**Rule 3.14 SURFACE PREPARATION AND CLEAN-UP**
(Adopted 6/1991; Amended xx/xx/2011)

## A. GENERAL

A.1 **PURPOSE:** The purpose of this Rule is to limit the emissions of volatile organic compounds (VOC) from surface preparation and clean-up, and from the storage and disposal of materials used for surface preparation and clean-up.

A.2 **APPLICABILITY:** The provisions of this Rule applies to any owner or operator of any facility that uses VOC containing materials for surface preparation and clean-up, or any person who sells or distributes any solvent subject to the provisions of this rule.

A.3 **EXEMPTION - GENERAL:** The provisions of this rule, except for Section E.3, Burden of Proof, shall not apply to the following:

a. Cleaning operations using a solvent containing no more than 50 grams of VOC per liter of material;

b. Cleaning with aerosol products provided that the facility uses less than 160 fluid ounces of aerosol products per day. The use of such products shall comply with CARB regulations.

c. Dry cleaning operations;

d. Janitorial cleaning;

e. Stripping of cured coatings, cured adhesives, and cured inks;

f. Degreasers with an open top surface area of 1.0 square foot or less or with a capacity of 2.0 gallons or less, using unheated non-halogenated solvent exclusively, and the reservoir is covered when not processing work;

g. Any solvent degreasing operations that are subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements of 40 CFR Part 63 Subpart T- National Emission Standards for Halogenated Solvent Cleaning;

h. Cleaning operations in printing pre-press or graphic arts pre-press areas, including the cleaning of film processors, color scanners, plate processors, film cleaning, and plate cleaning.

i. Sanitizing products which are labeled and applied to food-contact surfaces that are used to process dry and low-moisture food products and are not rinsed prior to contact with food.

A.4 **EXEMPTION - SOLVENT REQUIREMENTS:** The solvent VOC limits of Section C.1 shall not apply to any of the following applications:

a. Facilities with a solvent usage of 20 gallons or less per calendar year. Solvents with a VOC content of 50 grams per liter or less do not count towards the 20 gallon per year aggregate limit;

b. Wipe cleaning of solar cells, laser hardware, high precision optics, or polycarbonate plastics;

c. Wipe cleaning for performance laboratory tests on coatings, adhesives or inks, research and development programs, and laboratory tests in quality assurance laboratories;

d. Cleaning of cotton swabs to remove cottonseed oil before cleaning of high precision optics;

e. Cleaning of paper-based gaskets, and clutch assemblies where rubber is bonded to metal by means of an adhesive;

f. Cleaning of sterilization ink indicating equipment provided that the solvent usage is less than 1.5 gallons per day;

g. Coating and adhesive application processes utilized to manufacture transdermal drug delivery products using ethyl acetate.

## B. DEFINITIONS

B.1 **AEROSOL PRODUCT:** A hand-held, non-refillable container which expels pressurized product ingredients by means of a propellant-induced force.

B.2 **AEROSPACE COMPONENT:** Any raw material, partial or completed fabricated part, assembly of parts, or completed unit of any aircraft, helicopter, missile, or space vehicle, including mockups and prototypes.

B.3 **AIR-SOLVENT INTERFACE:** The point of contact between the exposed solvent and air.

B.4 **APPLICATION EQUIPMENT:** A device used to apply adhesive, coating, ink, or polyester resin material, such as but not limited to brushes, rollers and spray guns.

B.5 **BATCH LOADED COLD CLEANER:** Any batch loaded, non-boiling solvent degreaser with an air-solvent interface.

B.6 **CONTROL DEVICE:** Equipment, such as an incinerator or adsorber, used to reduce or prevent air pollutants from reaching the ambient air.

B.7 **CURED COATINGS, CURED INKS, AND CURED ADHESIVES:** Coatings, inks, and adhesives which are dry to the touch.

B.8 **DEGREASER:** A tank, tray, drum or other container in which objects to be cleaned are exposed to a solvent or solvent vapor in order to remove contaminants. The objects to be cleaned include, but are not limited to, parts, products, tools, machinery, and equipment. An enclosed spray application equipment cleaning system is not a degreaser.

B.9 **ELECTRICAL APPARATUS COMPONENT:** An internal component such as wires, windings, stators, rotors, magnets, contacts, relays, energizers, and connections in an apparatus that generates or transmits electrical energy including, but not limited to: alternators, generators, transformers, electric motors, cables, and circuit breakers, except for the actual cabinet in which the components are housed. Electrical components of graphic arts application equipment and hot-line tools are also included in this category.

