



# COUNTY OF SAN DIEGO

## AIR POLLUTION CONTROL DISTRICT

### AIR POLLUTION CONTROL BOARD

GREG COX  
First District

DIANNE JACOB  
Second District

PAM SLATER-PRICE  
Third District

RON ROBERTS  
Fourth District

BILL HORN  
Fifth District

**DATE:** May 14, 2008

**TO:** San Diego County Air Pollution Control Board

**SUBJECT:** AMENDMENTS OF RULE 67.21 – ADHESIVE MATERIAL APPLICATION OPERATIONS (District: All)

**SUMMARY:**

#### **Overview**

Proposed amendments to Rule 67.21 will reduce volatile organic compound content limits for some architectural and specialty adhesive materials, and will also provide clarifications and updates. If implemented, amended Rule 67.21 is expected to reduce volatile organic compound emissions from adhesive material application operations by approximately 390 tons per year (31%) with no additional costs for affected businesses. The proposed amendments to Rule 67.21 are necessary to comply with State law, which requires adoption of all feasible control measures to reduce emissions of ozone precursors.

The Air Pollution Control Board is requested to adopt proposed amendments to Rule 67.21 – Adhesive Material Application Operations. Rule 67.21 regulates emissions of volatile organic compounds from the application of adhesives, sealants, and adhesive and sealant primers. Volatile organic compounds contribute to ozone (smog) formation and can be toxic.

#### **Recommendation(s)**

##### **AIR POLLUTION CONTROL OFFICER**

1. Find that it is certain there is no possibility that amending Rule 67.21 may have a significant adverse effect on the environment, and that this action is exempt from the provisions of California Environmental Quality Act (CEQA) pursuant to California Code of Regulations, Title 14, Section 15061(b)(3).
2. Adopt a resolution titled Resolution Amending Rule 67.21 of Regulation IV of the Rules and Regulations of the San Diego County Air Pollution Control District.

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**Fiscal Impact**

The recommended amendments to Rule 67.21 will not have a significant fiscal impact on the Air Pollution Control District. The amended rule will be enforced with existing District staff, and full-cost recovery is anticipated through the San Diego County Air Pollution Control District's Permit Program.

**Business Impact Statement**

All types of adhesive materials complying with the proposed new limits on volatile organic compound content are readily available from manufacturers, distributors, and local retail stores. Their cost is equal or less than adhesives with a higher volatile organic compound content thus, amending Rule 67.21 will not adversely impact the business community.

**Advisory Board Statement**

There was no quorum at the March 12, 2008 meeting of the District Advisory Committee. Members present recommended adopting the proposed amendments to Rule 67.21.

**BACKGROUND:**

Rule 67.21 was first adopted in 1998. Since then, the adhesive and sealant manufacturing industry has focused on further reducing volatile organic compound (VOC) content in adhesive materials. Consequently, lower-emitting adhesive materials are now readily available in the marketplace. Associated amendments to Rule 67.21 are necessary to fulfill the State requirement to adopt all feasible control measures to reduce air pollution. San Diego County does not yet meet State and federal air quality standards for ozone. This action is a feasible control measure that will contribute toward meeting requirements.

The proposed amendments will reduce VOC content limits for flooring adhesives, multipurpose construction adhesives, contact adhesives, and some adhesives applied on porous materials such as wood. The amendments will also clarify that facilities may annually use less than 55 gallons of non-compliant adhesive materials, but that this low-use exemption does not apply to the associated clean-up, stripping, surface preparation solvents, or adhesive bonding agents. In addition, the amendments will exempt aerosol adhesives that are currently regulated under the California Air Resources Board Consumer Products regulation. The amendments also include several new definitions and updated test methods.

On November 5, 2007, the San Diego County Air Pollution Control District held a public workshop to discuss and receive comments on the proposed amended rule. No significant issues were raised.

**Compliance with Board Policy on Adopting New Rules**

On February 2, 1993 (APCB #2), 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

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federal or State law. Proposed amendments to Rule 67.21 are required by State law, which calls for adoption of every feasible control measure to accelerate progress toward achieving ambient air quality standards for ozone. Therefore, implementation of the proposed amendments is consistent with the Board's directive.

**Environmental Statement**

It can be seen with certainty that there is no possibility that amending Rule 67.21 may have a significant adverse impact on the environment. This action is exempt from the California Environmental Quality Act (CEQA) pursuant to California Code of Regulations, Title 14, Section 15061(b)(3).

**Linkage to the County of San Diego's Strategic Plan**

The County's five-year strategic plan includes an Environment Initiative to ensure environmental preservation and enhance quality of life. Amended Rule 67.21 will provide a significant reduction of VOC emissions. The amendments will not negatively affect the local business community because all types of adhesive materials complying with the proposed new limits are readily available in the marketplace. The amended rule appropriately balances air quality preservation, public health protection, and economic development needs.

Respectfully submitted,



CHANDRA L. WALLAR  
Deputy Chief Administrative Officer



ROBERT KARD  
Air Pollution Control Officer

**ATTACHMENTS**

- Attachment A – Resolution Amending Rule 67.21 of Regulation IV of the Rules and Regulations of the San Diego County Air Pollution Control District
- Attachment B – Change Copy – Rule 67.21
- Attachment C – Socioeconomic Impact Assessment
- Attachment D – Comparative Analysis
- Attachment E – Incremental Cost-Effectiveness Analysis
- Attachment F – Workshop Report

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**AGENDA ITEM INFORMATION SHEET**

**CONCURRENCE(S)**

<b>COUNTY COUNSEL REVIEW</b>	<input checked="" type="checkbox"/> Yes	
Written disclosure per County Charter §1000.1 required?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<b>GROUP/AGENCY FINANCE DIRECTOR</b>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A
<b>CHIEF FINANCIAL OFFICER</b>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A
Requires Four Votes	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<b>GROUP/AGENCY INFORMATION TECHNOLOGY DIRECTOR</b>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A
<b>COUNTY TECHNOLOGY OFFICE</b>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A
<b>DEPARTMENT OF HUMAN RESOURCES</b>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A

**Other Concurrence(s):** N/A

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

**CONTACT PERSON(S):**

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**AUTHORIZED REPRESENTATIVE:**

Rosa M. Abreu  
Assistant Director, Air Pollution Control District

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**AGENDA ITEM INFORMATION SHEET**  
(continued)

**PREVIOUS RELEVANT BOARD ACTIONS:**

December 16, 1998 (APCB #1), Adoption of New Rule 67.21 – Adhesive Material Application Operations; February 2, 1993 (APCB #2), Delayed implementation of new or revised regulations unless requested by business, specifically ordered by federal or State law, or for which a socioeconomic impact assessment is not required.

