

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**METHOD 5.4**

**DETERMINATION OF PARTICULATE EMISSIONS FROM STATIONARY  
SOURCES WITH SMALL STACKS OR DUCTS**

**OFFICE OF OPERATIONS  
TECHNICAL SERVICES DIVISION  
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## METHOD 5.4

### DETERMINATION OF PARTICULATE EMISSIONS FROM STATIONARY SOURCES WITH SMALL STACKS OR DUCTS

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#### Section 1 of 3

#### 1. Overview

##### 1.1 Principle

In this method the particulate sampling and velocity measurement are done at two different locations.

Either the wet impingement (Method 5.1) or heated probe and filter (Method 5.2) method can be used. The instack filter (Method 5.3) method cannot be used due to significant blockage of the cross-sectional area of the stacks or ducts.

##### 1.2 Applicability

This method is applicable to stacks or ducts less than about 0.30 m (12 in.) in diameter, or 0.071

$m^2$  (113 in.<sup>2</sup>) in cross sectional area, but equal to or greater than about 0.10 m (4 in.) in diameter, or 0.0081  $m^2$  (12.57 in.<sup>2</sup>) in cross sectional area.

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#### 2. Field Procedure

Follow either Method 5.1 or Method 5.2 except for the following:

a. Pitot Tube

Use a standard Pitot tube as described in Method 2.3, with a temperature sensor mounted on it.

b. Probe Nozzle

Same as Methods 5.1 and 5.2, except that the entry plane of the nozzle must be at least two nozzle diameters (ID) upstream of the probe sheath blockage plane.

c. Sampling Site and Minimum Number of Traverse Points

Follow Method 1.2.

d. Unsteady Flow Sampling

During the sampling, take velocity head readings at the velocity measurement site, at points downstream of but directly in line with the particulate sampling points. Use these velocity head readings to set the isokinetic sampling rate through the sample nozzle.

e. Steady Flow Sampling

Follow the procedure as described in Section 2.d or conduct a velocity traverse just before the sampling. Set the isokinetic sampling rate at each point based on the velocity head readings obtained during the velocity traverse.

At the end of the particulate sample run, perform a second velocity traverse. If the average velocity is within  $\pm 5$  percent of the average velocity obtained during the preliminary

traverse, the flow can be assumed to be steady, and the results are acceptable. Otherwise, reject the results and repeat the run following the procedure as described in Section 2.d.

For a steady flow condition the same site may be used for preliminary traverse and particulate sample runs.

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#### 3. Laboratory Procedure

Follow Method 5.1 or 5.2 depending on which particulate sampling method was used in the field.



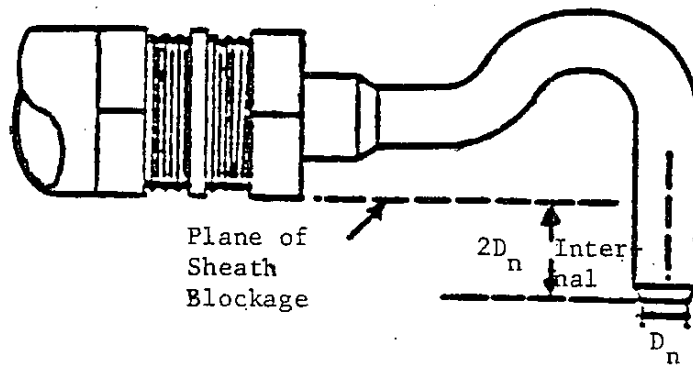


Figure 5.4-1

Recommended Sampling Nozzle Design for use in Small Ducts