The following are requirements for field testing of fume hoods after installation, which the specifier may wish to insert into Part 3 of the fume hood specification. The Owner may elect to have field evaluation procedures included in a separate contract to a separate testing agency.

**1. FIELD QUALITY CONTROL TESTING OF FUME HOODS**

A. Field testing requirements:

1. Perform tests in field to verify proper operation of the fume hoods before they are put in use, using only qualified personnel.

2. Perform tests after installation is complete, the building ventilation system has been balanced, all connections have been made, and written verification has been submitted that the above conditions have been met.

3. Verify that the building make-up air system is in operation, the doors and windows are in normal operating position, and that all other hoods and exhaust devices are operating at designed conditions.

4. Correct any unsafe conditions disclosed by these tests before request of test procedures.

B. Testing equipment:

1. Properly calibrated hot wire thermal anemometer equal to Alnor Model No. 8500D-1 Compuflow.

2. Supply of 30-second smoke bombs.

3. Supply of titanium tetrachloride.

C. Test procedure – SEFA-1 2006:

1. Check room conditions in front of fume hood using a thermal anemometer and a smoke source to verify that the velocity of cross drafts does not exceed 20% of the specified average fume hood face velocity. Eliminate any cross drafts that exceed these values before proceeding.

a. CAUTION: Titanium tetrachloride fumes are toxic and corrosive. Use sparingly; avoid inhalation and exposure to body, clothing and equipment that might be affected by corrosive fumes.

b. NOTE: No fume hood can operate properly if excessive cross drafts are present.

2. Perform the following test to verify conformance of actual fume hood face velocities to those specified. Turn on the exhaust blower with the sash in full open position. Determine the face velocity by averaging the velocity of six readings taken at the fume hood face: at the centers of a grid made up of three sections of equal area across the top half of the fume hood face and three sections of equal area across the bottom half of the fume hood face.

a. If not in accordance with specifications, refer to manufacturer's Troubleshooting Guide for aid in determining cause of variation in air flow.

3. Check sash operation by moving sash through its full travel. Verify that sash operation is smooth and easy, and that vertical rising sash shall hold at any height without creeping up or down.

D. Field testing of air flow in fume hoods without auxiliary air:

1. Turn fume hood exhaust blower on. With sash in the open position check air flow into the fume hood using a cotton swab dipped in titanium tetrachloride or other smoke source. Verify that air flow is into the fume hood over the entire face area by a complete traverse of the fume hood 6" inside the face. Reverse flow is evidence of unsafe conditions. Take necessary corrective actions and retest.

2. Move a lighted smoke bomb throughout the fume hood work area directing smoke across the work surface and against the side walls and baffle. Verify that smoke is contained within the fume hood and rapidly exhausted.

E. Field testing of air flow in fume hoods with auxiliary air:

1. Calculate exhaust volume from face velocity data as determined above. Determine face velocity and exhaust volume with the auxiliary air blower off, in accordance with SEFA-1 2006.

2. With sash in the open position check air flow into the fume hood using a cotton swab dipped in titanium tetrachloride or other smoke source. Verify that air flow is into the fume hood over the entire face area by a complete traverse of the fume hood 6" inside the face. Reverse flow is evidence of unsafe conditions. Take necessary corrective actions and retest.

3. Ignite smoke bomb at the source of auxiliary air and observe the flow of smoke/air down the face and into the hood. Close sash and observe flow patterns. Verify that operation is safe and proper.

4. Move a lighted smoke bomb throughout the fume hood work area directing smoke across the work surface and against the side walls and baffle. Verify that smoke is contained within the fume hood and rapidly exhausted.

## END OF SECTION