DISTRICT RESPONSE

No. As stated in Subsection (b)(3), such a facility is only required to keep records of monthly purchase and monthly or daily usage of adhesive materials.

5. WORKSHOP COMMENT

The District should add recordkeeping requirements to Subsection (b)(4) - Exemption for Non-Compliant Adhesive Material Usage.

DISTRICT RESPONSE

The District agrees. A recordkeeping requirement has been added to Subsection (b)(4).

6. WORKSHOP COMMENT

The exemption provided in Subsection (b)(4) should be revised to allow the 55-gallon limit per each consecutive 12-month period to include both non-compliant adhesive and cleanup materials.

DISTRICT RESPONSE

The District agrees. Subsection (b)(4) has been revised to include non-compliant adhesive, surface preparation, stripping and cleanup materials, and adhesive bonding agents.

7. WORKSHOP COMMENT

Section (c) should include a formula for the calculation of total vapor pressure of materials containing Volatile Organic Compounds (VOCs).

DISTRICT RESPONSE

The District disagrees. A method for calculating the total vapor pressure of materials containing VOCs is already provided in the Test Method section of the rule (see Subsection (g)(4)).

8. WORKSHOP COMMENT

The definition provided in Subsection (c)(12) for Contact Adhesive - Special, is not consistent with the definition provided in the Proposed Determination of Reasonable Available Control Technology and Best Available Retrofit Control Technology for Adhesives and Sealants (RACT/BARCT Guidance). The District should modify the definition to include the bonding of decorative laminate in postforming applications or curved surfaces.

DISTRICT RESPONSE

The District agrees. The definition for Contact Adhesive - Special has been revised as suggested.

9. WORKSHOP COMMENT

The exemptions provided in Subsections (b)(3) and (b)(4), for small usage of adhesive materials and non-compliant adhesive material usage, respectively, do not apply to the requirements of Subsection (d)(1)(i) - Standards for General Adhesive Materials. Please explain this exclusion.

DISTRICT RESPONSE

Adhesive materials subject to the VOC standards of Subsection (d)(1)(i) are typically used in architectural and plastic welding activities. The sale of architectural and plastic welding adhesive materials exceeding the standards of Subsection (d)(1)(i) is prohibited by Subsection (d)(6). Therefore, non-complying architectural and plastic welding products will not be available for purchase or subsequent use in San Diego County and are not allowed to be used by sources subject to the exemptions in Subsections (b)(3) and (b)(4).

10. WORKSHOP COMMENT

The District should consider adding South Coast Air Quality Management District (SCAQMD) Method 316A to measure the VOC content of any plastic welding cement adhesive material subject to the VOC limits of Subsection (d)(1)(i)(B).

DISTRICT RESPONSE

The rule currently specifies SCAQMD Method 316A in Subsection (g)(3).

11. WORKSHOP COMMENT

Subsection (d)(1)(ii), Standards for Specialty Adhesive Materials, provides a future compliance date for using contact adhesives with a lower VOC limit. Will the District provide a future compliance date and a lower VOC limit for any adhesive specified in Subsection (d)(1)(i)?

DISTRICT RESPONSE

The District does not plan on adding any future compliance dates or limits to the adhesives listed under Subsection (d)(1)(i). If, in the future, adhesive materials with a lower VOC limit than those specified in Subsection (d)(1)(i) become available, the District will consider amending Rule 67.21 to require such lower limits.

12. WORKSHOP COMMENT

The future implementation dates for contact adhesive VOC limits in Rule 67.21 are inconsistent with the dates proposed in the RACT/BARCT Guidance. The District should adopt the same implementation dates as the state guidance.

DISTRICT RESPONSE

The District disagrees. The present state of low VOC adhesive technology does not allow an exact prediction of the time when contact adhesives complying with the future limits will be available for all applications. This has been a problem with other District rules having future effective dates for technology forcing limits. Therefore, the implementation dates in Rule 67.21, one year after those in the proposed RACT/BARCT Guidance, will provide sufficient time for the District to evaluate any problems connected with the use of compliant materials that may be encountered elsewhere in the state.

