



UNIVERSITY *of* NEW HAMPSHIRE

Respiratory Protection Program

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Respiratory Protection Program

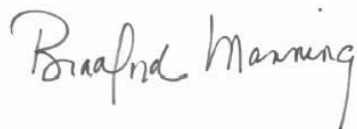
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I: INTRODUCTION

Individuals at the University of New Hampshire (UNH) are entitled to a working and learning environment free of unsafe and unhealthy conditions. This goal, as it pertains to respiratory health, is best attained through engineering controls - modifying the source in order to reduce the amount of contaminants to which an individual is exposed. Often these types of controls are either insufficient or not feasible. It is in these situations, in accordance with the State of New Hampshire Occupational Health & Safety Standards, that respirators are required.

Respirators act as a barrier, preventing contaminant dusts, fumes, mists, smokes, gases, and vapors from entering the body via the respiratory system. A respirator will only be effective, however, if used with a comprehensive respiratory program that includes guidance on proper selection, use, and maintenance. The purpose of the UNH Respiratory Protection Program is to provide this guidance and define responsibilities for the timely issue, testing, maintenance, and administration of fitted respirators.

A handwritten signature in black ink that reads "Bradford Manning". The signature is written in a cursive style with a large initial 'B'.

Bradford Manning

Director of Environmental Health & Safety

II: RESPONSIBILITIES

A. Office of Environmental Health and Safety

1. Designates the Occupational Health and Safety Coordinator (OHSC) as the *Program Administrator* to oversee the campus Respiratory Protection Program.
2. Evaluates and approves all respiratory protection equipment before the purchase and issuance to individuals. UNH will provide respirators that are approved by the National Institute of Occupational Safety and Health (NIOSH) and Mine Safety and Health Administration (MSHA).
3. Evaluates the nature and extent of any potential respiratory hazard to determine whether the nature of the hazard is that of oxygen deficiency or contaminated air.
4. Determines, under certain circumstances, when respirators must be worn.
5. Oversees issue of respiratory equipment. Insures appropriate respirator selection for the expected hazard.
6. Evaluates and maintains records of training in respirator use and wear. May conduct training if needed.
7. Assists department heads with respiratory protection issues as needed.
8. Conducts formal inspections of respirator use, maintenance, and storage.
9. Provides Respirator Medical Evaluation Questionnaire to individuals needing a respirator prior to issue.
10. Conducts preliminary screening of the Respirator Medical Evaluation Questionnaire and follow up processing by Occupational Health Physician.

**B. DEPARTMENTAL RESPIRATORY PROTECTION CONTACT
(Where appropriate)**

1. Coordinates respirator fitting between Environmental Health and Safety (EH&S) and individual.
2. Coordinates routine maintenance of respirators. Ensures that individuals periodically clean respirators, replace deteriorated parts, change filters and cartridges, use proper fit test techniques before respirator use, and maintain an adequate supply of replacement parts.
 - A. Coordinates availability of necessary respirators and cartridges with EH&S.
 - B. Issues respirator fact sheet concurrently with respirator.
 - C. Conducts initial and refresher training as needed.

C. INDIVIDUAL'S SUPERVISOR

1. Ensures all individuals have proper protection before entering a hazardous environment. EH&S will provide assistance in selecting a respirator when necessary.
2. Provides adequate storage facilities for respirators.

D. INDIVIDUAL

1. Visually inspects respirator before wearing and exchanges it if damaged. Performs proper fit test techniques before and during use.
2. Cleans respirator after use. Replaces cartridges when contaminant can be detected through the filter or breathing becomes difficult due to a clogged filter.
3. Insures a tight seal on mask by maintaining a clean-shaven appearance any morning that respirator is used. Mustaches are acceptable if fit test is successful.
4. Reports potentially hazardous environments to supervisor.

III: PROCEDURES

Two types of hazards require respiratory protection - oxygen deficiency and contaminated atmospheres. Oxygen deficient atmospheres have an oxygen concentration that are less than 19.5%. Contaminated atmospheres contain toxic gases, vapors, or particles at harmful levels.