**BOARD POLICIES APPLICABLE:**

N/A

**BOARD POLICY STATEMENTS:**

N/A

**CONTRACT AND/OR REQUISITION NUMBER(S):**

N/A

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

**RESOLUTION AMENDING RULE 67.21 – ADHESIVE MATERIALS APPLICATION  
OPERATIONS OF REGULATION IV OF THE RULES AND  
REGULATIONS OF THE SAN DIEGO COUNTY  
AIR POLLUTION CONTROL DISTRICT**

On motion of Member Roberts, seconded by Member Horn, 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 held relating to the amendment of said Rules and Regulations pursuant to Section 40725 of the Health and Safety Code; and

**WHEREAS**, pursuant to Section 40727 of the Health and Safety Code, the San Diego County Air Pollution Control Board makes the following findings:

- (1) (Necessity) The adoption of proposed amended Rule 67.21 is necessary in order to implement all feasible measures to achieve the ambient air quality standards for ozone by further reducing emissions of volatile organic compounds in the County of San Diego;
- (2) (Authority) The adoption of proposed amended Rule 67.21 is authorized by Health and Safety Code Section 40702;
- (3) (Clarity) The proposed amended Rule 67.21 can be easily understood by persons directly affected by it;
- (4) (Consistency) The adoption of proposed amended Rule 67.21 is in harmony with, and not in conflict with or contrary to, existing statutes, court decisions, and State and federal regulations;
- (5) (Non-duplication) The adoption of proposed amended Rule 67.21 will not duplicate existing District or federal requirements;

- (6) (Reference) The adoption of proposed amended Rule 67.21 is necessary to comply with the State law, California Health and Safety Code Section 40914(b)(2), that requires adoption of every feasible control measure to reduce ozone precursor emissions;

**WHEREAS**, the Air Pollution Control Board further finds pursuant to Health and Safety Code Section 40001 that proposed amended Rule 67.21 will facilitate the attainment of ambient air quality standards; and

**WHEREAS**, the Air Pollution Control Board further finds that an assessment of socioeconomic impacts of the proposed amended Rule 67.21, as required by Section 40728.5 of the State Health and Safety Code, has been prepared and has been made available for public review and comment, and that the socioeconomic impacts of the proposed amended rule have been actively considered and the proposed amendments will not have adverse socioeconomic impacts; and

**WHEREAS**, the Air Pollution Control Board further finds that an analysis comparing proposed amended Rule 67.21 with applicable requirements of federal and local regulations has been prepared pursuant to the State Health and Safety Code Section 40727.2; and

**WHEREAS**, the Air Pollution Control Board further finds that the incremental cost-effectiveness analysis pursuant to the State Health and Safety Code Section 40920.6(a) properly concludes that there are no cost-effective alternatives that will achieve the same benefit as proposed amended Rule 67.21.

**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:

1. Proposed amended Rule 67.21 is to read as follows:

**RULE 67.21 ADHESIVE MATERIAL APPLICATION OPERATIONS**  
(Adopted 12/16/98: Rev. Effective (6 months from date of 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)(4) and (d)(5) and Section (g) of this rule apply to any person who supplies, sells, offers for sale, or specifies the application of adhesive materials.

(3) 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)(2) of this rule shall not apply to surface preparation, stripping, or cleaning operations conducted in equipment subject to Rule 67.6.1 or Rule 67.6.2.

(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)(1), (e), and (f) shall not apply to the following:

(i) Adhesive materials 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. This exemption does not apply to plastic welding products specified in Subsection (d)(1)(i)(B).

(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.

(v) Aerosol adhesive materials.

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 on site 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 at Stationary Sources

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). Any person claiming this exemption shall maintain monthly purchase and monthly or daily usage records of adhesive materials. These records shall be maintained on site for at least three years and be made available to the District upon request.

(4) Non-Compliant Adhesive Material Usage at Stationary Sources

The provisions of Subsections (d)(1)(ii) through (d)(1)(iv), and (d)(2) 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) **"Carpet Pad Adhesive"** means an adhesive specified by the manufacturer to be used for the installation of a carpet pad (or cushion) beneath a carpet.

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

(13) **"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.

(14) **"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.

(15) **"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 either Elastomeric Adhesive or Top & Trim Adhesive shall not be considered a contact adhesive.

(16) **"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.

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

(18) **"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.

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

(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) **"Medical Device"** means an instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent or other similar article including any component or accessory, that is intended for use in the diagnosis of disease or other conditions or in the cure, mitigation, treatment, or prevention of disease, or is intended to affect the structure or any function of the body.

(23) **"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.

(24) **"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, panel, ceiling tile, and acoustical tile.

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

(26) **"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.

(27) **"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.

(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, particle board, 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) **"Rubber Flooring Adhesive"** means an adhesive specified by the manufacturer to be used for the installation of flooring material in which both the back and the top surfaces are made of synthetic rubber, and which may be in sheet or tile form.

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

(38) **"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.

(39) **"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.

(40) **"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.

(41) **"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.

(42) **"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.

(43) **"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.

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

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

(46) **"Structural Wood Member Adhesive"** means an adhesive specified by the manufacturer to be used for the construction of any load bearing joints in wooden joists, trusses, or beams.

(47) **"Subfloor Adhesive"** means an adhesive specified by the manufacturer to be used for the installation of subflooring material over floor joists.

(48) **"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.

(49) **"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.

(50) **"Top and Trim Adhesive"** means an adhesive specified by the manufacturer to be used for installing automotive or marine trim, including, but not limited to headliners, vinyl tops, vinyl trim, sunroofs, dash covering, door covering, floor covering, panel covering and upholstery.

(51) **"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.

(52) **"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.

(53) **"VCT and Asphalt Tile Adhesive"** means an adhesive specified by the manufacturer to be used for the installation of vinyl composite tile (VCT) or asphalt tile flooring. Vinyl composite tile is a material made from thermoplastic resins, fillers, and pigments.

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

(55) **"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:

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

where:

$C_{Cvoc}$	=	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

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

$$C_{Mvoc} = (W_s - W_w - W_{es}) / (V_m)$$

where:

$C_{Mvoc}$	=	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

(57) **"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.

(58) **"Wood Flooring Adhesive"** means an adhesive specified by the manufacturer to be used for the installation of wood flooring, which may include but is not limited to parquet tiles, wood planks, or strip-wood.