13. WORKSHOP COMMENT

The District should consider providing some flexibility to facilities using adhesives that belong to either the general or special contact adhesive categories in proposed Rule 67.21. If a facility uses mostly special adhesive (80% or more) it should be allowed to use the same adhesive for the rest of its operations. This will prevent the facility from having to use two separate contact adhesives in a production line.

DISTRICT RESPONSE

This flexibility is not presently prohibited by the rule because the proposed VOC limits for both contact adhesive categories are the same. Before the different VOC limits for general and special contact adhesives become effective, the District will evaluate the performance of low VOC content adhesives and will determine the need for possible rule amendments.

14. WORKSHOP COMMENT

If a facility is bonding metal ductwork to fiberglass, what VOC limit would apply?

DISTRICT RESPONSE

Such work will be subject to the requirements of Subsection (d)(1)(iii). If an adhesive material is used to bond together two or more of the substrates listed in Subsection (d)(1)(iii), the highest applicable substrate-specific VOC limit will apply. In the case of metal ductwork being bonded to fiberglass, the appropriate VOC limit would be 200 grams per liter.

15. WORKSHOP COMMENT

Does Subsection (d)(1)(iii), Substrate-Specific Adhesives, apply only to adhesives or does it also apply to adhesive materials (i.e., sealants, primers, etc.)?

DISTRICT RESPONSE

Subsection (d)(1)(iii) applies only to adhesives being used with any of the three substrates listed. Subsection (d)(1)(iv) applies to all other adhesive materials not listed elsewhere, including adhesive primers, sealants and sealant primers.

16. WORKSHOP COMMENT

If an adhesive material is not listed under Section (d), would this material be subject to Rule 67.21?

DISTRICT RESPONSE

Yes. If an adhesive material is not listed in Subsections (d)(1)(i) or (d)(1)(ii), the substrate-specific VOC limits specified in Subsection (d)(1)(iii) should be reviewed. If the substrate being bonded is not listed in Subsection (d)(1)(iii), then the adhesive material is subject to the VOC limits specified in Subsection (d)(1)(iv) - All Other Adhesive Materials.

17. WORKSHOP COMMENT

The District has stated that if adhesive materials with lower VOC content become available in the future, the VOC limits in Rule 67.21 may be amended to reflect this. What criteria will the District use when evaluating new lower VOC adhesive materials prior to amending Rule 67.21?

DISTRICT RESPONSE

Prior to making any amendments to Rule 67.21, the District will conduct a thorough analysis of information related to any new adhesive materials with a lower VOC content. Applicable rules of other air districts will be reviewed, facilities using the adhesive material will be contacted, manufacturers' technical data will be evaluated and a public workshop will be held to discuss any comments or concerns from industry. Consideration will be given to any technical limitations and implementation issues or costs associated with new lower VOC content adhesive materials.

18. WORKSHOP COMMENT

Subsection (d)(6), Prohibition of Sale, prohibits anyone from supplying, selling or offering for sale any adhesive material listed under Subsection (d)(1)(i), which exceeds the VOC limits listed. Would a facility be in violation if it uses a non-compliant material subject to the prohibition of sale?

DISTRICT RESPONSE

Yes. As stated in Subsection (d)(1), "A person shall not apply any adhesive material specified below with a VOC content in excess of the following limits:" It is the responsibility of the facility to use ("apply") compliant adhesive materials unless they are specifically exempted by the rule.

19. WORKSHOP COMMENT

Subsection (d)(6), Prohibition of Sale, prohibits anyone from supplying, selling, or offering for sale any adhesive material listed under Subsection (d)(1)(i), which exceeds the VOC limits listed. How will the District regulate those adhesive materials that are shipped from out-of-state and don't comply with the VOC limits listed in the rule?

DISTRICT RESPONSE

The District intends to enforce the sales prohibition at the point of sale by periodically inspecting local suppliers and distributors. The use of prohibited materials will be considered a violation of Rule 67.21. Persons selling or supplying these materials, including those shipped from out-of state, will also be in violation of Rule 67.21 and are not immune from enforcement action.

20. WORKSHOP COMMENT

The District should provide small businesses with a list of compliant adhesive materials.

DISTRICT RESPONSE

The District will develop a list of commonly used compliant adhesive materials. In addition, the District's Small Business Assistance Program Specialist can assist small businesses with Rule 67.21 and other compliance issues.