B.10 **ELECTRONIC COMPONENT:** The portion of an assembly, including circuit card assemblies, printed wire assemblies, printed

circuit boards, soldered joints, ground wires, bus bars, and other electrical fixtures, except for the actual cabinet in which the components are housed.

B.11 **ENCLOSED GUN CLEANER:**

a. A device that fully encloses the spray guns, cups, nozzles, bowls, and other associated parts during washing, rinsing, and draining procedures; or

b. A device that is used for the cleaning of spray guns, cups, nozzles, bowls, and associated equipment that has an enclosed solvent container, uses non-atomized solvent flow to flush the spray equipment, and collects and returns the discharged solvent to the enclosed solvent container.

B.12 **EXEMPT COMPOUNDS:** As defined in District Rule 1.1.

B.13 **FLEXOGRAPHIC PRINTING:** A letterpress method utilizing flexible rubber or other elastomeric plates and rapid drying liquid inks.

B.14 **FREEBOARD HEIGHT:** The distance from the top of the solvent or solvent drain to the top of the tank for batch loaded cold cleaners.

B.15 **FREEBOARD RATIO:** The freeboard height divided by the width of the degreaser.

B.16 **GRAVURE PRINTING:** An intaglio printing process in which the ink is carried in minute etched or engraved wells on a roll or cylinder.

B.17 **HIGH PRECISION OPTICS:** An optical element used in an electro-optical device that is designed to sense, detect, or transmit light energy, including specific wavelengths of light energy and changes in light energy levels.

B.18 **INTAGLIO PRINTING:** A printing operation done from a plate in which the image is etched or engraved into the surface.

B.19 **JANITORIAL CLEANING:** The cleaning of building or facility components, such as the floor, ceiling, walls, windows, doors, stairs, bathrooms, furnishings, and exterior surfaces of office equipment. The cleaning of work areas where manufacturing or repair activity is performed is excluded from this definition.

B.20 **LETTERPRESS PRINTING:** The method in which the image area is raised relative to the non-image area and the ink is transferred to the paper directly from the image surface.

B.21 **LITHOGRAPHIC PRINTING:** A plane-o-graphic method in which the image and non-image areas are on the same plane.

B.22 **LIQUID LEAK:** A visible liquid solvent leak from a container at a rate of more than three (3) drops per minute, or a visible liquid mist.

B.23 **LOW EMISSION SPRAY GUN CLEANER:** Any properly used spray equipment clean-up device which has passive solvent losses of no more than 0.6 grams per hour and has active solvent losses of no more than 15 grams per operating cycle as defined by the test method in Section F.7.

B.24 **LOW-MOISTURE FOOD:** A food with a water activity less than 0.85 or other applicable standards approved by the Air Pollution Control Officer, California Air Resources Board, or U.S. Environmental Protection Agency.

B.25 **MAINTENANCE CLEANING:** Surface preparation and clean-up, including sanitization, carried out to keep parts, products, tools, machinery, equipment, or general work areas in clean and good operational condition.

B.26 **MANUFACTURING PROCESS:** The process of making goods or articles by hand or by machinery.

B.27 **MEDICAL DEVICE:** Any instrument, apparatus, implement, machine contrivance, implant, in vitro reagent or other similar article, including any component or accessory that meets one of the following conditions:

a. It is intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease; or

b. It is intended to affect the structure or any function of the body; or

c. It is defined in the National Formulary or the United States Pharmacopia, or any supplement to them.

B.28 **NON-ABSORBENT CONTAINERS:** Containers made of nonporous materials which do not allow the migration of the liquid solvent through them.

B.29 **NON-ATOMIZED SOLVENT FLOW:** The use of a solvent to remove uncured adhesives, uncured inks, uncured coatings, and contaminants from an article in the form of a liquid stream without atomization.

B.30 **PHARMACEUTICAL:** Any facility producing or blending chemicals for use in pharmaceutical products and or employing chemical processes in the manufacture of pharmaceutical products or medical devices.

B.31 **PHARMACEUTICAL PRODUCT:** A preparation or compound of medicinal drugs including, but not limited to, a prescription drug, analgesic, decongestant, antihistamine, cough suppressant, vitamin, mineral and herb, and is used by humans for consumption to enhance human health.

B.32 **PRINTING:** Any operation in the graphic arts that imparts color, design, alphabet, or numerals on a substrate.