(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 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	65
Cove base installation adhesive	50
Flooring adhesives:	
Indoor carpet or carpet pad adhesive	50
Rubber flooring adhesive	60
Subfloor adhesive	50
VCT and asphalt tile adhesive	50
Wood flooring adhesive	100
Other floor covering adhesive	150
Multipurpose construction installation/repair adhesive	70
Non-membrane roof installation/repair adhesive/sealant	300
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
Structural wood member adhesive	140
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	80
-Special	250
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
Top and Trim adhesive	540
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	80
Metal	30
Porous material (except wood)	50
Wood	30
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) 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).

(3) 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.

(4) 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.

(5) 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), or (d)(3) 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 on site 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), or (d)(3) 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)(2) and/or (d)(3) 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 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).

(3) Calculation of total VOC vapor pressure for materials subject to Subsections (d)(2)(iii) and/or (d)(3)(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)(2)(iii) and/or (d)(3)(iii), the vapor pressure shall be determined in accordance with ASTM Standard Test Method D2879-97(2007), or its most current version. The solvent composition shall be determined using ASTM Standard Practice E260-96(2006), 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 D3792-05 and D4457-02, 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 D2879-97(2007), or its most current version, shall be corrected for partial pressure of water and exempt compounds.

(4) Measurement of the initial boiling point for materials subject to Subsection (d)(2)(ii) and/or (d)(3)(ii) of this rule shall be conducted in accordance with ASTM Standard Test Method D1078-05, or its most current version.

(5) Measurement of the emission collection system capture efficiency subject to Subsection (e)(1)(iii) of this rule shall be determined according to EPA's Test Method 204 and 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.

(6) 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.

(7) Measurement of solvent losses from alternative application cleaning equipment subject to Subsection (d)(3)(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).

(8) 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).

(9) Measurement of the VOC content of adhesive materials pursuant to Subsection (c)(40) shall be conducted in accordance with South Coast Air Quality Management District's Method 316B, as it exists on (date of adoption).

**IT IS FURTHER RESOLVED AND ORDERED** that the subject amendments to Rule 67.21 of Regulation IV shall take effect six months from date of adoption.

APPROVED AS TO FORM AND LEGALITY  
COUNTY COUNSEL

BY H. Dutton  
SENIOR DEPUTY

PASSED AND ADOPTED by the Members of the Air Pollution Control Board of the San Diego County Air Pollution Control District, State of California, this 14<sup>th</sup> day of May, 2008, by the following vote:

AYES: Cox, Jacob, Slater-Price, Roberts, Horn

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

THOMAS J. PASTUSZKA  
Clerk of the Air Pollution Control Board

By: Catherine Santos  
Catherine Santos, Deputy



Resolution No. 08-090  
5/14/08 (AP1)

CHANGE COPY

1. Amendments to Rule 67.21 are to read as follows:

**RULE 67.21 ADHESIVE MATERIAL APPLICATION OPERATIONS**

(Adopted 12/16/98: Rev. Effective (6 months from date of 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)(~~54~~) and (d)(~~65~~) 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 June 16, 1999,~~ 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)(~~32~~) of this rule shall not apply to surface preparation, stripping, or cleaning operations conducted in equipment subject to ~~Rule 67.6,~~ Rule 67.6.1 or Rule 67.6.2.

(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)(1), (e), and (f) shall not apply to the following:

- (i) ~~Except for adhesive materials listed in Subsection (d)(1)(i)(B), a~~ 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. This exemption does not apply to plastic welding products specified in Subsection (d)(1)(i)(B).

- (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.
- (v) Aerosol adhesive materials.

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 on site 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 at Stationary Sources

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



(4) Non-Compliant Adhesive Material Usage at Stationary Sources

The provisions of Subsections (d)(1)(ii) through (d)(1)(iv), and (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) **"Carpet Pad Adhesive"** means an adhesive specified by the manufacturer to be used for the installation of a carpet pad (or cushion) beneath a carpet.

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

(13) **"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.

(14) **"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.

(15) **"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 either Elastomeric Adhesive or Top & Trim Adhesive, as defined in this rule, shall not be considered a contact adhesive.

(16) **"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.

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

(18) **"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.

(1819) **"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) **"Medical Device"** means an instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent or other similar article including any component or accessory, that is intended for use in the diagnosis of disease or other conditions or in the cure, mitigation, treatment, or prevention of disease, or is intended to affect the structure or any function of the body.

~~(2223)~~ **"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.

~~(2324)~~ **"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.

~~(2425)~~ **"Multi-Unit Package"** means a single package which includes two or more separately contained components of a multi-component adhesive material.

~~(2526)~~ **"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.

(2627) **"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.

~~(2829)~~ **"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, particle board ~~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) “**Rubber Flooring Adhesive**” means an adhesive specified by the manufacturer to be used for the installation of flooring material in which both the back and the top surfaces are made of synthetic rubber, and which may be in sheet or tile form.

~~(3637)~~ **"Sealant"** means a material that is formulated primarily to fill, seal, waterproof, or weatherproof gaps or joints between two surfaces. Sealants include caulk materials. Sealants do not include sealers.

~~(3738)~~ **"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.

~~(3839)~~ **"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.

~~(3940)~~ **"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.

~~(4041)~~ **"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.

~~(4142)~~ **"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.

~~(4243)~~ **"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.

~~(4344)~~ **"Single-Ply Roof Membrane Sealant"** means a sealant specified by the manufacturer to be applied to single-ply roof membrane.

~~(4445)~~ **"Structural Glazing Adhesive"** means an adhesive specified by the manufacturer to attach glass, ceramic, metal, stone or composite panels to exterior building frames.

(46) “**Structural Wood Member Adhesive**” means an adhesive specified by the manufacturer to be used for the construction of any load bearing joints in wooden joists, trusses, or beams.

(47) “Subfloor Adhesive” means an adhesive specified by the manufacturer to be used for the installation of subflooring material over floor joists.

(4548) "**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.

(4649) "**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.

(50) “Top and Trim Adhesive” means an adhesive specified by the manufacturer to be used to install for installing automotive and marine trim, including, but not limited to headliners, vinyl tops, vinyl trim, sunroofs, dash covering, door covering, floor covering, panel covering and upholstery.

(4751) "**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.

(4852) "**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.

(53) “VCT and Asphalt Tile Adhesive” means an adhesive specified by the manufacturer to be used for the installation of vinyl composite tile (VCT) or asphalt tile flooring. Vinyl composite tile is a material made from thermoplastic resins, fillers, and pigments.