Oxygen deficiency

A self-contained breathing apparatus (SCBA) will be authorized for those individuals who must work in an oxygen-deficient atmosphere. A high level of contamination above 50 times the Threshold Limit Value (TLV) also requires the use of a SCBA. A hazard assessment will be conducted by the OHSC to justify the use of a SCBA. For more information on the proper use and maintenance of a SCBA contact EH&S at 862-4041.

Air contaminants

The most common use of respirators at UNH involves protection against airborne contaminants. If the contaminant is a particulate, a filter cartridge respirator may be used. If the contaminant is a vapor or gas, an air purifying chemical cartridge respirator may be used. The cartridges contain absorbent materials, which remove contaminants from the air. These materials are chosen based on the chemical properties of the substance. The OHSC has the option of recommending other types of respirators based on current circumstances (concentration of contaminant, etc.). For situations where an individual must work in a contaminated environment, the OHSC will conduct an initial hazard assessment of the work area and then use the respirator selection logic sequence to determine the most practical respirator.

A. HAZARD DETERMINATION

The OHSC will determine the hazards of the contaminant. One property to consider is whether the contaminant is in a gaseous or vapor state or whether it is an airborne particulate. Other important information evaluated by OHSC include:

- ◆ Physical property of contaminant
- ◆ Odor threshold data
- ◆ NIOSH recommended exposure limit (REL) or OSHA permissible exposure limit (PEL)
- ◆ Immediately dangerous to life or health (IDLH) zone
- ◆ Odor warning potential
- ◆ Eye irritating pollutants
- ◆ Service life of appropriate cartridge

The OHSC shall consider all recognized hazards before selecting a respirator including exposure limits. Other important considerations include:

- ◆ Job task
- ◆ Frequency and duration of use
- ◆ Location
- ◆ Ventilation
- ◆ Physical exertion
- ◆ Special considerations of the individual

Once the OHSC has determined and assessed all hazards, a respirator will be selected using the respirator decision logic sequence. All respirators, face pieces, and cartridges shall have a NIOSH/MSHA certification of approval.

Cartridge air purifying respirators will **not** be worn at UNH under the following conditions:

- ◆ Unknown atmosphere or contaminant
- ◆ Atmospheres which contain less than 19.5% oxygen
- ◆ Contaminants which have poor warning properties (no odor, etc.)
- ◆ Chemical odor detected when respirator is worn
- ◆ Individual has facial hair which impedes respirator seal
- ◆ Condition requires particle filter respirator
- ◆ Fire fighting

If the contamination is particulate in nature (dusts, radionuclides, fumes, mists), the OHSC will recommend a respirator equipped with a filter medium capable of trapping the particles within the filter, following the matrix detailed in Appendix C, Flowchart for Selecting Part 84 Particulate Filters. Respirator and filter selection will be based on concentration, type, toxicity, and size of particulate. Filter life depends on the penetration of particle in the air. Filters should be replaced when the individual has a detectable resistance to breathing.

Particle filter respirators will **not** be worn under the following conditions:

- ◆ Unknown atmosphere or contaminant
- ◆ Atmospheres which contain less than 19.5% oxygen
- ◆ Contaminant detected when respirator is worn
- ◆ Individual has facial hair which impedes the respirator seal
- ◆ Individual notices increased resistance to inhaling while wearing respirator
- ◆ Respirator filter is not designed for the contaminant present
- ◆ Condition requires cartridge-type air purifying respirator
- ◆ Fire fighting

A self-contained breathing apparatus (SCBA) is defined as an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user. The SCBA shall be used in the following situations:

- ◆ Atmospheres that are immediately dangerous to life or health (IDLH)
- ◆ Unknown atmospheres or contaminants
- ◆ Emergencies

If the air contaminant concentration is less than 10 times the Threshold Limit Value (TLV) established by NIOSH, then a half-face respirator with the appropriate absorbent cartridge is sufficient. If the contaminant concentration is between 10 and 50 times the TLV, a full-face respirator shall be used. The OHSC will authorize a full-face respirator only when a hazard assessment has verified the need for one. Any contaminant concentration above 50 times the TLV requires a SCBA or other air supplied unit.