B.33 **PRODUCT CLEANING:** The removal of loosely held uncured adhesives, uncured inks, uncured coatings, and contaminants such as dust, soil, oil, grease, etc., from the product or substrate during any manufacturing process, repair process, maintenance cleaning, adhesive application, coating application or ink application.

B.34 **REACTIVE ORGANIC GASES (ROG):** As defined in District Rule 1.1.

B.35 **REMOTE RESERVOIR COLD CLEANER:** A cleaning device in which liquid solvent is pumped from a solvent container to a sink-like work area and the solvent from the sink-like area drains into an enclosed solvent container while parts are being cleaned.

B.36 **REPAIR PROCESS:** The process of returning a damaged object or an object not operating properly to good condition.

B.37 **SCREEN PRINTING:** A process in which the printing ink passes through a web or fabric to which a refined form of stencil has been applied. The stencil openings determine the form and dimensions of the imprint.

B.38 **SOLVENT:** Any liquid containing a volatile organic compound or combination of volatile organic compounds, which is used to perform surface preparation and clean-up.

B.39 **SOLVENT FLUSHING:** The use of solvent to remove uncured adhesives, uncured inks, uncured coatings, or contaminants from the internal surfaces and passages of the equipment by flushing solvent through the equipment.

B.40 **STRIPPING:** The removal of cured inks, cured adhesives, and cured coatings.

B.41 **SURFACE PREPARATION AND CLEAN-UP:** The removal of loosely held uncured adhesives, uncured inks, uncured coatings, and contaminants such as dust, soil, oil, grease, etc., at any step in the production, repair, maintenance, or servicing of parts, products, tools, machinery, equipment, or general work areas and including the storage and disposal of VOC containing materials.

B.42 **ULTRAVIOLET INKS:** Inks which dry by a polymerization reaction induced by ultraviolet radiation.

B.43 **VOLATILE ORGANIC COMPOUND (VOC):** Shall have the same meaning as Reactive Organic Gases (ROG).

B.44 **VOLATILE ORGANIC COMPOUND (VOC) COMPOSITE PARTIAL PRESSURE:** The sum of the partial pressures of the compounds defined as VOCs. VOC composite partial pressure is calculated according to Section F.5.

B.45 **VOLATILE ORGANIC COMPOUND (VOC) CONTENT:** As defined in District Rule 1.1.

B.46 **WATER ACTIVITY:** A measure of the free moisture in a food and is the quotient of the water vapor pressure of the substance divided by the vapor pressure of pure water at the same temperature.

B.47 **WIPE CLEANING:** The method of cleaning a surface by physically rubbing it with a material such as a rag, paper, or a cotton swab moistened with a solvent.

## C. STANDARDS

C.1 **SOLVENT VOC LIMITS:** A person shall not use a solvent to perform surface preparation and clean-up, or specify or require any person to use a solvent subject to the provisions of this Rule, unless the solvent complies with the applicable requirements set forth in Table 1.

**TABLE 1: VOC CONTENT LIMITS**

| Category | | | VOC Content Limit (grams/Liter) | |
|---|---|---|---|---|
| | | | Prior to 12/31/2011 | Effective 12/31/2011 |
| Product Cleaning | Coatings and Adhesives | | | 50 |
| | Vehicles & Mobile Eqmt. [Rule 3.19] | Surface Prep | 200 | 50 |
| | | Handheld Spray | 780 | 50 |
| | Wood Products [Rule 3.20] | | 200 | 50 |
| | Metal Parts and Products | | | 50 |
| | Polyester Resins | | | 50 |
| | Inks | | | 50 |
| | Electrical Apparatus Components & Electronic Components | | | 100 |
| | Aerospace Components | | | 200 g/L or 45 mm Hg VOC Composite Partial Pressure |
| | Medical Devices, Pharmaceuticals, and Pharmaceutical Products | | | 800 |
| Cleaning of Application Equipment | Coatings and Adhesives | | | 50 |
| | Vehicles & Mobile Eqmt. [Rule 3.19] | | | 50 |
| | Wood Products [Rule 3.20] | | | 50 |
| | Metal Parts and Products | | | 50 |
| | Polyester Resins | | | 50 |
| | Printing Operations: Screen, Lithographic, and Letterpress, Ultraviolet, Flexographic, Gravure (Publication) | | | 100 |
| | Aerospace Components | | | 50 |
| | Medical Devices, Pharmaceuticals, and Pharmaceutical Products | | | 810 |
| Sterilization of food manufacturing and processing equipment | | | | 200 |
| General: Industries Not Specified Above | | | | 50 |