21. WORKSHOP COMMENT

The recordkeeping requirements provided in Subsection (f)(1)(ii) state that a facility must maintain daily or monthly records of the amount of adhesive material used. The District should allow the use of purchase records to comply with this requirement.

DISTRICT RESPONSE

The District disagrees. Purchase records alone do not reflect the actual usage of adhesive materials. Facilities will need purchase, disposal and inventory records in order to compile the required monthly usage records or may keep records of actual material usage for each operating day.

22. WORKSHOP COMMENT

Does the District have any specific requirements for container labeling?

DISTRICT RESPONSE

No. Rule 67.21 does not require container labeling.

23. WORKSHOP COMMENT

The District should require only annual recordkeeping since the rule will not be submitted to EPA for inclusion into the State Implementation Plan (SIP).

DISTRICT RESPONSE

The District disagrees. The monthly recordkeeping requirements of Rule 67.21 is consistent with the statewide RACT/BARCT Guidance and with other District rules regulating the use of VOC containing materials.

24. WORKSHOP COMMENT

Will the cost of additional recordkeeping be considered when calculating the cost-effectiveness of Rule 67.21?

DISTRICT RESPONSE

Yes. A Socioeconomic Impact Assessment (SIA) is being conducted by a consultant for the District. It will take into consideration all costs associated with rule compliance.

25. WORKSHOP COMMENT

When will proposed Rule 67.21 be adopted?

DISTRICT RESPONSE

The District is planning to submit Rule 67.21 to the Air Pollution Control Board for adoption in late 1998 or early 1999.

26. WORKSHOP COMMENT

Once the workshop report is final and Rule 67.21 is revised, will the District hold another public workshop?

DISTRICT RESPONSE

The District does not intend to hold another public workshop unless significant changes are made to the proposed rule. If affected sources have specific issues, the District may hold an informal meeting to discuss them. The District will also mail affected sources an Advisory after rule adoption explaining the rule requirements.

27. WORKSHOP COMMENT:

What is the quantity of VOC emission reductions expected from the implementation of this rule?

DISTRICT RESPONSE

Emission reductions will come primarily from adhesive materials used in permitted sources and non-permitted architectural applications, including installation of floors, roofs, and multipurpose construction. It is estimated that the emissions reductions will be approximately 23 tons per year for permitted sources. It is more difficult to estimate emissions for architectural applications not subject to District permit requirements. A consultant is preparing an SIA and will estimate the VOC emissions and emission reductions from non-permitted sources based on currently available information on sales and usage of adhesives in San Diego County.

28. WORKSHOP COMMENT

Will the District coordinate the adoption of proposed Rule 67.21 with the approval of the ARB RACT/BARCT Guidance?

DISTRICT RESPONSE

The RACT/BARCT Guidance is expected to be reviewed by the Engineering Managers Committee of the California Air Pollution Control Officers Association in September, 1998. Proposed Rule 67.21 is scheduled to be adopted by the District Board in late 1998 or early 1999. Any changes to the RACT/BARCT Guidance will be considered by the District for proposed Rule 67.21 prior to the Board approval.

29. WRITTEN COMMENT

The District should add adhesive materials used to protect underground pipe lines to the specialty adhesive material category with a VOC limit of 850 g/liter. The higher VOC limit would ensure compliance with specific federal law requirements for corrosion control of gas pipelines.

DISTRICT RESPONSE

The District agrees. A new specialty adhesive category with a VOC limit of 600 g/liter for pipe wrap adhesives has been added to the proposed rule. This limit reflects the VOC content of the adhesive material presently used.

30. ARB COMMENT

Subsection (b)(1)(i) exempts adhesive materials in single or multi-unit packages having a net volume of 16 fluid ounces or less. The draft ARB RACT/BARCT Guidance for Adhesives and Sealants (dated April 1998) is proposing an exemption level of 8 fluid ounces. The District may wish to consider this lower level in order to gain additional emission reductions and consistency with the Guidance.