B. MEDICAL EVALUATION

Respirators can impose physiological stresses including restriction of breathing. For this reason, a medical evaluation will determine whether a medical condition would preclude the use of a respirator. All individuals must be medically cleared before wearing a respirator in a contaminated environment. Individuals that experience claustrophobia or shortness of breath during respirator use must notify their supervisor. Any accidental exposure to a contaminant while wearing a respirator must be reported to the supervisor followed by prompt medical attention.

Before respirator issue, each individual must complete the Respirator Medical Evaluation Questionnaire (Appendix A) and have a medical evaluation performed by a Physician or other Licensed Health Care Professional (PLHCP). A follow-up medical evaluation will be conducted if an individual gives a positive response to any of questions one (1) through eight (8) of the medical questionnaire. Follow-up medical evaluations will be conducted under the following conditions:

1. A change occurs in workplace conditions that may result in a substantial increase in the physiological burden placed on an individual.
2. An individual reports medical symptoms that are related to their ability to use a respirator.
3. The PLHCP, Departmental Respirator Protection Contact or the Individual's Supervisor determines that an individual needs to be re-evaluation.
4. Observations made during respirator fit testing and program evaluation indicate a need for the individual's re-evaluation.

All questionnaires and examinations are processed in confidence with the PLHCP.

C. RESPIRATOR TRAINING AND ISSUE

Respirator training is conducted by EH&S. It will be conducted when the respirator is issued and annually thereafter as a refresher. Both individuals and supervisors must attend. Individuals in attendance must sign a roster verifying their presence at the training session.

Initial Training will include the following:

- ◆ Reasons for respiratory protection including the nature of respiratory hazards and why engineering controls aren't used
- ◆ Criteria used in hazard evaluation
- ◆ Explanation of respirator selection procedure
- ◆ Hands-on demonstration of proper fitting, donning, wearing, removal, and inspection of respirator
- ◆ Capabilities and limitations of respirators including effects of damage, modification, and facial hair
- ◆ Proper maintenance and storage procedures
- ◆ Explanation of Respirator Medical Evaluation Questionnaire
- ◆ Explanation, demonstration, and implementation of fit testing procedures for each individual to be issued a respirator
- ◆ Emergency procedures
- ◆ Observation of proper donning and fit testing technique of each individual
- ◆ SCBA training for designated individuals for emergency use

Initial respirator training may feature a film or videotape. This media presentation discusses respirator use, selection, fitting, and proper wearing of the respirator and respirator maintenance.

Those individuals who have not yet been cleared through a PLHCP for respirator use or fail to complete the fit test portion of the initial training session, may call EH&S at ext. 2-4041 to schedule an appointment.

Refresher respirator training will include the following:

- ◆ Hazard assessment
- ◆ Need for respirator
- ◆ Basic respirator selection
- ◆ Fit test procedures
- ◆ How to inspect a respirator
- ◆ Cleaning and sanitizing
- ◆ Medical conditions
- ◆ Supervisor responsibilities
- ◆ Respirator safety
- ◆ Emergency procedures
- ◆ SCBA training

Each individual should bring their respirator to the retraining session conducted by EH&S on a periodic basis. This training is designed to update an individual's knowledge of proper respirator wear, use, and maintenance. Each individual will receive refresher respirator training on an annual basis. During this session, EH&S will conduct spot inspections for serviceability and cleanliness. Training records at EH&S will determine when a particular department is due for refresher training; however, supervisors are encouraged to contact EH&S before the first anniversary of respirator issue for scheduling.

D. FIT TESTING PROCEDURES

Because of the variation in face size and shape, respirators must be custom fit to ensure an adequate seal between the face and face piece. Fit testing procedures are designed to find a respirator size and style that provides maximum protection and comfort. Half-face respirator fit testing is covered in detail here. If a full-face respirator or a supplied air respirator is required, the appropriate fitting procedures will be covered in detail at the time of issuance.

UNH shall supply respirators from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user. Individuals shall be fit-tested with the same make, model, size, and style of respirator that will be used.