(4954) "**Volatile Organic Compound (VOC)**" means the same as in Rule 2.

(5055) "**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:

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

where:

$C_{\text{Cvoc}}$	=	VOC content per volume of adhesive material, less water and exempt compounds
$W_{\text{s}}$	=	weight of volatile compounds including water and exempt compounds
$W_{\text{w}}$	=	weight of water
$W_{\text{es}}$	=	weight of exempt compounds
$V_{\text{m}}$	=	volume of adhesive material including water and exempt compounds
$V_{\text{w}}$	=	volume of water
$V_{\text{es}}$	=	volume of exempt compounds

(5456) **"VOC Content Per Volume of Material"** means the weight of VOC per volume of material and is calculated by the following equation:

$$C_{\text{m}}^{\text{voc}} = (W_{\text{s}} - W_{\text{w}} - W_{\text{es}}) / (V_{\text{m}})$$

where:

$C_{\text{m}}^{\text{voc}}$	=	VOC content per volume of material
$W_{\text{s}}$	=	weight of volatile compounds including water and exempt compounds
$W_{\text{w}}$	=	weight of water
$W_{\text{es}}$	=	weight of exempt compounds
$V_{\text{m}}$	=	volume of material including water and exempt compounds

(5257) **"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.

(58) **"Wood Flooring Adhesive"** means an adhesive specified by the manufacturer to be used for the installation of wood flooring, which may include but is not limited to parquet tiles, wood planks, or strip-wood.

#### (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

**VOC LIMITS**  
**(grams/liter)**

Architectural sealant	250
Architectural sealant primer for:	
-Non-porous materials	250
-Porous materials	775
Ceramic tile installation adhesive	<del>430</del> <u>65</u>
Cove base installation adhesive	<del>450</del> <u>50</u>
<u>Flooring adhesives:</u>	
<u>Indoor carpet or carpet pad adhesive</u>	<u>50</u>
<u>Rubber flooring adhesive</u>	<u>60</u>
<u>Subfloor adhesive</u>	<u>50</u>
<u>VCT and asphalt tile adhesive</u>	<u>50</u>
<u>Wood flooring adhesive</u>	<u>100</u>
<u>Other Indoor floor covering installation/repair</u> adhesive	150
<u>Outdoor floor covering installation/repair adhesive</u>	250
Multipurpose construction installation/repair adhesive	<del>200</del> <u>70</u>
Non-membrane roof installation/repair adhesive/sealant	300
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
<u>Structural wood member adhesive</u>	<u>140</u>
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) SPECIALTY ADHESIVE MATERIALS

VOC LIMITS  
(grams/liter)

Automotive glass adhesive primer	700
Computer diskette jacket manufacturing adhesive	850



Contact adhesive	
<del>General</del>	540
<del>Special</del>	540
General <del>—Effective December 16, 2001</del>	250 <u>80</u>
Special <del>—Effective December 16, 2001</del>	400 <u>250</u>
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
<u>Top and Trim adhesive</u>	<u>540</u>
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> (grams/liter)
Fiberglass	<del>200</del> <u>80</u>
Metal	30
Porous material <u>(except wood)</u>	<del>120</del> <u>50</u>
<u>Wood</u>	<u>30</u>
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.~~

~~(32)~~ 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).

~~(43)~~ 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.

**(54) 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.

**(65) 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), or (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 on site 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), or (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)(~~32~~) and/or (d)(~~43~~) 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 December 16, 1998.~~

(~~32~~) 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 ~~December 16, 1998~~ *(date of adoption)*.

(~~43~~) Calculation of total VOC vapor pressure for materials subject to Subsections (d)(~~32~~)(iii) and/or (d)(~~43~~)(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)(~~32~~)(iii) and/or (d)(~~43~~)(iii), the vapor pressure shall be determined in accordance with ASTM Standard Test Method D2879-~~96~~ 97(2007), or its most current version. The solvent composition shall be determined using ASTM Standard Practice E260-~~96~~(2006), 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~~ 05 and D4457-~~85~~ 02, 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 97(2007), or its most current version, shall be corrected for partial pressure of water and exempt compounds.

(~~54~~) Measurement of the initial boiling point for materials subject to Subsection (d)(~~32~~)(ii) and/or (d)(~~43~~)(ii) of this rule shall be conducted in accordance with ASTM Standard Test Method D1078-95 05, or its most current version.

(~~65~~) Measurement of the emission collection system capture efficiency subject to Subsection (e)(1)(iii) of this rule shall be determined according to EPA's Test Method 204 and 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.

(~~76~~) 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.

(~~87~~) Measurement of solvent losses from alternative application cleaning equipment subject to Subsection (d)(~~43~~)(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 ~~December 16, 1998~~ (date of adoption).

(~~98~~) 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).

(~~109~~) Measurement of the VOC content of adhesive materials pursuant to Subsection (c) (40) (~~39~~) shall be conducted in accordance with South Coast Air Quality Management District's Method 316B, as it exists on ~~December 16, 1998~~ (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 June 16, 1999, 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 June 16, 2001, 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.~~

**SOCIOECONOMIC IMPACT ASSESSMENT**

**PROPOSED AMENDED RULE 67.21 –  
ADHESIVE MATERIALS APPLICATION OPERATIONS**

**January 2008**

**Prepared by**

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**SOCIOECONOMIC IMPACT ASSESSMENT  
PROPOSED AMENDED RULE 67.21 –  
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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's proposed amended Rule 67.21 – Adhesive Material Application Operations. The amended rule will fulfill the District's commitment in the San Diego Regional Air Quality Strategy to implement all feasible control measures as required by State law.

The rule applies to 89 existing permitted facilities in San Diego County that use adhesives, sealants, and adhesive sealant and primers. These are wood products manufacturing, automotive repair, tire repair shops, etc. Rule 67.21 also affects the supply, sale, distribution, or use of adhesive materials by sources that do not require a permit to operate from the District. These are businesses and independent contractors involved in building construction, maintenance, and repair such as plumbing, roofing, floor and carpeting installation, and also consumers that buy adhesive materials in retail stores and use them for hobbies or other do-it yourself activities.

The proposed amendments will establish lower volatile organic compound (VOC) content limits in some adhesives used in both permitted and non-permitted operations. The amendments are expected to reduce VOC emissions in San Diego County by approximately 390 tons per year.