DISTRICT RESPONSE

The District disagrees. The proposed exemption in the RACT/BARCT Guidance for adhesives sold in containers of 8 fluid ounces or less will create a confusing overlap with the requirements of the statewide Consumer Products Regulation for some adhesives sold in containers between 8 and 16 fluid ounces. The District has provided comments to ARB indicating that the additional emission reduction potential from exempting containers of 8 fluid ounces or less is negligible. As a result, the latest draft of the RACT/BARCT Guidance is now recommending the same exemption level as proposed Rule 67.21.

31. ARB COMMENT

The standard for "Contact Adhesive - General" and "Contact Adhesive - Special" is 540 grams per liter. The standards are reduced three years following the rule adoption date to 250 and 400 grams per liter, respectively. The District should consider adopting similar limits and time tables as those in the proposed RACT/BARCT Guidance.

DISTRICT RESPONSE

The District disagrees. The future implementation dates and limits proposed in Rule 67.21 will provide sufficient time for the District to evaluate the availability and performance of contact adhesives complying with the lower VOC limits. (See also the response to Workshop Comment #12.)

32. ARB COMMENT

Subsection (d)(6) only applies to products that are supplied to or sold to persons for application within San Diego County. There is no provision in the rule to verify compliance with this requirement. Unless the District can provide a means of verifying compliance, this section of the rule will be difficult to enforce. To ensure the enforceability of the rule, ARB suggests that the statement, "This provision only applies to products that are supplied to or sold to persons for application within San Diego County," be deleted from Subsection (d)(6). As an alternative, the District may retain the current language, but include a requirement for tracking sales by distributors and suppliers. This requirement could ensure that non-compliant adhesives are sold and supplied only to persons conducting business outside San Diego County.

DISTRICT RESPONSE

The District disagrees. This requirement is consistent with the RACT/BARCT Guidance. In addition, Rule 67.0 (Architectural Coatings) approved by ARB and EPA and adopted into the SIP has had a similar provision since 1990. The District has not experienced any significant enforcement problems with this requirement.

33. EPA COMMENT

The exemption for adhesive products sold in containers of 16 ounces or less is greater than ARB's suggested 8 ounce cutoff (Subsection (b)(1)(i)). While EPA understands that rule applicability determinations may be more difficult if the 8 ounce cutoff were adopted, many adhesives are sold in containers of 8 ounces or more but 16 ounces or less do not fall under the scope of ARB's consumer products regulation. As written, neither Rule 67.21 nor the consumer products rule would regulate these products.

DISTRICT RESPONSE

The District disagrees. See the District response to ARB Comment #30.

34. EPA COMMENT

Recordkeeping requirements suggested by ARB for sources exempted by Subsection (b)(2)(iii) should be included.

DISTRICT RESPONSE

The exemption provided in Subsection (b)(2)(iii) applies to small quantities of adhesive materials used in Research and Development applications. Any recordkeeping requirements would be burdensome for the affected sources because of the wide variety and small quantities of adhesive materials used.

35. EPA COMMENT

Recordkeeping requirements suggested by ARB for sources exempted by Subsection (b)(4) should be included.

DISTRICT RESPONSE

The District agrees. A recordkeeping requirement has been added to Subsection (b)(4).

36. EPA COMMENT

The recordkeeping requirements described in Subsection (f)(1)(i) should be extended to those persons subject to Subsection (d)(1)(i).

DISTRICT RESPONSE

The District disagrees. Adhesive materials listed under Subsection (d)(1)(i) are used almost exclusively by non-permitted sources in construction related activities. Thus, enforcement of recordkeeping requirements would be impossible. Adhesive materials listed under Subsection (d)(1)(i) are prohibited for sale by Subsection (d)(6). This prohibition will be enforced primarily at the point of sale.

37. EPA COMMENT

The definition for Contact Adhesive - Special is less restrictive than that recommended by ARB. It should not include flexible vinyl, bonding of melamine-covered board to substrates other than decorative laminate, or bonding of wood veneers greater than 1/16" thick.

DISTRICT RESPONSE

The definition for Contact Adhesive - Special has been revised to be more consistent with the RACT/BARCT Guidance.

38. EPA COMMENT

A number of terms referred to in the rule are not defined. Rule 67.21 should include definitions for the following terms: "stationary source," referenced in Subsections (b)(3) and (b)(4); "percent VOC by weight," referenced in Subsection (d)(2); and "sealer," referenced in Subsection (c)(33).