Before donning a respirator, it must be inspected for the following:

- ◆ General construction of respirator (not dented, cracked)
- ◆ Condition of straps (not frayed, still elastic)
- ◆ Condition of valves
- ◆ Filter and cartridges (intact, unbroken)
- ◆ Cleanliness of respirator
- ◆ Flexibility of valve disk (not brittle)

Once the respirator is on, a check is performed which includes:

- ◆ Chin strap/section properly placed
- ◆ Respirator position on nose
- ◆ Temple strap tension, straps untangled
- ◆ Fit across nose bridge
- ◆ Room for glasses or safety glasses
- ◆ Tendency to slip
- ◆ Effects of smiling, talking
- ◆ Respirator comfort

The individual will now wear the respirator for two to three minutes to get accustomed to the feel of the device.

POSITIVE PRESSURE TEST

The user can do this test alone in the field. It is conducted by closing off the exhalation valve and exhaling gently into the face piece. The fit is considered satisfactory if a slight positive pressure can be maintained inside the face piece without any evidence of outward leakage. The user should do this test just before entering any hazardous atmosphere.

The test:

Cover the exhalation valve and exhale gently into the face piece. Hold the positive pressure for 10 seconds.

Care must be taken so that the individual does not exhale so strongly as to force the respirator away from their face. Pushing hard on the exhalation valve will also force the respirator away from the face. No air should pass out of the respirator during the test.

If leakage is detected, the individual should do one or all the following:

- ◆ Adjust tension on temple straps
- ◆ Refit respirator
- ◆ Try different size respirator

This test should be repeated until a satisfactory seal has been achieved. If leakage persists, notify the OHSC.

NEGATIVE PRESSURE TEST

This test is very much like the positive pressure test. It has the same advantages and limitations. The wearer should conduct this test just before entering any toxic atmosphere. Close off the inlet of the canister, cartridge, or filter with a piece of paper or the palm of the hand so that air does not pass. Gently inhale so that the face piece collapses slightly and hold the breath for ten seconds. If the face piece remains slightly collapsed and no inward leakage is detected, the tightness of the respirator is considered satisfactory.

The test:

Cover the 2 cartridges with the palms of the hand and inhale for 5-10 seconds. The face piece should collapse slightly. If no air leakage between face and face piece has been detected, a proper fit has been obtained. If leakage has been detected, the individual should do one or all of the following:

- ◆ Adjust tension on temple straps
- ◆ Refit respirator
- ◆ Try different size respirator

This test should be repeated until a satisfactory seal has been achieved. If leakage persists, notify the OHSC representative.

SMOKE TEST (QUALITATIVE FIT TEST)

A non-toxic, irritant smoke (stannic chloride) is used to determine if a respirator is properly fitted. The individual dons the respirator and remains stationary as the smoke is blown over respirator inhalation and exhalation ports, and all points of contact between the individual's face and the respirator face piece. The individual should close their eyes to avoid irritation. The OHSC will then instruct the individual to do the following:

- ◆ Breathe normally
- ◆ Breathe deep
- ◆ Turn head side to side
- ◆ Nod up and down
- ◆ Bend at the waist and resume upright position
- ◆ Smile
- ◆ Count backwards from 100

If a leak occurs, the smoke will cause an involuntary coughing reaction. The individual should leave the immediate area and re-don their respirator. Any adjustments and corrections must be verified by the OHSC before re-testing.

For safety reasons:

- ◆ Test will be done in a well ventilated room
- ◆ The OHSC will ensure that the glass smoke tube edges are kept away from the respirator face seal and exhalation valves
- ◆ The respirator user must close their eyes. If individual starts coughing or displays symptoms of smoke inhalation, the test is halted

E. **CLEANING, MAINTENANCE, AND STORAGE** (*for Air-Purifying Respirators*)

Routine maintenance is an essential of the Respiratory Protection Program. By properly cleaning, maintaining, and storing a respirator, its effectiveness is assured and its life increased.

All respirators will be cleaned after each day's use to prevent possible infection or contamination. If the respirator has not been used, it should be cleaned monthly.

Cleaning procedures are as follows:

- ◆ Remove filters, cartridges and valve flaps
- ◆ Immerse face piece in warm water and soap/disinfectants
- ◆ ***Do not use alcohol or any organic solvent!***
- ◆ Use a soft brush or cloth to remove dust, grease, paint
- ◆ Rinse off detergent with cold water
- ◆ Towel or air dry
- ◆ Gently wash valve flaps. Inspect flaps, replace if needed
- ◆ Reassemble
- ◆ Store respirator in re-sealable bag

Note: Manufacturer's instructions should always be followed.