The proposed amendments are not anticipated to have a significant socioeconomic impact on affected industries. The SIA herein demonstrates that the lower VOC emission limits in the proposed rule are feasible based on the commercial availability of complying adhesives and the present use of these adhesives in San Diego County. This is partly due to similar existing rules regulating the sale and use of adhesives in other California air districts, especially in the adjacent South Coast air district. In the San Diego region, only six out of 75 permitted facilities subject to the proposed VOC limits are not already using complying adhesive materials. There are also a variety of low-VOC adhesives and sealants used in building construction and related industries that are available for purchase in retail stores.

The cost of adhesive materials complying with the proposed VOC content limits is the same or lower than non-complying materials. Therefore, the amended Rule 67.21 will not result in additional expenses for affected sources. In fact, users of large amounts of adhesive materials, such as the building construction industry, may realize cost savings by using less expensive products with a lower VOC content. In addition, many adhesives available now are water-based and some do not contain organic solvents. The use of such adhesives may not only be economically advantageous for businesses of all sizes, but also provides additional health and environmental benefits by eliminating exposure to VOCs.

## **I. INTRODUCTION**

California law requires air pollution control districts (excluding those with populations of less than 500,000 people) to perform a socioeconomic impact assessment (SIA) when adopting, amending, or repealing rules and regulations that will significantly affect air quality and emission limitations.

The Health and Safety Code Section 40728.5 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 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.
5. The impact of the rule or regulation on employment and the economy of the region affected by the adoption of the rule or regulation.
6. The availability and cost-effectiveness of alternatives to the rule or regulation.

This report presents the results of an SIA of San Diego Air Pollution Control District's (District) proposed amended Rule 67.21 (Adhesive Material Application Operations). Consistent with existing requirements of several other air districts, the rule amendments will impose more stringent limits for volatile organic compound (VOC) content for specified adhesives.

## **II. DESCRIPTION OF CURRENT RULE 67.21**

Current Rule 67.21, adopted in 1998, regulates VOC emissions from adhesive materials application operations. The rule applies to industrial and commercial use of adhesive materials (i.e., adhesives, sealants, and adhesive and sealant primers). The rule specifies VOC content limits for adhesive materials, provides work standards and VOC content limits for surface preparation, stripping and clean-up materials, and the cleaning of application equipment. All adhesive materials are separated in the rule into four broad categories. The first category is called "General Adhesive Materials" and includes Architectural Products and Plastic Welding Products. These materials are used in operations that are not required to obtain a permit to operate from the District, such as on site construction, flooring, roofing, repairs, plastic pipe welding, etc. The rule also prohibits the sale of general adhesive materials that exceed VOC content limits.

The second category of adhesives identified in the rule as "Specialty Adhesive Materials" are used mostly in the activities conducted by the businesses that are currently required to obtain a

permit to operate from the District. These adhesive materials are used in a variety of manufacturing and repair operations such as auto repair, upholstery manufacturing and installation, wood products manufacturing and repair, etc. There are also the “Substrate-Specific Adhesives” category and finally, “All other Adhesive Materials” that include primers, sealants, and sealant primers.

Rule 67.21 exempts adhesives with a low VOC content (< 20 gram/liter), self-curing adhesives containing reactive diluents, and adhesive materials sold in packages containing an aggregate of 16 fluid ounces or less. In addition, the rule exempts specified operations and businesses using less than 55 gal/yr of all adhesive materials and solvents. The businesses otherwise subject to the VOC content limits of the rule are allowed to use annually less than 55 gallons of non-compliant materials.

### **III. NECESSITY OF AMENDING RULE 67.21**

San Diego County Air Basin does not attain the National and State Ambient Air Quality Standards for ozone. Both federal and State laws require the District to implement rules that control emissions of ozone precursors - volatile organic compounds and nitrogen oxides.

Current Rule 67.21 satisfies the Best Available Retrofit Control Technology requirements of the Health and Safety Code. However, the rule does not reflect the recent achievements in adhesive materials technology that resulted in significant reduction of the VOC and toxic compound contents in individual adhesives. Many air districts in California have already incorporated this technology in their rules regulating adhesive materials. In addition, Rule 67.21 must be amended to fulfill the District’s obligations in the San Diego Regional Air Quality Strategy to expeditiously implement “all feasible control measures” as required by State law.

Since the time of the rule adoption in 1998, there are continuing trends in the adhesive and sealant manufacturing industry towards further reducing the VOC content of adhesive materials. These trends are a result of a combination of several factors. For example, the South Coast Air Quality Management District (SCAQMD) amended its Rule 1168 (Adhesive and Sealant Applications) several times since 1999 introducing technology forcing lower VOC limits. Another factor in the decreasing organic solvent content of adhesive and sealants is a general concern of businesses regarding health risks and fire safety in the workplace. Some businesses have voluntarily replaced conventional adhesives with low VOC content adhesive materials, many of them water-based, to make both their workplace and products safer and environmentally more benign.

Consequently, the District proposes to amend Rule 67.21 to further reduce VOC emissions from adhesive and sealant application operations by establishing lower VOC content limits for specified adhesives, thus ensuring the region continues to benefit from low VOC content adhesive materials.

#### **IV. SUMMARY OF PROPOSED RULE 67.21 AMENDMENTS**

The proposed amended rule will:

- Establish lower VOC limits for some categories of General Adhesive Materials such as adhesives used in installation of flooring, ceramic tiles, cove base, structural member adhesives, and multipurpose adhesives used in construction work.
- Establish lower VOC limits for some specialty category adhesives such as contact adhesives.
- Establish lower VOC limits for substrate-specific adhesives applied to fiberglass and porous materials, including wood.
- No longer apply to aerosol adhesives. The VOC content of these adhesives is now being specified in the Air Resources Board Consumer Products regulation.
- Add and define a new category of Top and Trim adhesive with a VOC limit of 540 g/l.
- Clarify that exemptions specified under Subsection (b)(1) apply only to adhesive materials but not to adhesive bonding agents or to solvents used for clean-up, stripping, and surface preparation.
- Include several new and revise existing definitions for adhesive materials.
- Update test methods and remove or revise outdated references.

#### **V. TYPE OF INDUSTRIES AFFECTED BY RULE 67.21**

The majority of businesses affected by amended Rule 67.21 will be those who use adhesive products in their daily operations. The rule applies to several industrial sectors in San Diego County, including building construction and remodeling, general maintenance and repair operations, various manufacturing sectors, and consumer products for do-it-yourself homeowners and hobbyists.

