



## **Respiratory Protection Program**

Manual originated 08/1999  
Updated 5/2016

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# TABLE OF CONTENTS

- I. [PURPOSE](#)
- II. [RESPONSIBILITIES](#)
- III. [GENERAL RESPIRATORY INFORMATION](#)
- IV. [MEDICAL EVALUATIONS](#)
- V. [SELECTION AND USE OF RESPIRATOR](#)
- VI. [RESPIRATOR INSPECTION AND MAINTENANCE](#)
- VII. [FIT TESTING](#)
- VIII. [TRAINING](#)
- IX. [WEARING OF RESPIRATOR](#)
- X. [RECORDKEEPING](#)
- XI. [ATTACHMENTS](#)

[Attachment #1 – Respirator medical Evaluation Questionnaire](#)

[Attachment #2 – Respirator Cleaning Procedures](#)

[Attachment #3 – User Seal Check Procedures for Respirators](#)

[Attachment #4 – Information for Employees Who Voluntarily Use Respirators](#)

[Attachment #5 – Training Record Form](#)

## **I. Purpose**

The purpose of this plan is to establish a program and procedures for wearing respiratory protection at the University of Northern Iowa.

This Program supports compliance with the Occupational Safety and Health Administration Respiratory Protection Standard, as found in 29 CFR 1910.134. This program applies to all Physical Plant and Power Plant employees who work in areas in which the potential exposure to airborne contaminants requires the use of respirators. Certain parts of this program may also apply to all University employees who use respirators voluntarily in the work place.

## **II. Responsibilities**

***Program Administrator: Environmental Safety Specialist***

This person is responsible for:

- Issuing, updating and administering a written respiratory program and making sure it satisfies all applicable federal, state and local respiratory protection requirements.
- Providing or making arrangements for initial and annual training to employees on respiratory protection.
- Coordinating annual medical evaluations and forwarding any associated medical records to HRS.
- Performing or making arrangements for the initial, annual and special fit testing of respiratory equipment.
- Maintaining records for fit test, physical exams, and training for all Physical Plant and Power Plant employees included in the Respiratory Protection Program.
- Conducting or making arrangements for hazard assessments when respiratory hazards may be present.
- Assisting the University Safety Officer in the annual review of the Respiratory Protection Program to ensure its continued effectiveness.
- Collecting, evaluating and acting on appropriate recommendations made by respirator users.
- Assuring that all equipment purchases are NIOSH approved.
- Conduct annual inspections and evaluations to determine continued effectiveness of the respiratory protection program.

***Managers and Supervisors whose staff are required to wear respiratory protection: Power Plant Manager, Power Plant Maintenance Manager,***

**O&M Managers, Area Maintenance Supervisor, and EH&S Safety Manager.**

These people are responsible for:

- Knowing the hazards in their areas that require respiratory protection.
- Knowing the types of respirators that need to be used are readily available and fit properly and comfortably
- Ensure employees under their supervision, using respirators, have received appropriate training, fit testing and annual medical evaluations.
- Enforcing the wearing of respiratory protection in areas where it's required.
- Ensure respirators are properly cleaned, maintained and stored according to the respiratory protection program.
- Making sure employees are knowledgeable about the respiratory equipment for areas in which they work.
- Providing training on hazardous chemicals to new employees.
- Collecting feedback on respiratory use by employees

**Employees who are required to wear respiratory protection: Facilities Mechanic II and III, Material Handling Operators, Area Mechanics assigned to water treatments at the pools and specific air filter cleaning, Painters and Environmental Safety Specialist.**

These people are responsible for:

- Scheduling initial and annual respiratory physical.
- Attending initial and annual respiratory training and fit testing.
- Wearing appropriate respiratory protection.
- Maintaining their respiratory protection equipment properly and keeping it in a clean and operable condition.
- Replacing respirator cartridges before each use.
- Providing feedback about respirator use to the Program Administrator through Managers and Supervisors.
- Informing the Program Administrator of personal changes that may affect their use of respirators.

### **III. General Respiratory Information**

- The potential for respiratory hazards will be assessed within the Physical Plant, Power Plant and facilities where Physical Plant and Power Plant employees work and appropriate respiratory protection will be provided for all affected employees.