C.2 **CLEANING DEVICES AND METHODS REQUIREMENTS:** A person shall not perform surface preparation and clean-up unless one of the following cleaning devices or methods is used:

a. Wipe cleaning;

b. Hand-held spray bottles from which solvents are applied without a propellant-induced force;

c. Cleaning equipment which contains solvent and is closed during cleaning operations, except when depositing and removing objects to be cleaned, and is closed during non-operation with the exception of maintenance and repair to the cleaning equipment itself;

d. Remote reservoir cold cleaners used pursuant to Section C.5;

e. Non-atomized solvent flow method where the cleaning solvent is collected in a container or a collection system which is closed except for solvent collection openings and, if necessary, openings to avoid excessive pressure build-up inside the container;

f. Solvent flushing method where the cleaning solvent is discharged into a container which is closed except for solvent collection openings and, if necessary, openings to avoid excessive pressure build-up inside the container. The discharged solvent from the equipment must be collected into containers without atomizing into the open air. The solvent may be flushed through the system by air or hydraulic pressure, or by pumping;

g. Cleaning device or mechanism which has been determined by the APCO to result in equivalent or lower emissions than the applicable limits listed in Table 1.

C.3 **CLEANING DEVICES - GENERAL REQUIREMENTS:** Any person using equipment subject to the requirements of C.2.c, C.2.d, C.2.e, or C.2.f shall comply with all of the following requirements:

a. Do not clean porous or absorbent materials, such as cloth, leather, rope, and wood;

b. Use only solvent containers free of all liquid leaks.

c. Auxiliary equipment, such as pumps, pipelines, or flanges shall not have any liquid leaks, visible tears, or cracks.

d. Any liquid leak, visible tear, or crack detected shall be repaired within one calendar day, or the leaking

section of the cleaner shall be drained of all solvent and shut down until it is replaced or repaired.

e. Any liquid leak detected by the district shall constitute a violation of this section. This provision shall not apply if the equipment is tagged out and if the leak is already noted in the facility's logbook.

C.4 **CLEANING DEVICES – BATCH LOADED COLD CLEANERS:** Any person using a batch loaded cold cleaner shall comply with all of the following requirements:

a. A cover must be used which prevents the solvent from evaporating when work is not being performed. The cover should be designed so that it can be opened and closed easily with one hand;

b. If the solvent initial boiling point is less than 248°F (120°C) and the solvent is heated above 122°F (50°C), then the cold cleaner shall have one of the following:

1. A freeboard ratio greater or equal to 0.75; or

2. A water cover if the solvent is insoluble in and heavier than water;

c. If the solvent initial boiling point is less than 248°F (120°C), then the drainage facility shall be internal so that the parts are enclosed under the cover while draining. The drainage facility may only be external for applications where an internal type cannot reasonably fit the cleaning system;

d. All cleaned parts shall be drained for at least 15 seconds after cleaning or until dripping ceases. Parts with blind holes or cavities shall be tipped or rotated before being removed, such that the solvents in the blind holes or cavities are drained in accordance with the above requirements;

e. If using a solvent flow, the cleaning system shall use only a continuous, fluid stream (not a fine, atomized, or shower type spray) at a pressure which does not cause liquid solvent to splash outside the solvent container;

f. Solvent agitation, where necessary, shall be carried out only by pump recirculation, ultrasonics, or a mixer. Air agitation shall not be allowed.

C.5 **CLEANING DEVICES - REMOTE RESERVOIR COLD CLEANERS:** Any person owning or operating a remote reservoir cold cleaner shall comply with all of the following requirements:

a. The operator shall prevent solvent vapors from escaping by using such devices as a cover or a valve when the remote reservoir is not being used, cleaned, or repaired;

b. The operator shall direct solvent flow in a manner that will prevent liquid solvent from splashing outside of the remote reservoir cold cleaner;

c. All remote reservoir cold cleaners shall consist of:

1. A tank or sink-like work area which is sloped sufficiently to preclude pooling of solvent;

2. A single drain hole, less than 100 square centimeters (15.5 square inches) in area, for the solvent to flow from the sink into the enclosed reservoir;

3. A drain plug or a cover for placement over the top of the sink when the equipment is not in use;

4. A freeboard height of at least six inches.

C.6 **CLEANING DEVICES - SPRAY EQUIPMENT:** Effective December 31, 2011, any person cleaning spray application equipment with a solvent containing more than 50 grams of VOC per liter shall use an enclosed system, or equipment that is proven to the satisfaction of the APCO to be equally effective as an enclosed system at controlling emissions. If an enclosed system is used, it shall totally enclose spray guns, cups, nozzles, bowls, and other parts during washing, rinsing and draining procedures, and it shall be used according to the manufacturer’s recommendations.