Once the respirator has been cleaned it should be checked for physical damage including:

- ◆ Brittle or frayed temple straps and elastic head band
- ◆ Excessive fraying or stretching around respirator edges
- ◆ Rubber valve flap frayed or inelastic
- ◆ Warped exhaust or intake valve
- ◆ Torn face piece
- ◆ Cracked cartridge
- ◆ Damaged filter
- ◆ Excessive odor around cartridge
- ◆ Stripped cartridge grooves

Respirators must be properly stored to protect them from conditions that may negatively affect their protection capabilities.

Dust, sunlight, extreme temperatures, moisture, chemicals, and physical damage can all contribute to the deterioration of the respirator. Respirators should be stored in individual re-sealable plastic bags in their natural positions, protected from contamination, distortion, and damage.

F. SELF-CONTAINED BREATHING APPARATUS (SCBA) MAINTENANCE

All self-contained breathing apparatus (SCBA) shall be inspected on a monthly basis. Air and oxygen cylinders must be maintained in a fully charged state and shall be recharged when the pressure falls to *90% of the manufactures recommended pressure level*. All regulator and warning devices attached to the SCBA should function properly and be tested *every 30 days*. SCBA's should be dismantled, washed and disinfected after each use.

For SCBA's that are maintained for emergency use, EH&S shall perform the following functions:

- ◆ Certify the SCBA by documenting the date the inspection was performed, the name or signature of the person who made the inspection, the findings, required remedial action, and a serial number identifying the inspected SCBA.
- ◆ Provide this information on a tag or label that is attached to the storage compartment for the SCBA or include in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.
- ◆ Ensure that cylinders used to supply breathing air meet the following requirements:
 - Cylinders are tested and maintained as prescribed in the Shipping Container Specification regulations of the Department of Transportation (49 CFR Part 173 & Part 178)
 - Cylinders of purchased breathing air have a Certification of Analysis from the supplier that the breathing air meets the requirements for Grade D breathing air.
 - The moisture content in the cylinder does not exceed a dew point of -50° F at 1 atmosphere pressure.

Inspection of SCBA's:

- Before and after each use
- At least monthly when in storage
- Every time they are cleaned
- Check material conditions for the following:
 - Signs of pliability
 - Signs of deterioration
 - Signs of distortion
- Check for proper setting and operation of regulators and valves (according to manufacturer's recommendations) every 30 days
- Check operation of alarms
- Check faceshield and lenses for:
 - Cracks
 - Crazing
 - Fogginess

G. RESPIRATOR SELECTION

I. Regulatory Requirements

The selection, use, and maintenance of respirators in the United States are presently regulated by several Federal agencies. The acts which authorize their activities, agencies, and current regulations relating to selection, use, and maintenance of respirators, are as follows:

<u>Ac t</u>	<u>Agency</u>	<u>Regulations</u>
Federal Mine Safety Health Act of 1977	Mine Safety and Health Administration, Department of Labor	Title 30 CFR Part 11, 70
Occupational Safety and Health Act of 1970	National Institute for Occupational Safety and Health, Centers for Disease Control, Department of Health and Human Services	Title 42 CFR Part 84
	Occupational Safety and Health Administration. Department of Labor	Title 29 CFR Part 1910
Toxic Substances Control Act of 1970	Environmental Protection Agency	Title 40 CFR Part 750
Title II of the Energy Reorganization Act of 1974	Nuclear Regulatory Commission	Title 10 CFR Part 20

APPENDIX A

OSHA Respirator Medical Evaluation Questionnaire

Can you read (check one): Yes No

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

Name: _____ Date: _____

Job Title: _____

Age (to nearest year): _____

Sex (check one): Male Female

Height: _____ ft. _____ in. Weight: _____ lbs.

A phone number where you can be reached by the health care professional who reviews this questionnaire (include the *area code*): _____-_____-_____

The best time to phone you at this number: _____

Has your employer told you how to contact the health care professional who will review this questionnaire (check one):

Yes No

Check the type of respirator you will use (you can check more than one category):

- N, R, or P disposable respirator (filter-mask, non-cartridge type only).
- Other type (for example, half- or full-face piece type, powered-air purifying, supplied-air, self-contained breathing apparatus).

