Sample Procedure: How to Check Air Flow Rates Provided by Ambient-Air Pumps Used for Asbestos Work

**Purpose:** To find the “psi” value (operating pressure) needed to ensure the air-flow rate provided to each respirator user meets the 6-cubic foot per meter (CFM) minimum required by WAC 296-62-07715.

**Assemble the System Before Testing:**

1. **Gather** all equipment and supplies. Make sure electrical outlets can provide enough amps to operate ambient air pumps (for example, 15 amps).
   - Make sure you have a properly maintained rotameter (photo 1), scaled to measure up to 6 CFM. Rotameters marked to measure SCFM instead of CFM are acceptable.
   - Check to make sure only NIOSH-approved respirator hoses, quick connects, and other respirator components will be used. Look for damaged parts and use only NIOSH-approved replacements.
   - Make sure the pressure gauge on each ambient air pump is readable and works.

2. **Determine** how many respirator wearers will use a specific ambient air pump at the same time. For each wearer, determine the maximum number and length of hoses (up to 300-ft. limit) that could be used.
   - Connect all components exactly as they will be used during work. For example, if you’ll have 3 respirator users drawing air from one ambient air pump, assemble and connect all 3 respirators using the maximum number and length of hoses and couplers.

3. **Select** the respirator assembly with the longest air-line and most hose connections for testing. Check the respirator’s user manual to find and note the minimum and maximum operating pressure values (in “psi” units) specified for that assembly. Make sure you stay well above the minimum and below the maximum operating pressure psi while following this procedure.
   - Disconnect the breathing tube from the facepiece of the selected assembly by carefully removing the hose clamp (photo 2) or other fastener. Leave the other end of the breathing tube connected to the air line.
   - When testing multiple-user systems, all other respirator assemblies will need to remain fully assembled and connected to the ambient air pump.
   - Make sure any check valve connected to the breathing tube is in the “closed” position.
   - Attach a barbed-brass fitting (photo 3) or other adapter to the rotameter.
   - Connect the free end of the respirator’s breathing tube to the lower opening of the rotameter (photo 4).

**IMPORTANT:** This procedure is designed for jobs where employees will use ambient air pumps to supply breathing air to continuous-flow respirators during asbestos work inside negative-pressure enclosures.

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2: Hose clamp securing one end of the respirator’s breathing tube to the facepiece.

3: Use a barbed fitting that allows an air-tight connection between the rotameter and the respirator’s breathing tube.

4: Keep a screwdriver handy in case you need to secure the end of the breathing tube with an adjustable clamp.
**Conduct the test:**

4. **Hold or position** the rotameter in an upright position so you can easily read the numbered scale. Locate the pressure-relief valve on the ambient-air pump and loosen the lock nut (using a wrench, if necessary) to make sure the pressure-relief valve is adjustable and open (photo 5).

5. **Turn on** the ambient-air pump and let the system warm up. While you wait, inspect the system to make sure all connections are air-tight (listen for any hissing sound created by small leaks).

6. **Adjust** the pressure-relief valve until the rotameter reading reaches the 6-CFM mark (or a higher air flow mark, if needed).

   - When you get a 6-CFM reading, note the corresponding “psi” reading shown by the air pump’s pressure gauge. **This is the operating pressure (in psi units) needed to achieve the 6 CFM minimum during actual use for the configuration as tested.** You may assume the air flow delivered to the other connected respirator assemblies is the same or higher.

   - If the flow rate remains below 6-CFM (photo 6) after adjusting up to the maximum psi the pump can safely provide, you’ll need to use a different ambient air pump and repeat this procedure; OR, if feasible, make changes to reduce the air-flow demands on the system such as removing one user from the system. Repeat this procedure until you achieve the 6-CFM minimum.

7. **Tag** the pump with the following information (documentation) for easy reference during set up and use of the system later at the job site:

   - A description of the system configuration tested including: brand and model of attached respirators; number, length, and diameter of hoses supplying each respirator; and other components of the system).

   - The operating pressure (in psi units) noted during step “6.” that corresponds to the respirator configuration being described.

   - The name of the person conducting the test and the test date.

8. **Tighten** the lock nut on the ambient-air pump while making sure you don’t inadvertently adjust the psi setting.

   **Notes about additional testing:**

   - If you increase the number of users or hoses on the system, switch to a smaller-diameter hose, add quick disconnects, or make other changes that could increase air-supply demands on the system, repeat this procedure to ensure the modified configuration meets the 6-CFM minimum.

   - As a best practice, periodic testing should be used to verify air flow remains at or above 6 CFM and the ambient air pump’s pressure gauge continues to function reliably.

9. **Disconnect** the rotameter and reconnect the breathing tube to the test facepiece. Using the system, as configured, at the operating pressure documented in Step 7, should provide the required air flow.