For purposes of this report, these businesses were separated into two categories. The first category consists of facilities (representing a variety of industries) that are required to obtain a District permit to operate. These are businesses that apply adhesive materials in specific manufacturing or repair operations at stationary facilities. Any such operation using more than 20 gallons of adhesive materials per year must have a District permit, pursuant to District Rule 10 (Permits Required) and Rule 11 (Exemption from Permit Requirements). Rule 67.21 classifies the adhesive materials used in these operations as “Specialty Adhesive Materials,” “Substrate Specific Adhesive Materials,” or “All other Adhesive Materials.”

The second category of businesses consists of non-permitted operations such as on site building construction, flooring, roofing, repairs, etc., where adhesive materials may be used in large

volumes but are not considered a main business activity. In addition, non-permitted adhesive application operations may be conducted at permitted stationary sources for maintenance and repair that are incidental to the facility's major activity.

These materials are specified in the rule as "General Adhesive Materials – Architectural Products and Plastic Welding Products."

#### A. PERMITTED SOURCES

According to the District's files, there are 89 permitted sources in San Diego County that use a variety of adhesive materials. These sources include auto upholstery shops, wood cabinets and other wood products manufacturing, plastic products manufacturing, etc. The majority of these establishments (~ 70%)<sup>1</sup> are small businesses (99 or fewer employees).

Rule 67.21 VOC emission standards are currently applicable to all facilities using 55 gallons per year of adhesive materials or more. There are 75 such sources in the County. Businesses using less than 55 gallons of adhesive materials annually are exempt from the emission limits, but must keep records demonstrating the exemption eligibility. There are currently 14 such facilities in San Diego County. Table 1 below provides the Standard Industrial Classification (SIC) and North American Industrial Classification System (NAICS) codes associated with the industries represented by these sources.

**TABLE 1**  
**San Diego County Industries Affected – Permitted Sources**

Standard Industrial Classification (SIC)	North American Industrial Classification System (NAICS)	Industry
2434	33711	Wood kitchen cabinets manufacturing
2435	321211	Hardwood veneer and plywood operations
3083	326130	Laminated Plastics manufacturing
3732	336612 & 811490	Boat building and repair
3172	316992 & 316993	Leather goods manufacturing
7532	811121	Top, Body, and Upholstery Repair Shops
7534	326212 & 811198	Tire Retreading and Repair Shops

#### B. NON-PERMITTED SOURCES

Adhesive materials are also widely used in industries and by individuals that are not required to obtain permits to operate from the District. This includes building construction and related operations, such as roofing, flooring, wood frame assembling, and miscellaneous bonding operations including bonding of foam and other porous substrates, consumer products, hobby related activities, shoe repair shops, etc.

Table 2 provides the SIC codes associated with the industries represented by these sources.

**TABLE 2**  
**San Diego County Industries Affected– Non-Permitted Sources**

Standard Industrial Classification (SIC)	North American Industrial Classification System (NAICS)	Industry
15	236	Building construction – general contractors and operative builders
16	237	Heavy Construction, except building construction
17	238	Construction – specialty trade contractors

## **VI. VOC EMISSIONS FROM THE USE OF ADHESIVE MATERIALS IN SAN DIEGO COUNTY**

### **A. HISTORICAL DATA**

#### Permitted Sources

In 1998, when the original Rule 67.21 was adopted, VOC emissions from permitted sources were estimated based on a 1997 telephone survey and District permit file data. There were 84 permitted sources in San Diego County emitting approximately 71 tons/year of VOC. The VOC emission reductions resulting from rule implementation were estimated at 18 tons/year.

#### Non-permitted Sources

As stated in a Socioeconomic Impact Assessment for Rule 67.21 prepared for the District by Jack Faucett Associates<sup>1</sup>, the VOC emissions from non-permitted adhesive materials application operations were about 1,507 tons/year. These estimates were based on 1995 National Adhesive Materials Usage data and the proportional share in San Diego County based on national and county population and employment data.<sup>2</sup> In addition, information from the Rauch Guide Survey<sup>3</sup> was used to approximate adhesives and sealant usage for the variety of adhesive materials based on the San Diego County employment share obtained from the same sources. The VOC emission reductions resulting from rule implementation were estimated at 258 tons/year.

### **B. CURRENT EMISSION ESTIMATES**

#### Permitted Sources

According to a recent District telephone survey, there are now 89 permitted sources with total VOC emissions of approximately 36 tons/year; 75 of these facilities are subject to the VOC limits of the rule. The large majority (69) already use adhesives, which are in compliance with the proposed amended rule.



### Non-permitted Sources

The District does not have direct information for the current amount of adhesive materials usage in non-permitted sources in San Diego County. From the data collected at the time of Rule 67.21 adoption, VOC emissions from non-permitted sources after rule implementation were estimated at 1,249 tons/year. Combining this same figure with the current emissions from permitted sources, total VOC emissions from adhesive materials application operations in the County (permitted and non-permitted) are presently about 1,285 tons per year.

It should be noted that many adhesive materials commercially available now have VOC content equal or less than those in the proposed amended Rule 67.21. This phenomenon may be the result of the market penetration of low VOC content adhesives from the adjacent SCAQMD and other air districts in California which have more stringent emission limitations than current Rule 67.21. For example, the SCAQMD Rule 1168 (Adhesive and Sealant Applications), as amended in 2000, has VOC limits for many categories of adhesives similar to the limits currently proposed in the Rule 67.21 amendments. The same VOC content limits are currently in place in Ventura County's air district rule. SCAQMD is the largest district in California and includes four counties – all of Orange County and parts of Los Angeles, Riverside, and San Bernardino counties, with a total population of over 16 million people. Its population represents a huge market for adhesive materials manufacturers and distributors. Consequently, many adhesive material manufacturers have reformulated their products to comply with Rule 1168 limits in order to sell them in Southern California.

However, to reflect the actual emission reductions, which occurred in the County since the time of the original rule adoption (including emission reductions from market penetration of lower-emitting products), the rest of this report relies on the District's emission estimates as a baseline for calculations of control efficiency of the proposed amendments to Rule 67.21.

## **VII. EMISSION REDUCTION POTENTIAL OF THE PROPOSED AMENDMENTS**

The proposed amendments will reduce the VOC content limits of several adhesives in the Architectural Products category. These include flooring adhesives, such as indoor carpet, rubber flooring, subfloor and cove base installation, and structural wood member adhesives used mostly by non-permitted sources. The rule as proposed will also reduce the VOC content of contact adhesives that are used mostly by permitted facilities.

Table 3 shows the percentage of VOC emissions reduced for non-permitted and permitted sources in each adhesive material category affected by the lower VOC limits based on the VOC content of present and proposed limits.

