

## QUALITATIVE FIT TEST -- ISOAMYL ACETATE TEST

### Purpose

This procedure should be followed to conduct a qualitative fit test (QLFT) using isoamyl acetate (IAA) as the test agent. Only those persons who have passed the odor detection (attached SOP: "Sensitivity Check") should be fit tested by this method.

### Preparation

Assemble the following items:

- ❑ A fit test chamber (see SOP: "Test Chamber Design").
- ❑ Isoamyl acetate also known as isopentyl acetate technical grade 95% pure or better.
- ❑ A syringe or eyedropper with cc or ml markings.
- ❑ A prepared standard atmosphere of 1-2 ppm IAA to test odor sensitivity (see SOP: "Sensitivity Check").
- ❑ A test area with good ventilation separate from areas where the IAA sensitivity test and mask selection are done.
- ❑ Appropriate respirators outfitted with organic vapor cartridges. These cartridges are color coded black and should be changed at least weekly.
- ❑ A paper towel or other porous absorbent single-ply material cut approximately 4" X 5" and folded in half.
- ❑ Make a copy of the test exercises and the rainbow passages to be hung inside the test chamber (see Standard Operating Procedure 7). Respirator should be cleaned between test subjects.

### Procedure

1. Before beginning this test, be sure that the test subject has completed the IAA sensitivity test (see SOP: "Sensitivity Check") and the face piece selection process (see SOP: "Selection of a Respirator for Comfort").
2. Check test facilities. It is important to minimize the test subject's exposure to IAA to prevent his/her olfactory sense from fatiguing. The odor test, selection, and donning of the mask should occur in one room. The test chamber should be located in another room or should be in such a well-ventilated area that general room contamination is prevented.
3. Before the subject is taken to the IAA test chamber, check the respirator to be certain that it has organic vapor cartridges.
4. Direct the subject to don the respirator, adjust the strap, and seat the mask by moving the head from side to side and up-and-down and by taking a few deep breaths.
5. Conduct a positive and negative pressure test.
6. Direct the subject, with the respirator on, into fit test chamber.
7. After the subject has entered the test chamber, use the calibrated syringe or eye dropper to apply ½ cc of full strength IAA onto an absorbent paper towel that has been folded in half.  
NOTE: Studies show that the following amounts of IAA applied to a 4 " x 5" paper towel generate various concentrations in the fit test chamber.

#### IAA CONCENTRATION

IAA (ml)	IAA (ppm)	DURATION
½	150	1 test
1	200	1 test
5	220	½ hour
10	290	1 hour

8. Hand the towel to the subject and instruct the subject to clip the folded, saturated towel to the binder clip or to hang it from the hook in the center of the test chamber ceiling.
9. Allow 2 minutes for the IAA test concentration to be reached before starting the fit test exercises. This would be an appropriate time to talk with the test subject to explain the fit test, the importance of his/her cooperation, and the purpose of the test exercises or to demonstrate some of the exercises.
10. If at any time during the test the subject detects the banana-like odor of IAA, to avoid olfactory fatigue, he/she should quickly exit the test chamber.
11. Upon returning to the selection room, the subject should remove the respirator, repeat the odor sensitivity test, select, and put on another respirator, return to the test chamber, etc. The process continues until the respirator that fits well has been found.
12. If a respirator fails during the odor sensitivity test, the subject should wait about 5 minutes before retesting. Odor sensitivity will usually have returned by this time.
13. When a respirator passes the test, its efficiency can be impressed by having subjects break the face seal and take a breath before they exit the chamber.