

## **REUSABLE RESPIRATOR FIT-TESTING**

February 1, 1999

### **OBJECTIVE**

To provide a step by step guide for quantitative fit testing.

### **DISCUSSION**

Only personnel trained by the ES&H Section may perform quantitative fit testing.

### **EQUIPMENT**

- TSI Portacount Plus
- Quantitative Respirator Fitting Test Record Form (IH FORM #4)
- Probed Respirator or Cartridge Adapters with HEPA Filters  
(Inspect Before Use)

### **PROCEDURE**

1. The Portacount is stored in a locked cabinet in the ES&H Section. Call to check availability.
2. Preparation
  - a. Add alcohol wick to the machine. The alcohol level in the storage container should be at or above the line. If it is not, add manufacturer's supplied alcohol and let the wick soak for a few minutes.
  - b. Attach the PORTACOUNT to an outlet and turn it on. Let a 60-second warm-up cycle elapse.
  - c. Check the number of exercises set by momentarily pressing the NO. OF EXER. key. If the number of exercises is not 8, press hold the NO. OF EXER, key. Release the key as soon as the number 8 appears on the display.
  - d. Check the fit factor pass level by momentarily pressing the PASS LEVEL key. For half mask respirators the pass level is 100. For full-face respirators the pass level is 500. If the setting is incorrect, press the PASS LEVEL key until the desired number appears.
3. Zero Check
  - a. A zero check should be done each time the PORTACOUNT is turned on.

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- b. Put the PORTACOUNT into Count Mode by pressing the COUNT key.
  - c. Make sure that there is a reasonable ambient particle concentration. This will be a value between 3000 and 50,000.
  - d. Attach the HEPA filter (note direction of arrows) to the Sample Tube (Clear tubing), and observe the particle concentration on the display. It should drop to zero (0.00) in less than 30 seconds. An occasional value of 0.60 or 1.20 is acceptable. If the PORTACOUNT will not zero, consult the ES&H Section. If the unit passes, check the appropriate section of the fit test record form.
4. Maximum Fit Factor Check
- a. A maximum fit factor check should be done each time the PORTACOUNT is turned on.
  - b. Put the PORTACOUNT in Fit Test Mode by pressing the Fit Test Key. Wait 30 seconds.
  - c. Assure the HEPA filter is attached to the Sample Tube.
  - d. Initiate a fit test by pressing the TEST START/STOP key.
  - e. At the completion of 1 test cycle (exercise), a fit factor of at least 50,000 should be displayed. If the fit factor is below this number, allow the test to continue for another cycle. If the fit factor remains low, consult the ES&H Section.
  - f. Press the TEST START/STOP key to end the test. Remove the HEPA filter.
5. Conducting the Fit Test

NOTE: Do not allow an individual to smoke within 30 minutes of the fit test.

- a. Instruct the person to be tested to don the respirator. Make sure he/she does a positive and negative pressure fit test.
- b. Attach the clear Sample Tube to the respirator.
- c. Press the TEST START/STOP key to start the fit test and instruct the individual to begin the first exercise. Have the individual begin the next exercise each time you hear the PORTACOUNT "beep". Each exercise is 80 seconds in duration, with the exception of the Grimace that lasts 35 seconds. Record the fit factor for each test.

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- d. The exercises are as follows:
    - Normal Breathing
    - Deep Breathing
    - Head Side to Side
    - Head Up and Down
    - Talk Out Loud (read the "Rainbow Passage", copy attached)
    - Grimace
    - Touch Toes
    - Normal Breathing
  - e. Record the overall fit factor. The PASS or FAIL message will indicate whether or not the test was successful. If the test was a PASS, the fit test is over.
  - f. Remove the alcohol wick
  - g. Store the PORTACOUNT with the HEPA filter in the sample line to prevent debris from being drawn into the instrument.
6. Sample Recording Procedures
- a. Complete the fit test form and forward the to the ES&H Section for inclusion into the database.
  - b. Have employee sign the fit test record.
7. ES&H Section Database Entry
- a. Enter results into Oracle database (TRAIN).
  - b. Fit test paperwork is filed in folder marked "Respirator Fit Test 19XX, 20XX, etc".

## QUANTITATIVE RESPIRATOR FIT-TESTING RECORD

**IDENTIFICATION**

SUBJECT \_\_\_\_\_ ID \_\_\_\_\_

DATE \_\_\_\_\_ DIV/SEC \_\_\_\_\_

MEDICAL APPROVAL \_\_\_\_\_

TRAINING DATE \_\_\_\_\_

**RESPIRATOR**

GENERAL TYPE \_\_\_\_\_

MAKE \_\_\_\_\_ MODEL \_\_\_\_\_ SIZE \_\_\_\_\_

CARTRIDGES ISSUED \_\_\_\_\_

**SET UP**

TEST OPERATOR \_\_\_\_\_

ZERO CHECK \_\_\_\_\_

MAX. FF CHECK \_\_\_\_\_

**TEST RESULTS**

PARAMETER	RESULTS (Protection Factor)
OVERALL PROTECTION FACTOR NEEDED	
NORMAL BREATHING - INITIAL	
DEEP BREATHING	
TURNING HEAD FROM SIDE TO SIDE	
MOVING HEAD UP AND DOWN	
TALK LOUDLY (RAINBOW PASSAGE)	
GRIMACE *	
TOUCH TOES	
NORMAL BREATHING FINAL	
<b>OVERALL PROTECTION FACTOR</b>	

Passed: YES \_\_\_\_\_ NO \_\_\_\_\_

**COMMENTS:** (Note why respirator issued, frequency of use, degree of exertion needed, and other information needed to evaluate situation)


**TEST CONDUCTED USING TSI PORTACOUNT PLUS (S/N 16608) CAL. DUE: January 2000**

**I certify that I have been trained in the use of respirators, I have been given a medical approval, and that I have been quantitatively fit tested \_\_\_\_\_ (EMPLOYEE SIGNATURE)**

\* Not included in the overall protection factor

## **THE RAINBOW PASSAGE**

**WHEN THE SUNLIGHT STRIKES RAINDROPS IN THE AIR, THEY ACT LIKE A PRISM AND FORM A RAINBOW. THE RAINBOW IS A DIVISION OF WHITE LIGHT INTO MANY BEAUTIFUL COLORS. THESE TAKE THE SHAPE OF A LONG ROUND ARCH, WITH ITS PATH HIGH ABOVE, AND ITS TWO ENDS APPARENTLY BEYOND THE HORIZON. THERE IS, ACCORDING TO LEGEND, A BOILING POT OF GOLD AT ONE END. PEOPLE LOOK, BUT NO ONE EVER FINDS IT. WHEN A MAN LOOKS FOR SOMETHING BEYOND HIS REACH, HIS FRIENDS SAY HE IS LOOKING FOR THE POT OF GOLD AT THE END OF THE RAINBOW.**