**TABLE 3**  
**Proposed VOC Limits and Calculated Percentage of Emission Reductions**

Adhesive	Present Limit	New Limit	Theoretical VOC Emission	Actual VOC Emission
	g/l, less water less exempts	g/l, less water less exempts	Reductions (Increase), % calculated on solid basis*	Reductions (Increase), % calculated on solid basis**
Cove base	150	50	71	62
Indoor Carpet	150	50	71	62
Carpet Pad	150	50	71	62
Subfloor	150	50	71	62
VCT & Asphalt Tile	150	50	71	62
Ceramic Tile	130	65	54	no data
Wood Flooring	150	100	38	no data
Rubber Floor	150	60	64	no data
Outdoor Carpet	250	150	48	no data
Multipurpose Const.	200	70	71	62
Fiberglass	200	80	66	62
Porous Substrate (except Wood)	120	50	62	62
Wood	120	30	78	62
Structural Wood Member	200	140	36	62
<b>Average</b>			<b>62</b>	<b>62</b>
Contact General	250	80	75	no data
Contact Special	400	250	52	no data
<b>Average</b>			<b>64</b>	N/A
Top and Trim	400	540	<b>(48) ***</b>	N/A

\*Assumed that there is no water or exempt compounds in both current and amended adhesive formulations.

\*\* Based on the MSDS for actual adhesives formulated with water and/or exempt compounds.

\*\*\* There will be no actual emission increase because the only company subject to this limit was under the variance. The rest of the facilities that use Top and Trim adhesives are exempt from the rule VOC limits because their annual usage is less than 55 gal of adhesive materials.

Table 3 shows that, on average, the VOC emission reduction from the adhesive materials used by non-permitted sources as a result of Rule 67.21 amendments would be approximately 62% for each adhesive category. For permitted sources, the rule amendments will affect mostly contact adhesives, with 64% emission reductions. The VOC emission reductions for permitted sources, as a result of rule implementation, are estimated to be about one ton per year.

It should be noted that the proposed amendments apply only to certain categories of adhesive materials, such as flooring adhesives, multipurpose adhesives, etc. Therefore, it is necessary to consider the distribution of VOC emissions among different adhesive categories. This distribution was presented in the Socioeconomic Impact Assessment for Rule 67.21.<sup>1</sup>

**TABLE 4**  
**Estimated VOC Emission Reductions from Non-Permitted Sources**

Adhesive Material End-use	Percent of the total emissions*	VOC Emissions, tons/year	Activity affected by the proposed amendments?	VOC Emissions reduced, tons/year
Roofing	4.1	51	No	0
Flooring	9.2	115	Yes (62% reduction)	71
Piping	4.4	55	No	0
On site construction including sealants and primers	82.3	1028	Yes (app. 50% of materials are affected), 62% reduction	319
<b>Total</b>	<b>100</b>	<b>1249</b>	<b>N/A</b>	<b>390</b>

\* Calculated from the VOC emissions distribution among the adhesive categories as determined in the SIA for the original Rule 67.21.<sup>1</sup>

Assuming that the emission distribution remains the same as previously determined, Rule 67.21 amendments will reduce VOC emissions from non-permitted sources by approximately 390 tons/year, or 31%.

Presently, there are many adhesives and sealants on the market with very low or zero VOC content. The recent District telephone survey and permit files data show that 69 permitted facilities have already been using adhesive materials that comply with the more stringent limits of the amended rule. In addition, the District staff visited a few retail stores that sell adhesive materials. The majority of materials on the shelves will comply with the VOC limits as proposed in the amended Rule 67.21. Therefore, the estimated amount of emission reductions may be quite conservative because the VOC content of many commercially available adhesives is lower than the rule requirements, and some adhesive materials do not contain any VOCs at all.

## **VIII. RANGE OF PROBABLE COSTS TO INDUSTRY INCLUDING SMALL BUSINESS**

The proposed VOC content limits will affect not only the users of adhesives but distributors and sellers of these products as well because Rule 67.21 prohibits the sale of non-complying General Adhesive Materials. It was stated previously that all adhesive materials complying with the VOC limits in the proposed amended rule are presently available in the marketplace. The recent telephone survey and the District's permit files have shown that the majority of the permitted sources that would be affected by the amendments are presently using complying materials. There are only six facilities in the County that will have to substitute presently used adhesive materials with the complying materials. The same can be said about adhesive materials used in non-permitted sources.

The information for complying adhesives presented in the SCAQMD Staff Report for 2000 amendments to Rule 1168<sup>4</sup> shows that the cost of complying adhesive materials is generally the same or even lower than the materials with a higher VOC content. In 2003, the Ventura County Air Pollution Control District adopted a rule similar to Rule 1168 and also conducted a survey of the cost of reformulated adhesives.<sup>5</sup> Ventura County staff determined that the cost of

reformulated adhesive materials is the same or slightly lower than the cost of the previous generation of such materials. For example, they found that the average cost of the low VOC content cove base adhesives complying with the rule limits is the same, while complying ceramic tile and subfloor adhesives are actually cheaper. The same or similar adhesives are available in San Diego County. Therefore, it is reasonable to conclude that Rule 67.21 amendments will not result in any additional expenses for the affected industries, including small businesses, and in many cases will provide savings due to the lower costs of complying adhesives.

## **IX. IMPACT OF THE PROPOSED AMENDMENTS ON EMPLOYMENT AND THE REGIONAL ECONOMY**

Revisions to Rule 67.21 will have no impact on employment and the economy of the region because adhesive materials with the lower VOC limits are already available in the County at the same or at a lower price than non-compliant materials. Many permitted facilities are presently using complying materials. These companies and other non-permitted sources, especially in building construction and related industries that use significant volumes of adhesives and sealants, have already benefited from the lower costs of available materials, improved fire safety, and positive worker's health and environmental impacts.

## **X. AVAILABILITY AND COST-EFFECTIVENESS OF ALTERNATIVES**

There are two possible alternatives for the proposed amendments in Rule 67.21 – either less stringent or more stringent VOC limits for the adhesive materials in the affected categories.

Implementing more stringent VOC content limits than proposed for adhesive materials is not viable. This would be inconsistent with the similar rules in the majority of air districts in California. In addition, requiring such limits would be technology forcing so the manufacturers would have to conduct some research and development to reformulate many categories of adhesive materials. This work would be cost-prohibitive for the comparatively small market of San Diego County.

Further, requiring less stringent limits than those in the proposed amended rule is not a reasonable alternative either. As discussed earlier, all adhesive materials with the proposed VOC content limits have satisfactory performance and are presently available and used in other parts of California, and therefore are feasible. Establishing less stringent VOC limits would be inconsistent with the “all feasible measures” requirement of State law.

