

**SAN JOAQUIN VALLEY
AIR POLLUTION CONTROL DISTRICT
Permit Services**

Specifying Test Methods On Permits

Approved by: _____ Signed Seyed Sadredin Director of Permit Services	Date: <u>10/9/97</u>
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Purpose: To require inclusion of appropriate source test methods in existing and new permits. This policy provides guidance on incorporating test methodology in permit terms and conditions. It does not abridge the authority of the APCO to require testing and specify test methods pursuant to Rule 1081.

I. Background:

Most permits issued by the District contain mass emission limits or performance standards. To make these conditions enforceable, the permits must contain appropriate source test methods. For Title V sources, the law explicitly requires that all permits contain appropriate test methods.

Currently, most permits issued by the District do not contain a reference to the appropriate test methods that are to be used in verifying compliance. Historically, these issues have been dealt with as a part of the source test protocol developed after permits have been issued.

To ensure consistency, this policy requires that appropriate test methods in conjunction with the applicable emissions or performance standards be included in the permit at the time of issuance. Aside from the issue of enforceability, it must be noted that in some cases varying test methods affect the stringency of the emissions limits. For instance, for particulate matter, the use of a test method that excludes the condensibles (i.e., back half catch) is less stringent than demonstrating compliance with the same emission limit using a method that includes both the front and back half particulates. A similar situation may occur with other test methods measuring VOCs or hazardous air pollutants. Therefore, designation of a test method that corresponds to the assumptions that were used as the basis for permit issuance is best accomplished at the time the permit application is being evaluated.

II. Incorporating Test Methods in Permits

All permits that contain emissions or performance standards for which the permit requires testing to verify compliance must contain appropriate test methods sufficient to assure compliance with the terms and conditions of the permit. All Authorities to Construct are to specify test methods at the time of issuance. Appropriate test methods must be added to existing Permits to Operate at the time of permit renewal. (Note: This policy only requires addition of test methods to existing permits that already contain testing requirements. This policy should not be used to add testing requirements to existing permits that do not already contain testing requirements.)

Permit conditions specifying the test methods to be used shall be placed on permits in the following format:

Source testing to measure [*parameter (e.g., NO_x, flowrate, O₂, Moisture, Control efficiency)*] shall be conducted using [*test method*].

Example

“Source testing to measure oxides of nitrogen (as NO₂) shall be conducted using CARB method 1-100.”

III. Selection of Appropriate Test Methods

The appropriate source test methods shall be established as follows:

Step 1 - Select the most stringent emissions limitation (including performance standard) that will be incorporated into the permit. The most stringent emissions limitations must be determined taking into account any applicable averaging time, test method, and transfer or collection efficiencies. A written analysis documenting the comparison of multiple applicable requirements and the basis for selection of the most stringent emission limits must be prepared.

Step 2 - Identify test methods contained in each of the rules and regulations that serve as the basis for the proposed emissions or performance standard. If the applicable requirements do not specify test methods, skip to step 4.

Step 3 - The test method that is associated with the most stringent emission limitation is presumed to be appropriate and will be incorporated into the permit. If more than one regulation with the same emissions limitation apply to the source (e.g., federal and local rules), then both methods can be listed on the permit.

Step 4 - If the most stringent emission limitation is associated with a rule or regulation that does not contain a test method (e.g., NSR), then choose an appropriate test method as follows:

- A. If the source is subject to a prohibitory rule with a less stringent emissions limit which specifies a source test method, select that test method if it is feasible for determining compliance with the proposed limit. Otherwise,
- B. Select an appropriate test method from Appendix A of this policy.

IV. Compliance Division Review

Whenever test methods are added to existing PTO's during permit renewal (without an ATC), the processing engineer must generate a change order and submit it to the Compliance Division for review and approval. For ATCs, compliance sign-off on the routing form prior to ATC issuance will constitute approval of the test methods contained in the ATC.

V. Special Circumstances

Occasionally, a source may operate under unique circumstances that may render the methodology that is normally used for measuring a parameter infeasible. Examples of such circumstances include but are not limited to the following:

- A. Measuring PM10 in the presence of ammonia
- B. Determining Flow Rate when stack dimensions are inadequate for using Reference Methods 1, 1A, 2, 2A
- C. Determining Flow Rate when cyclonic flow is expected
- D. Measuring lb/MMBtu with high O₂ concentrations (>10%) - This situation may be encountered with dryers and furnaces.

When faced with the above or other special circumstances, the processing engineer in consultation with Compliance Division, must examine the feasibility of taking corrective measures (e.g., flow straighteners for cyclonic flow) to remedy the problem. If corrective measures are not feasible, then an alternative test method must be selected that produces the most accurate result for the source in question.

VI. Notification to Existing Sources

A written explanation to the affected source must accompany a revised PTO whenever existing PTOs are revised to incorporate test methods.