Have you worn a respirator (check one):

Yes No

If "Yes," what type(s): _____

The questions below must be answered by every individual who has been selected to use any type of respirator (please check "yes" or "no").

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month?
Yes No

2. Have you ever had any of the following conditions?
Yes No Seizures (fits)
Yes No Diabetes (sugar disease)
Yes No Allergic reactions that interfere with your breathing
Yes No Claustrophobia (fear of closed-in places)
Yes No Trouble smelling odors

3. Have you ever had any of the following pulmonary or lung problems?
Yes No Asbestosis
Yes No Asthma
Yes No Chronic bronchitis
Yes No Emphysema
Yes No Pneumonia
Yes No Tuberculosis
Yes No Silicosis
Yes No Pneumothorax (collapsed lung)
Yes No Lung cancer
Yes No Broken ribs
Yes No Any chest injuries or surgeries
Yes No Any other lung problem that you've been told about

4. Do you currently have any of the following symptoms of pulmonary or lung illness?
Yes No Shortness of breath
Yes No Shortness of breath when walking fast on level ground or walking up a slight hill or incline
Yes No Shortness of breath when walking with other people at an ordinary pace on level ground
Yes No Have to stop for breath when walking at your own pace on level ground
Yes No Shortness of breath when washing or dressing yourself
Yes No Shortness of breath that interferes with your job
Yes No Coughing that produces phlegm (thick sputum)
Yes No Coughing that wakes you early in the morning
Yes No Coughing that occurs mostly when you are lying down
Yes No Coughing up blood in the last month
Yes No Wheezing
Yes No Wheezing that interferes with your job
Yes No Chest pain when you breathe deeply
Yes No Any other symptoms that you think may be related to lung

problems

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

- Yes No Heart attack
Yes No Stroke
Yes No Angina
Yes No Heart failure
Yes No Swelling in your legs or feet (not caused by walking)
Yes No Heart arrhythmia (heart beating irregularly)
Yes No High blood pressure
Yes No Any other heart problem that you've been told about:

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

- Yes No Frequent pain or tightness in your chest
Yes No Pain or tightness in your chest during physical activity
Yes No Pain or tightness in your chest that interferes with your job
Yes No In the past two years, have you noticed your heart skipping or missing a beat
Yes No Heartburn or indigestion that is not related to eating
Yes No Any other symptoms that you think may be related to heart or circulation problems

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

- Yes No Breathing or lung problems
Yes No Heart trouble
Yes No Blood pressure
Yes No Seizures

8. If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and go to question 9) :

- Yes No Eye irritation
Yes No Skin allergies or rashes
Yes No Anxiety
Yes No General weakness or fatigue
Yes No Any other problem that interferes with your use of a respirator

Check here if you have never used a respirator.

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

- Yes No

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

10. Have you ever lost vision in either eye (temporarily or permanently)? Yes No

11. Do you currently have any of the following vision problems?

- | | | |
|------------------------------|-----------------------------|---------------------------------|
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Wear contact lenses |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Wear glasses |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Color blind |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Any other eye or vision problem |

12. Have you ever had an injury to your ears, including a broken ear drum? Yes No
Do you currently have any of the following hearing problems?

- | | | |
|------------------------------|-----------------------------|----------------------------------|
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Difficulty hearing |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Wear a hearing aid |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Any other hearing or ear problem |

13. Have you ever had a back injury?

- Yes No

14. Do you currently have any of the following musculoskeletal problems?

- | | | |
|------------------------------|-----------------------------|--|
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Weakness in any of your arms, hands, legs, or feet |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Back pain |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Difficulty fully moving your arms and legs |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Pain or stiffness when leaning forward/backward at the waist |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Difficulty fully moving your head up or down |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Difficulty fully moving your head side to side |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Difficulty bending at your knees |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Difficulty squatting to the ground |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Climbing a flight of stairs or a ladder carrying 25 lbs + |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Any other muscle or skeletal problem that interferes with using a respirator |