DISTRICT RESPONSE

The definition for the term "stationary source" is provided in District Rule 2, Definitions, which is approved into the SIP. The term "percent VOC by weight" is self-explanatory. A definition of "sealer" has been added to proposed Rule 67.21.

39. EPA COMMENT

The requirements for materials used for surface preparation and cleanup and for application equipment cleaning include limits for the boiling point or vapor pressure of the materials. EPA believes it is generally not appropriate to use these characteristics as determinants for the suitability of materials. The VOC content is preferred for its consistency across various samples and for its stability to better indicate air pollution effects.

DISTRICT RESPONSE

The District disagrees. The VOC content does not necessarily reflect air pollution effect of organic solvents used as surface preparation and cleaning materials. For example, organic solvents including those boiling at temperatures higher than 190°C have a high VOC content by definition. However, these materials also have low volatility and evaporation rates resulting in lower usage and greater emission reductions.

The requirements for surface preparation and cleanup, and for application equipment cleaning in Rule 67.21 are consistent with other District coating rules that have been approved by EPA and are included in the SIP (Rule 67.3 - Metal Parts and Products Coating Operation; Rule 67.4 - Metal Container, Metal Closure and Metal Coil Coating Operations; Rule 67.16 - Graphic Arts Operations; Rule 67.18 - Marine Coating Operations).

40. EPA COMMENT

Subsection (e)(1) allows for the use of control equipment in lieu of meeting the standards of the rule. EPA suggests the District also encourage pollution prevention by revising Subsection (e)(1) to read "In lieu of or in addition to complying with the provisions..."

DISTRICT RESPONSE

The District agrees that pollution prevention should be encouraged but disagrees with the proposed suggestion. Rule 67.21 requires the use of low VOC content materials and therefore encourages pollution prevention. Add-on control equipment is an option for those facilities that are unable to use adhesives complying with the VOC limits. The rule does not prevent these facilities from using complying materials in combination with add-on control equipment.

41. EPA COMMENT

A number of ASTM test methods are cited in the rule. Some of these ASTM methods have not been reviewed and approved for use in SIP approved rules by the EPA. EPA is currently reviewing its policy on the extent of EPA review required for test methods developed by the ASTM. Certain test methods developed by the ASTM may need to be separately submitted to EPA for approval before incorporation of the rule into the SIP.

DISTRICT RESPONSE

At this time, the District does not plan on submitting Rule 67.21 for inclusion into the SIP.

42. EPA COMMENT

It is EPA's policy to not include the dates of adoption for test methods cited in rules since the versions referenced may not always be the latest version of the test method approved for use by the EPA. Rule 67.21 references the dates of adoption for test methods cited in Section (g).

DISTRICT RESPONSE

It is the District's policy to include the dates of adoption for test methods cited in District rules. ASTM test methods will reference the most recent version. District, ARB and EPA test methods will include the date of adoption. Should the District, ARB or EPA make amendments to a test method, the District will then amend the applicable District rule. At this time, the District does not plan on submitting Rule 67.21 for inclusion into the SIP.

43. EPA COMMENT

ARB Method 310 cited in Subsection (g)(2) has not yet been approved by EPA. This approval is needed before Rule 67.21 will be included in the SIP.

DISTRICT RESPONSE

At this time, the District does not plan on submitting Rule 67.21 for inclusion into the SIP.

44. EPA COMMENT

Subsection (g)(6) should state that the key system operating parameters may only be used as "indirect" verification that the capture efficiency has not diminished.

DISTRICT RESPONSE

The District disagrees. The language proposed in Rule 67.21 is consistent with the language in other District coating rules that have been approved by EPA and are included in the SIP.

45. EPA COMMENT

Subsection (h)(2) should explicitly require that any person installing new control equipment submit an application and obtain an Authority to Construct and a Permit to Operate the control equipment prior to startup.

DISTRICT RESPONSE

The District disagrees. This requirement is already specified in Section (e) - Control Equipment. Section (h)(2) requires a person installing add-on controls on new equipment to comply with the requirements of Section (e). This Section specifies that control equipment must be installed in accordance with an Authority to Construct. In addition, all persons installing new equipment in San Diego County are required to obtain Authority to Construct and a Permit to Operate under District Rule 10 (Permits Required).

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