- Employees will be required to wear respiratory protection whenever and wherever respiratory hazards exist.
- Respiratory protection will be stored in each individual employee's locker or approved container.
- Respiratory protection will be issued only through the Environmental Health and Safety Office.
- Efforts will be made to minimize the use of hazardous chemicals in the workplace.

#### **IV. Medical Evaluations**

- Prior to being fit tested for a respirator, each employee will complete a medical questionnaire similar to the one shown in Attachment #1 and have a medical evaluation to assess his or her ability to wear a respirator.
- Annual medical evaluations will be conducted for all University employees who wear respirators.
- Medical evaluation may include a physical exam under certain conditions.
- Medical evaluations are provided through the currently contracted Occupational Health Services provider.

##### ***Additional Medical Evaluations will be required if:***

1. An employee reports medical signs or symptoms that are related to use of a respirator.
2. A physician or other licensed health care professional, supervisor or the respirator program administrator believes the employee needs to be reevaluated.
3. Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation.
4. A change occurs in workplace conditions (e.g. physical work effort, protective clothing, and temperature) that may result in a substantial increase in the physiological burden placed on an employee.

#### **V. Selection and Use of Respirators**

- Respirators will be selected according to the types of activities for which they will be used and the types of potential air contaminants associated with the activities.
- Only NIOSH-approved respirators will be used. Half-face respirators are being purchased through Zee Medical . Full face respirators are purchased directly from MSA. Their certified industrial hygienist reviews the hazard analysis and recommends appropriate respiratory protection.

- All respiratory protection equipment will be used in accordance with its manufacturer's recommendations.
- Each respirator will be used and maintained exclusively by one employee.
- The service life of each respirator facepiece will be based on manufacturer's recommendation.

## **VI. Respirator Inspection and Maintenance**

- Each respirator will be inspected by its wearer before each use.
- Any respirator found to be defective will be turned into the employee's manager or supervisor for replacement.
- The user will perform the proper seal check prior to each use.
- Unit managers and supervisors where respirators are used will verify that appropriate respiratory protection is being used, inspected and maintained.
- Respirators are to be cleaned, disinfected and maintained in a sanitary condition following the manufacturer's recommendation. (See Attachment #2 for Respirator Cleaning Procedures.)
- Each respirator will be inspected annually during the annual fit testing.

## **VII. Fit Testing**

- Each user of a respirator with a negative or positive pressure, tight-fitting face piece will be fit tested to ensure a proper face piece-to-face seal.
- Fit testing will be conducted annually or more often, as necessary. Fit testing is contracted through Zee Medical and follows their documented protocol.
- Any employee who has facial hair or has a condition interferes with the face piece-to-face seal or valve function will not be allowed to wear a respirator.
- Employees will be fit tested with the make, model, and size of a respirator they will actually wear. Employees will be provided with several models and sizes of respirators so they may find an optimal fit. Fit testing of respirators is to be conducted in the negative pressure mode.
- The Program Administrator will conduct fit tests following the OSHA approved Biltrex Solution Aerosol QLFT Protocol in Appendix B (B4) of the Respiratory Protection standard. The Program Administrator has determined that QNFT is not required for the respirators used under current conditions. If conditions affecting respirator use change, the Program Administrator will evaluate on a case-by-case basis whether QNFT is required.

## **VIII. Training**

- All employees who are required to wear respirators will receive training in their appropriate use, selection and maintenance.
- Training will be repeated annually or more often, as needed (e.g.) if the employee changes departments and needs to use a different type of respirator)
- Training will provide an opportunity for each employee to handle the respirator, have it fitted properly, test the face piece-to-face seal, wear it in normal air and wear it in a test atmosphere.
- Training will include methods for cleaning, replacement of filters, and proper storage procedures.
- Training is contracted through Zee Medical and is conducted in conjunction with the fit test.