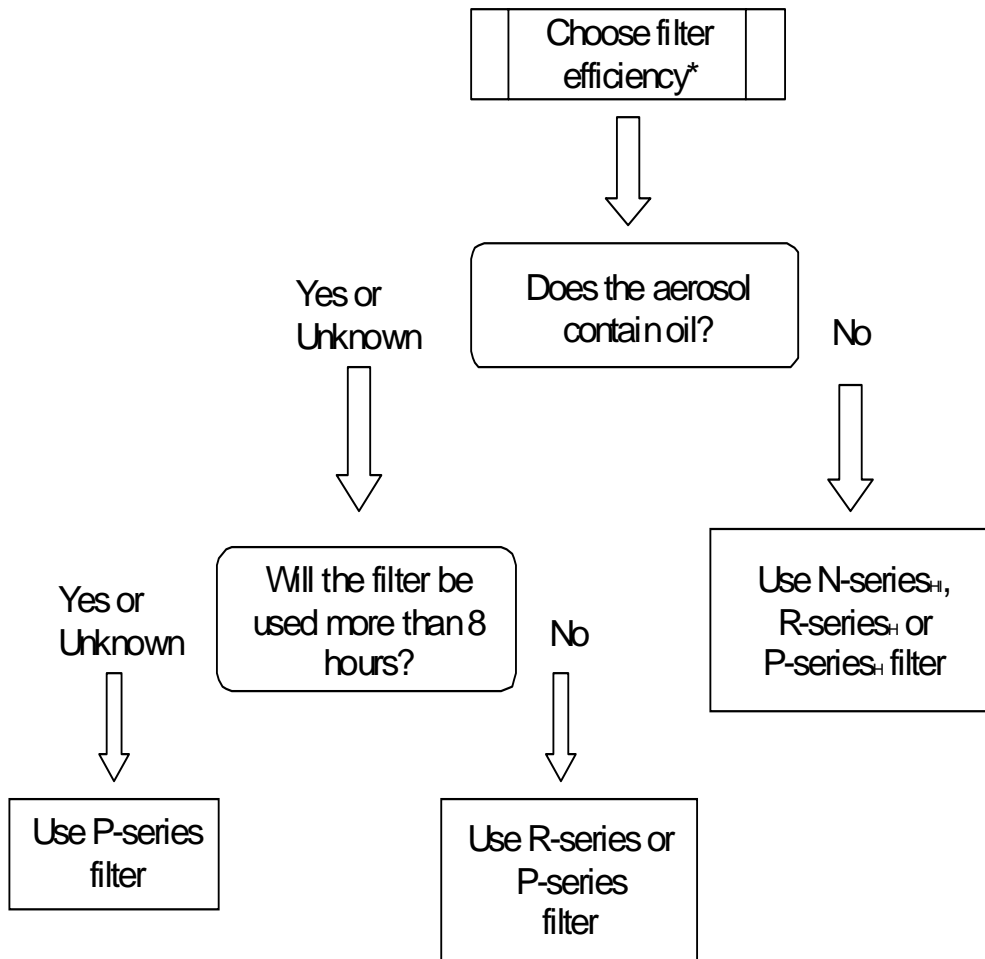
15. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen:

- Yes No

If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions?

- Yes No

APPENDIX C
FLOW CHART FOR SELECTING PART 84 PARTICULATE FILTERS



*The higher the filter efficiency, the lower the filter leakage

^HLimited by considerations of hygiene, damage, and breathing resistance.

^IHigh (200 mg) filter loading in the certification test is intended to address the potential for filter efficiency degradation by solid or water-based (i.e., non-oil) aerosols in the workplace. Accordingly, there is no recommended service time in most workplace settings. However, in dirty workplaces (high aerosol concentrations), service time should only be extended beyond 8 hours use (continuous or intermittent) by performing an evaluation in specific workplace settings that demonstrates (a) that extended use will not degrade the filter efficiency below the certified efficiency level, or (b) that the total mass loading of the filter is less than 200 mg (100 mg per filter for dual-filter respirators).

No specific service time limit when oil aerosols are not present. In the presence of oil aerosols, service may be extended beyond 8 hours of use (continuous or intermittent) by demonstrating (a) that extended use will not degrade the filter efficiency below the certified level, or (b) the total mass loading of the filter is less than 200 mg (100 mg per filter for dual-filter respirators).