C.7 **CLEANING DEVICES – VEHICLE AND MOBILE EQUIPMENT COATINGS:** Effective until December 31, 2011, a person shall not use organic-based VOC-containing materials for the clean-up of spray equipment used in Vehicle and Mobile Equipment

Coating Operations unless a low emission spray gun cleaner or an enclosed gun cleaner is properly used for cleaning.

C.8 **CLEANING DEVICES – WOOD PRODUCT COATINGS:** Effective until December 31, 2011, a person shall not use organic-based VOC-containing materials for the cleanup of spray equipment used in Wood Products Coating Operations unless a low emissions spray gun cleaner or an enclosed gun cleaner is properly used for cleaning. Spray gun nozzles may be soaked in organic-based materials for cleaning provided the container (not to exceed five (5) gallons in size) is kept tightly covered at all times except when accessing the container. These provisions shall not apply to Wood Products Coating Operations using less than 55 gallons of coatings and/or strippers per year.

C.9 **EMISSION CONTROL SYSTEM:** In lieu of complying with the requirements in Sections C.1, C.2, or C.6 of this Rule, a operator may comply by using a collection and control device in association with surface preparation and clean-up provided that:

a. The system is approved in writing by the APCO; and

b. During emission producing activities, the system's control device shall have a capture efficiency of at least 90 percent by weight of the emissions generated, and one of the following requirements:

1. The control device has a control efficiency of at least 95 percent by weight; or

2. The VOC emission control system has an output of less than 50 parts per million (ppm) by weight calculated as carbon with no dilution, as verified by Section F.2.

C.10 **STORAGE AND DISPOSAL – GENERAL REQUIREMENTS:** All VOC-containing materials, whether in their form for intended use or as a waste or used product, including items such as cloth or paper laden with VOC containing materials, shall be stored in non-absorbent, non-leaking containers which shall be kept closed at all times, except when filling or emptying, and disposed of in a manner to prevent evaporation of VOCs into the atmosphere at the facility. Waste solvent and waste solvent residues shall be disposed of by one of the following methods:

a. A commercial waste solvent reclamation service licensed by the State of California;

b. At a facility that is federally or state licensed to treat, store, or dispose of such waste;

c. Recycling in conformance with Section 25143.2 of the California Health and Safety Code.

## D. ADMINISTRATIVE REQUIREMENTS

D.1 **PROHIBITION OF SPECIFICATION:** A person shall not specify the use of any solvent used for surface preparation and clean-up subject to the provisions of this rule that does not meet the limits and requirements of this rule where such applications result in a violation of this rule. The requirements of this Section shall apply to all written or oral contracts.

D.2 **COMPLIANCE STATEMENT REQUIREMENT:** Any person who sells or distributes any solvent subject to this rule shall make available to the purchaser at the time of sale the following information:

a. The name of the solvent;

b. The name of the manufacturer;

c. The maximum VOC content of the solvent as applied. The VOC content shall be expressed as grams of VOC per liter of solvent, or pounds of VOC per gallon of solvent, as determined pursuant to Section F.2;

d. Recommendations regarding thinning, reducing or mixing with any solvent, if applicable.

D.3 **OPERATION AND MAINTENANCE PLAN (O&M PLAN):** Any person using an emission control device pursuant to Section C.9 of this Rule must submit an O&M Plan. The O&M Plan shall be submitted prior to operation of new control devices and no later than December 31, 2011 for existing control devices. The O&M Plan shall specify operation and maintenance procedures which will demonstrate continuous operation of the control device during periods of emission producing operations. The O&M Plan shall also specify which records

must be kept to document these operation and maintenance procedures. These records shall comply with the requirements of Section E.2 of this Rule.

## E. MONITORING AND RECORDS

E.1 **RECORDKEEPING - GENERAL:** Any person using solvents subject to this Rule, except those exempt per Section A.3, shall maintain records in a current file that contains all the data necessary to verify compliance and shall include the following:

a. Identification of each process at the facility subject to this Rule. The identification shall include the following:

1. The location of the unit(s);

2. Description of the method of application and substrate type.

b. The amount and type of each solvent used at each process, on a monthly basis. The following information should be included:

1. The name of the solvent;

2. The name of the solvent manufacturer;

3. The VOC content of the solvent, expressed in grams/liter or lbs/gallon;

4. The mix ratio for the solvent, if applicable;

5. The date and amount of solvent added;

6. The date and amount of waste solvent removed.

c. A copy of the Manufacturer's product data sheet or material safety data sheet of the solvent used.

d. Any other such records needed to verify compliance with this rule.