## **IX. Wearing Respirators**

### *Wearing Respirators in Normal Situations*

- Any PPE, corrective glasses or goggles must be worn in a manner that will not interfere with the seal of the face piece-to-face seal.
- Respirators must not be removed in a hazardous environment.
- Respirator and cartridges are limited to identifiable hazards and cannot be worn in any other atmosphere.
- Procedures for donning respirator include:
  1. Make sure the straps are not too tight or too loose.
  2. Check to see that the buckles are connected properly.
  3. Make sure the valves are in place and working properly.
  4. Attach the bottom strap first.
  5. Fit the respirator snugly from the chin upward.
  6. Attach the top strap and wear it high on the head for a better seal.
  7. Make sure nothing interferes with the seal of the face piece-to-face seal.
  8. Make sure the respirator provides a tight seal with no leaks. (Negative pressure fit check is performed by covering the cartridges with the palms of your hands while you try to inhale. Nose cup will pull against your face. If leaks are detected, try adjusting straps. If leaks continue, contact your manager or supervisor. Positive pressure fit check is performed by placing a hand over the exhaust valve and exhaling. If leaks are detected, assure you are not forcing the nose cup to lift from your face. If leaks continue, contact your manager or supervisor – See Attachment #3 for further information on seal check procedures.)

- Leave the hazardous environment immediately if you smell or taste the contaminant, if breathing becomes difficult, or if you become dizzy or nauseated.
- Replace cartridge. change out schedule
  1. Full face respirator cartridges should be changed out every 6 to 8 hours
  2. Half face respirator cartridges should be changed out prior to each use.
- After each use, clean and sanitize respirator.
- Store respirator in a plastic ziplock bag in a locker or approved container. Respirators are to be stored away from direct sunlight, extreme heat or cold, excessive moisture and away from damaging chemicals and other contaminants.
- Full face cartridges should be dated after being removed from the package. If the cartridge has not been changed out within 1 year of that date, it must be changed out on the 1 year anniversary of being removed from the package.
- Always check the expiration date of the respirator cartridges. Expired cartridges should be disposed of immediately.

### ***Wearing Respirators in Emergency Situations***

- No Physical or Power Plant employee is trained or authorized to use a respirator in an emergency situation.

### ***Wearing Respirators Voluntarily***

- All employees who voluntarily use respiratory protection equipment will be provided with information regarding its safe use. (See Attachment #4 – Information for Employees Who Voluntarily Use Respirators.)

## **X. Recordkeeping**

- Records for respirator selection, fit testing and training will be kept in the Environmental Health and Safety Office. (See Attachments #5 for example of recordkeeping form.)
- Medical evaluations are confidential records forwarded by Arrowhead Occupational Health Services. Medical records are kept at HRS.

## **XI. Attachments**

1. Respirator Medical Evaluation Questionnaire.
2. Respirator Cleaning Procedures.

3. User Seal Check Procedures for Respirators.
4. Information for Employees Who Voluntarily Use Respirators.
5. Training Record Form.

# Attachment #1

## RESPIRATOR MEDICAL Evaluation Questionnaire Part A

**To the employer:**\_\_\_\_\_ Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

**To the employee:**\_\_\_\_\_ Your employee must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to your. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you not to deliver or send this questionnaire to the healthcare professional who will review it.

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### Part A. Section 1. (Mandatory)

The following information must be provided by every employee who has been selected to use any type of respirator. (please print)

1. Today's Date \_\_\_\_\_
2. Your Name \_\_\_\_\_
3. Your age (to nearest year): \_\_\_\_\_
4. Sex:  Male  Female
5. Your height: \_\_\_\_\_ ft. \_\_\_\_\_ in.
6. Your weight: \_\_\_\_\_ lbs.
7. Your job title: \_\_\_\_\_ Job title not in list: \_\_\_\_\_
8. A phone number where you can be reached by the healthcare professional who reviews this questionnaire (include Area Code): \_\_\_\_\_
9. The best time to phone you at this number: \_\_\_\_\_
10. Has your employer told you how to contact the health care professional who will review the questionnaire?  Yes  No
11. Check the type of respirator you will use (you can check more than one category):
  - a.  N, R, P disposable respirator (filter-mask, non-cartridge type only).
  - b.  Other type (for example, half- or full-face piece type, powered-air purifying, supplied-air, self-contained breathing apparatus).
12. Have you worn a respirator?  Yes  No  
If \_\_\_\_\_ "yes" what  
type(s): \_\_\_\_\_