VII. Documentation

For ATCs, all findings that were made in the process of selecting appropriate test methods must be included in the compliance section of the Application review for each applicable requirement. For existing PTOs, a written documentation of such findings must be prepared and included in files.

APPENDIX A

SOURCE TEST METHODS

The following is a listing of the most common test methods used for the five criteria pollutants, as well as O₂ content, opacity, test for fuel sulfur, and hydrogen sulfide. It does not represent an exhaustive list of all available test methods. Consult District prohibitory rules, the California Air Resources Board, USEPA, and other districts' publications for additional approved test methods.

Pollutant/Parameter	Test Method	Comments
NOX – NITROGEN OXIDES		
	EPA 7E	¹ gives results in ppm, lb/hr
	CARB 100	¹ gives results in ppm, lb/hr
	CARB 20	¹ For stationary gas turbines, – gives results in ppm, lb/hr
CO – CARBON MONOXIDE		
	CARB 100	¹ gives results in ppm, lb/hr
	EPA 10	
	EPA 10B	
VOC – VOLATILE ORGANIC COMPOUNDS		
	EPA 18	Grab sample analyzed using gas chromatography/flame ionization detector (FID)
	CARB 100	¹ Total Hydrocarbons, gives results in ppm, lb/hr
	EPA 25A	² Total Hydrocarbons ¹ using FID -
	EPA 25B	² Total Hydrocarbons using NDIR
	EPA 25C	² Nonmethane Organic Compounds – intended for solid waste landfills
PM – PARTICULATE MATTER		
	CARB 5	Filterable and Condensable PM. Results in gr/dscf, lb/dscf
	EPA 5	Filterable PM only. May specify to modify to include back-half (condensibles). Results in gr/dscf, lb/dscf
	South Coast Method 5.1	Approved for use in the District.

1) Method relies on a continuous gas stream for sample collection

2) EPA Method 25 is susceptible to interference from CO₂ and water vapor. Specify EPA Method 18 or ARB Method 100 when interference is likely.

PM10 – PARTICULATE MATTER AERODYNAMIC DIAMETER OF 10 UM OR LESS		
	EPA 201A	Filterable PM10 only. Cyclonic separation. Results in gr/dscf, lb/dscf
	EPA 202	Condensable PM10 only.
	CARB 501	Inertial separation – not commonly used
SOX – SULFUR OXIDES		
	CARB 100	¹ gives results in ppm, lb/hr
	EPA 6	Grab sample analyzed by titration.
	EPA 6C	Grab sample analyzed with UV, NDIR, and fluorescence.
	EPA 8	Intended for sulfuric acid plants.
O2 – OXYGEN		
	CARB 100	¹ gives results in ppm, lb/hr
VISUAL EMISSIONS (OPACITY)		
	EPA 9	This test is performed regularly by District personnel or others certified to do so
FUEL SULFUR		
	Oxidative combustion micro-coulometric	
	Double GC for H ₂ S and mercaptans	Commonly used for oilfield steam generators.
	ASTM D3246	
H2S – HYDROGEN SULFIDE		
	CARB 15	
	CARB 16A	Total Reduced Sulfur
	EPA 11	
Stack sampling (determine traverse points)	EPA 1, CARB 1	
Stack Air velocity/volumetric flow rate	EPA 2, CARB 2	
Stack Gas Dry Molecular Weight	EPA 3, CARB 3	
Stack Gas Moisture Content	EPA 4, CARB 4	
Emission Rate Determination (lb/MMBtu)	EPA 19	Using F-factor, used to convert concentration results from CARB 100, others, to mass emission rate

1) Method relies on a continuous gas stream for sample collection

OTHER POLLUTANTS/PARAMETERS:

<u>Pollutant/Parameter</u>	<u>Test Method</u>
Acetaldehyde	CARB Method 430
Arsenic	CARB Method 423
Asbestos	CARB Method 427 and/or CARB Method 435 (serpentine aggregate)
Benzene	CARB Method 410A (low concentration) CARB Method 410B (high concentration)
Cadmium	CARB Method 424
Carbon disulfide	CARB Method 15
Carbonyl sulfide	CARB Method 15
Chloride	CARB Method 421
Chlorine	CARB Method 434 (in unheated air)
Total & Hex Chrome	CARB Method 425
Cyanide	CARB Method 426
Dichloromethane (paints)	CARB Method 432
Dimethyl disulfide	CARB Method 15
Dimethyl sulfide	CARB Method 15
Ethylene oxide	CARB Method 21 or CARB Method 431
Fluoride	CARB Method 421
Formaldehyde	CARB Method 430
Gasoline Vapor (VRS) Flow vs. Pressure	CARB Method TP-201.2C CARB Method TP-201.2B
Hydrocarbons In Soil	EPA Method 8015 TPH(G) and/or TPH(D), or EPA Method 8240B, or EPA Method 8260A

NH ₃	Bay Area Source Test Method ST-1B
Nickel	CARB Method 433
1,1,1-TCE (paints)	CARB Method 432
Vinyl chloride	CARB Method 106