that prevents a pull equivalent to drag-
ging the maximum length of the hose
over a concrete floor from exerting pull
upon the respiratory-inlet covering.

(d) Where supplied-air respirators
have a rigid or partly rigid head cov-
ering, a suitable harness shall be re-
quired to assist in holding this cov-
ering in place.

§ 84.152 Breathing tube test; minimum
requirements.

(a)(1) Type A and Type B supplied-air
respirators shall employ one or two
flexible breathing tubes of the
nonkinking type which extend from
the facepiece to a connecting hose cou-
pling attached to the belt or harness.

(2) The breathing tubes employed
shall permit free head movement, in-
sure against closing off by kinking or
by chin or arm pressure, and they shall
not create a pull that will loosen the
facepiece or disturb the wearer.

(b) Breathing tubes employed on
Type C supplied-air respirators of the
continuous flow class shall meet the
minimum requirements set forth in
paragraph (a) of this section, however,
an extension of the connecting hose
may be employed in lieu of the breath-
ing tubes required.

(c)(1) A flexible, nonkinking type
breathing tube shall:

(i) Be employed on Type C supplied-
air respirators of the demand and pres-
sure-demand class; and

(ii) Extend from the facepiece to the
demand or pressure-demand valve, ex-
cept where the valve is attached di-
rectly to the facepiece.

(2) The breathing tube shall permit
free head movement, insure against
closing off by kinking or by chin or
arm pressure, and shall not create a
pull that will loosen the facepiece or
disturb the wearer.

§ 84.153 Airflow resistance test, Type A
and Type AE supplied-air respirators;
minimum requirements.

(a) Airflow resistance will be deter-
mimed when the respirator is com-
pletely assembled with the respiratory-inlet covering, the air-supply device,
and the maximum length of air-supply
hose coiled for one-half its length in
loops 1.5 to 2.1 m. (5 to 7 feet) in diame-
ter.

(b) The inhalation resistance, drawn
at the rate of 85 liters (3 cubic feet) per
minute when the blower is not oper-
ating or under any practical condition
of blower operation shall not exceed
the following amounts:

<table>
<thead>
<tr>
<th>Maximum length of hose for which respirator is approved</th>
<th>Maximum resistance, water column height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feet</td>
<td>Meters</td>
</tr>
<tr>
<td>75</td>
<td>23</td>
</tr>
<tr>
<td>150</td>
<td>46</td>
</tr>
<tr>
<td>250</td>
<td>76</td>
</tr>
<tr>
<td>300</td>
<td>91</td>
</tr>
</tbody>
</table>

(c) The exhalation resistance shall
not exceed 25 mm. (1 inch) of water-
column height at a flow rate of 85 liters (3
cubic feet) per minute when the blower
is not operating or under any practical
condition of blower operation.

§ 84.154 Airflow resistance test; Type B
and Type BE supplied-air respirators;
minimum requirements.

(a) Airflow resistance shall be deter-
mimed when the respirator is com-
pletely assembled with the respiratory-
inlet covering and the hose in the max-
imum length to be considered for ap-
proval, coiled in loops 1.5 to 2.1 m. (5 to
7 feet) in diameter.

(b) Airflow resistance shall not ex-
ceed 38 mm. (1.5 inches) of water-
column height to air drawn at the flow
rate of 85 liters (3 cubic feet) per
minute.

(c) The exhalation resistance shall
not exceed 25 mm. (1 inch) of water-
column height at this flow rate.

§ 84.155 Airflow resistance test; Type C
supplied-air respirator, continuous
flow class and Type CE supplied-air respirator; minimum requirements.

The resistance to air flowing from
the respirator shall not exceed 25 mm.
(1 inch) of water-column height when
the air flow into the respiratory-inlet
covering is 115 liters (4 cubic feet) per
minute.

§ 84.156 Airflow resistance test; Type C
supplied-air respirator, demand
class; minimum requirements.

(a) Inhalation resistance shall not ex-
ceed 50 millimeters (2 inches) of water
at an air flow of 115 liters (4 cubic feet)
per minute.
§ 84.157 Airflow resistance test; Type C supplied-air respirator, pressure-demand class; minimum requirements.

(a) The static pressure in the facepiece shall not exceed 38 mm. (1.5 inches) of water-column height.

(b) The pressure in the facepiece shall not fall below atmospheric at inhalation airflows less than 115 liters (4 cubic feet) per minute.

(c) The exhalation resistance to a flow of air at a rate of 85 liters (3 cubic feet) per minute shall not exceed the static pressure in the facepiece by more than 51 mm. (2 inches) of water-column height.

§ 84.158 Exhalation valve leakage test.

(a) Dry exhalation valves and valve seats will be subjected to a suction of 25 mm. water-column height while in a normal operating position.

(b) Leakage between the valve and valve seat shall not exceed 30 milliliters per minute.

§ 84.159 Man tests for gases and vapors; supplied-air respirators; general performance requirements.

(a) Wearers will enter a chamber containing a gas or vapor as prescribed in §§84.160, 84.161, 84.162, and 84.163.

(b) Each wearer will spend 10 minutes in work to provide observations on freedom of the device from leakage. The freedom and comfort allowed the wearer will also be considered.

(c) Time during the test period will be divided as follows:

1. Five minutes. Walking, turning head, dipping chin; and
2. Five minutes. Pumping air with a tire pump into a 28-liter (1 cubic foot) container, or equivalent work.

(d) No odor of the test gas or vapor shall be detected by the wearer in the air breathed during any such test, and the wearer shall not be subjected to any undue discomfort or encumbrance because of the fit, air delivery, or other features of the respirator during the testing period.

§ 84.160 Man test for gases and vapors; Type A and Type AE respirators; test requirements.

(a) The completely assembled respirator will be worn in a chamber containing 0.1 ±0.025 percent isoamyl acetate vapor, and the blower, the intake of the hose, and not more than 25 percent of the hose length will be located in isoamyl acetate-free air.

(b) The man in the isoamyl acetate atmosphere will draw his inspired air through the hose, connections, and all parts of the air device by means of his lungs alone (blower not operating).

(c) The 10-minute work test will be repeated with the blower in operation at any practical speed up to 50 revolutions of the crank per minute.

§ 84.161 Man test for gases and vapors; Type B and Type BE respirators; test requirements.

(a) The completely assembled respirator will be worn in a chamber containing 0.1 ±0.025 percent isoamyl acetate vapor, and the intake of the hose, and not more than 25 percent of the hose length will be located in isoamyl acetate-free air.

(b) The man in the isoamyl acetate atmosphere will draw his inspired air through the hose and connections by means of his lungs alone.

§ 84.162 Man test for gases and vapors; Type C respirators, continuous-flow class and Type CE supplied-air respirators; test requirements.

(a) The completely assembled respirator will be worn in a chamber containing 0.1 ±0.025 percent isoamyl acetate vapor, the intake of the hose will be connected to a suitable source of respirable air, and not more than 25 percent of the hose length will be located in isoamyl acetate-free air.

(b) The minimum flow of air required to maintain a positive pressure in the respiratory-inlet covering throughout the entire breathing cycle will be supplied to the wearer, provided however, that airflow shall not be less than 115 liters per minute for tight-fitting and not less than 170 liters per minute for loose-fitting respiratory inlet-coverings.