**Part A. Section 2. (Mandatory)**

Questions 1 through 9 below must be answered by every employee who  
Has been selected to use any type of respirator

Yes                  No

1. Do you *currently* smoke tobacco, or have you smoked tobacco in the last month?                                   

2. Have you *ever had* any of the following conditions?                                   

- a. Seizures (fits):
- b. Diabetes (sugar disease):
- c. Allergic reactions that interfere with your breathing                                     :
- d. Claustrophobia (fear of close-in places):
- e. Trouble smelling odors:

3. Have you *ever had* any of the following pulmonary or lung problems)                                   

- a. Asbestosis:
- b. Asthma
- c. Chronic bronchitis:
- d. Emphysema:
- e. Pneumonia:
- f. Tuberculosis
- g. Silcosis:
- h. Pneumothorax (collapsed lung):
- i. Lung cancer:
- j. Broken ribs:
- k. Any chest injuries or surgeries:
- l. Any other lung problem that you've been told about:

4. Do you *currently* have any of the following symptoms of puulmonary or lung illness?                                   

- a. Shortness of breath:
- b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline:
- c. Shortness of breath when walking with other people at an ordinary pace or level ground:
- d. Have to stop for breath when walking at your own pace on level ground:
- e. Shortness of breath when washing or dressing yourself:
- f. Shortness of breath that interferes with your job:
- g. Coughing that produces phlegm (thick sputum):
- h. Coughing that wakes you early in the morning:
- i. Coughing that occurs mostly when you are lying down:
- j. Coughing up blood in the last month:
- k. Wheezing:
- l. Wheezing that interferes with your job:
- m. Chest pain when you breath deeply:

n. Any other symptoms that you think may be related to lung problems:

**Part A. Section 2. (Mandatory) (Continued)**

Yes No

5. Have you *ever had* any of the following cardiovascular or heart problems?

- |   |   |                          |                          |
|---|---|--------------------------|--------------------------|
| a. Heart attack   | : | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Stroke:  |   | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Angina:  |   | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Heart failure:   |   | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Swelling in your legs or feet (not caused by walking): |   | <input type="checkbox"/> | <input type="checkbox"/> |
| f. Heart arrhythmia (heart beating irregularly):          |   | <input type="checkbox"/> | <input type="checkbox"/> |
| g. High blood pressure:                                   |   | <input type="checkbox"/> | <input type="checkbox"/> |
| h. Any other heart problem that you've been told about:   |   | <input type="checkbox"/> | <input type="checkbox"/> |

6. Have ever had any of the following cardiovascular or heart problems?

- |   |  |                          |                          |
|---|--|--------------------------|--------------------------|
| a. Frequent pain or tightness in your chest:  |  | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Pain or tightness in your chest during physical activity:                          |  | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Pain or tightness in your chest that interferes with your job:                     |  | <input type="checkbox"/> | <input type="checkbox"/> |
| d. In the past two years, have you noticed your heart skipping or missing a beat:     |  | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Heartburn or indigestion that is not related to eating:                            |  | <input type="checkbox"/> | <input type="checkbox"/> |
| f. Any other symptoms that you think may be related to heart or circulation problems: |  | <input type="checkbox"/> | <input type="checkbox"/> |

7. Do you *currently* take medication for any of the following problems?

- |                                |  |                          |                          |
|--------------------------------|--|--------------------------|--------------------------|
| a. Breathing or lung problems: |  | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Heart trouble:              |  | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Blood pressure:             |  | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Seizures (fits):            |  | <input type="checkbox"/> | <input type="checkbox"/> |

8. If you've use a respirator, have you *ever had* any of the following problems?

- |   |  |                          |                          |
|---|--|--------------------------|--------------------------|
| a. Eye irritation:  |  | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Skin allergies or rashes:  |  | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Anxiety:   |  | <input type="checkbox"/> | <input type="checkbox"/> |
| d. General weakness or fatigue:                                     |  | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Any other problem that interferes with your use of a respirator: |  | <input type="checkbox"/> | <input type="checkbox"/> |

9. Would you like to talk to the healthcare professional who will review this questionnaire about your answers to this questionnaire?