E.2 **RECORDKEEPING - EMISSION CONTROL SYSTEMS:** If compliance with this rule is achieved through the use of an emission

control system, the owner or operator shall maintain all of the following in addition to the provisions of Section E.1:

a. Daily usage records of all solvents;

b. Daily records of key operating parameters such as temperatures, pressures, flow rates, and hours of operation of the control device to verify compliance of the capture and control device;

c. Maintenance work which interferes with the operation of the control device.

E.3 **BURDEN OF PROOF:** Any person claiming exemption pursuant to Section A.3 shall have information available such as product data or material safety data sheets or records that would allow the APCO to verify the eligibility of the exemption.

E.4 **REPORTING:** All records required by Sections E.1, E.2, and E.3 shall be maintained on site for a period of three years and made available to the APCO upon request.

## F. TEST METHODS AND CALCULATIONS

F.1 **GENERAL:** For the purposes of this Rule, the following test methods or calculation methods shall be used. Other test methods determined to be equivalent and approved in writing by the District and the EPA may also be used. VOC emissions or other parameters determined to exceed any limits established by this Rule through the use of any of the following test methods or calculations shall constitute a violation of this Rule.

F.2 **VOC CONTENT:** The VOC content of organic solvents subject to the provisions of this rule shall be determined by procedures contained in EPA Reference Test Method 24 or 24A, or by using the manufacturer's product formulation data and the formula listed in Section F.4.

F.3 **EXEMPT COMPOUNDS:** The content of exempt VOCs shall be determined by using CARB Method 432 or SCAQMD Method 303 (Determination of Exempt Compounds).

F.4 **CALCULATION OF VOC CONTENT:** The VOC content per volume of solvent shall be calculated by the following equation:

$$VOC_{con} = \frac{(W_S - W_W - W_{ES})}{V_M}$$

Where:
$VOC_{con}$= Grams of VOC per liter of material
$W_S$ = Weight of volatile compounds in grams
$W_W$ = Weight of water in grams
$W_{ES}$ = Weight of exempt compounds in grams
$V_M$ = Volume of material in liters

F.5 **CALCULATION OF VOC COMPOSITE PARTIAL PRESSURE:** The VOC composite partial pressure shall be calculated by the following equation:

$$PP_c = \sum_{i=1}^{n} \frac{\frac{W_i}{MW_i} \times VP_i}{\frac{W_w}{MW_w} + \frac{W_e}{MW_e} + \sum_{i=1}^{n} \frac{W_i}{MW_i}}$$

Where:
$W_i$ = Weight of the "i"th VOC compound, in grams
$W_w$ = Weight of water, in grams
$W_e$ = Weight of exempt compound, in grams
$MW_i$ = Molecular weight of the "i"th VOC compound, in grams per gram-mole
$MW_w$ = Molecular weight of water, in grams per gram-mole
$MW_e$ = Molecular weight of exempt compound, in grams per gram-mole
$PP_c$ = VOC composite partial pressure at 20°C, in mm Hg
$VP_i$ = Vapor pressure of the "i"th VOC compound at 20°C, in mm Hg

F.6 **CAPTURE EFFICIENCY:** The capture efficiency of a VOC emission control system's collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR 51, Appendix M, Methods 204-204F, as applicable.

F.7 **CONTROL EFFICIENCY:** The control efficiency of a VOC emission control system's collection device shall be determined by using EPA Methods 2, 2A, or 2D for measuring flow rates and EPA Method 25, 25A, or 25B for measuring total gaseous organic concentrations at the inlet and outlet of the control device. EPA Method 18 or CARB Method 422 shall be used to determine the emissions of exempt compounds.

F.8 **SPRAY GUN CLEANING SYSTEMS:** The determination of emissions of VOC from spray gun cleaning systems shall be made using South Coast Air Quality Management District "General Test Method for Determining Solvent Losses from Spray Gun Cleaning Systems" dated October 3, 1989.

F.9 **DETERMINATION OF WATER ACTIVITY IN FOODS:** Water activity in foods shall be determined in accordance with United States Food and Drug Administration Inspection Technical Guide number 39, Water Activity (aw) in Foods.