## **XI. CONCLUSION**

Proposed amended Rule 67.21 will not negatively impact affected industries, including small businesses. It will not affect employment or the economy of San Diego County, but will bring considerable environmental benefits by reducing emissions of VOCs that are precursors of ground level ozone, a major component of photochemical smog.

## References

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<sup>1</sup> Jack Faucett Associates. Socioeconomic Impact Assessment for Rule 67.21 – Adhesive Material Application Operations, prepared for San Diego County Air Pollution Control District, October 1998.

<sup>2</sup> County Business Patterns, 1995, US Bureau of the Census.

<sup>3</sup> Rauch Guide Survey, Impact Marketing, 1996.

<sup>4</sup> Staff Report – Proposed Amended Rule 1168 – Adhesive and Sealant Applications. South Coast Air Quality management District, September 2000.

<sup>5</sup> Staff Report – Revisions to Rule 74.20, Adhesives and Sealants. Ventura County APCD, September 2003.

# **ATTACHMENT D**

## **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 amended 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. Current Rule 67.21 satisfies the Best Available Retrofit Control Technology (BARCT) requirements of the State Health and Safety Code. However, the current rule does not reflect the recent achievements in adhesive materials technology that resulted in significant reduction of the VOC and toxic compound contents in individual adhesives. In addition, Rule 67.21 must be amended to fulfill the District's obligations in the San Diego Regional Air Quality Strategy to implement all feasible control measures as required by State law. The District does not intend to submit amended Rule 67.21 to be included in the federal State Implementation Plan (SIP). Thus, Rule 67.21 will not be a federally-applicable or enforceable requirement.

#### **CONCLUSION**

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

**TABLE 1 - COMPARATIVE ANALYSIS - RULE 67.21**

<b>ITEMS for COMPARISON</b>	<b>PROPOSED AMENDED RULE 67.21</b>	<b>BEST AVAILABLE CONTROL TECHNOLOGY</b>
APPLICABILITY	All Adhesive Material Application Operations.	Sources that use <10 gal/day of adhesive materials. Sources using 10 gals/day or more of adhesive materials must conduct top-down BACT analysis.
EXEMPTIONS	Various, including small usage, small size containers, and low VOC content.	Sources which emit <10 lbs/day of VOC
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.	Same as in proposed amended Rule 67.21.
ADD-ON EMISSION CONTROL REQUIREMENTS	Capture and control efficiency $\geq 85\%$ by weight, as an alternative to complying with VOC content limits.	Same as in proposed amended Rule 67.21 for sources using >20 gals/yr of adhesive materials, 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 records for adhesive materials and monthly solvent dispensing records.	Same as in proposed amended Rule 67.21.
TEST METHODS	Various methods including VOC content, vapor pressure, boiling point, and capture efficiency.	Same as in proposed amended Rule 67.21.

**COUNTY OF SAN DIEGO  
AIR POLLUTION CONTROL DISTRICT**

**INCREMENTAL COST-EFFECTIVENESS ANALYSIS**

**RULE 67.21 – ADHESIVE MATERIAL  
APPLICATION OPERATIONS**

Health and Safety Code Section 40920.6(a) requires air districts to identify one or more potential control options that achieve at least the same benefit as the proposed rule, assess the cost-effectiveness of those options, and calculate the incremental cost-effectiveness of each identified option. Incremental cost-effectiveness is defined as the difference in control costs divided by the difference in emission reductions between two potential control options achieving the same emission reduction goal.

Adhesive materials with more stringent VOC limits specified in proposed amended Rule 67.21 have satisfactory performance and are available now in the marketplace at a cost comparable with the materials presently used. There are no other potential viable options to achieve the same emission reduction goal without requiring the affected adhesive manufacturers to reformulate their products in other adhesive material categories such as sealants or primers. For the comparatively small market of San Diego County, reformulating these products would be cost-prohibitive. Therefore, no further incremental cost-effectiveness analysis is required for adoption of the proposed amended Rule 67.21.



**AIR POLLUTION CONTROL DISTRICT  
COUNTY OF SAN DIEGO**

**PROPOSED AMENDED 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 amended 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 November 5, 2007, and was attended by three people. The comments and District responses are provided below:

**1. WORKSHOP COMMENT:**

The proposed amendments now exempt aerosol adhesive materials from the majority of Rule 67.21 provisions including Section (f), Recordkeeping. Will facilities still be required to maintain records of aerosol adhesive materials for purposes of the Annual Emission Inventory?

**DISTRICT RESPONSE:**

Yes. While a prohibitory rule may have an exemption from recordkeeping requirements, facilities may still need to keep records for other reasons (e.g., to comply with New Source Review rules or Annual Emissions Inventory submittals). A facility should always follow the conditions related to recordkeeping as specified in the Permit to Operate.

**2. WORKSHOP COMMENT:**

Subsection (d)(1)(ii), Specialty Adhesive Materials, specifies a VOC limit for the Contact Adhesives – Special category to be 250 g/L. The facilities that install upholstery top and trim in motor vehicles and boats have been having a difficult time finding compliant adhesives that work adequately. The District should consider increasing the VOC limit for the Top and Trim Adhesives.

**DISTRICT RESPONSE:**

The District agrees. A new Top and Trim Adhesive category with a VOC limit of 540 g/L has been added to the list of Specialty Adhesive Materials. There are a number of compliant products that will work well for this application. A new definition of Top and Trim Adhesive has also been added.

**3. WORKSHOP COMMENT:**

Subsection (d)(1)(iii), Substrate Specific Adhesives, provides new VOC limits for fiberglass at 80 g/L and for porous material at 50 g/L. For a facility that performs pipe lagging (pipe insulation) operations, which of the two VOC limits would apply?

**DISTRICT RESPONSE:**

In general, when two different substrates are being bonded together and the VOC limits for each of the adhesives differ, the highest applicable substrate-specific VOC limit would apply. For example, wrapping “adhesive” cloth around a fiberglass pipe is essentially bonding a porous material (50 g/L VOC limit) to fiberglass (80 g/L VOC limit), and therefore the highest VOC limit for the adhesive would be 80 g/L. Similarly, wrapping an “adhesive” cloth around a metal pipe is essentially bonding a porous material (50 g/L VOC limit) to metal (30 g/L VOC limit), in which case the highest VOC limit for the adhesive would be 50 g/L.

**4. ARB COMMENTS:**

There were no comments from ARB.

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