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-face piece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected use other types of respirators, answering these questions is voluntary.

	Yes	No
10. Have you ever lost vision in either eye (temporarily or permanently)?	<input type="checkbox"/>	<input type="checkbox"/>
11. Do you currently have any of the following vision problems:		
a. Wear contact lenses:	<input type="checkbox"/>	<input type="checkbox"/>
b. Wear glasses:	<input type="checkbox"/>	<input type="checkbox"/>
c. Color blind:	<input type="checkbox"/>	<input type="checkbox"/>
d. Any other eye or vision problem:	<input type="checkbox"/>	<input type="checkbox"/>
12. Have you ever had an injury to your ears, including a broken ear drum?	<input type="checkbox"/>	<input type="checkbox"/>
13. Do you currently have any of the following hearing problems?		
a. Difficulty hearing:	<input type="checkbox"/>	<input type="checkbox"/>
b. Wearing a hearing aid:	<input type="checkbox"/>	<input type="checkbox"/>
c. Any other hearing or ear problem:	<input type="checkbox"/>	<input type="checkbox"/>
14. Have you <i>ever had</i> a back injury?	<input type="checkbox"/>	<input type="checkbox"/>
15. Do you currently have any of the following musculoskeletal problems?		
a. Weakness in any of your arms, hands legs, or feet:	<input type="checkbox"/>	<input type="checkbox"/>
b. Back pain:	<input type="checkbox"/>	<input type="checkbox"/>
c. Difficulty fully moving your arms and legs:	<input type="checkbox"/>	<input type="checkbox"/>
d. Pain or stiffness when you lean forward or backward at the waist:	<input type="checkbox"/>	<input type="checkbox"/>
e. Difficulty fully moving your head up or down:	<input type="checkbox"/>	<input type="checkbox"/>
f. Difficulty fully moving your head side to side:	<input type="checkbox"/>	<input type="checkbox"/>
g. Difficulty bending at your knees:	<input type="checkbox"/>	<input type="checkbox"/>
h. Difficulty squatting to the ground:	<input type="checkbox"/>	<input type="checkbox"/>
i. Climbing a flight of stairs or a ladder carrying more than 25 lbs.	<input type="checkbox"/>	<input type="checkbox"/>
j. Any other muscle or skeletal problem that interferes with using a respirator:	<input type="checkbox"/>	<input type="checkbox"/>

Examiners Comments:

## Attachment #2

### Respirator Cleaning Procedures

These procedures are provided for employer use when cleaning respirators. They are general in nature, and the employer, as an alternative, may use the cleaning recommendations provided by the manufacturer of the respirators used by their employees provided such procedures are as effective as those listed here in Appendix B-2. Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth in Appendix B-2, i.e. must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.

#### I. Procedures for Cleaning Respirators.

- A. Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
- B. Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
- C. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.
- D. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
  1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg C (110 deg F); or,
  2. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg C (110 deg F); or,
  3. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
- E. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain. The importance of rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
- F. Components should be hand-dried with a clean lint-free cloth or air-dried.

G. Reassemble facepiece, replacing filters, cartridges and canisters where necessary.

H. Test the respirator to ensure that all components work properly.

## Attachment #3

### User Seal Check Procedures for Respirators

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the positive and negative pressure checks listed in this appendix, or the respirator manufacturer's user seal check method shall be used. User seal checks are not a substitute for qualitative or quantitative fit tests.

#### I. Facepiece Positive and/or Negative Pressure Tests

- A. *Positive pressure check.* Close of the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing of the exhalation valve and then carefully replacing it after the test.
- B. *Negative pressure check.* Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and inward leakage of air is detected, the tightness of the respirator is considered adequate.

#### II. Manufacturer's Recommended User Seal Check

The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

## **Attachment #4**

### **Information for Employees Who Voluntarily Use Respirators**

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure

Limit, to provide an additional of comfort and protection for the workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for you voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.



Annual training				
Annual training				