050. PERSONAL PROTECTIVE EQUIPMENT

01. Scope: The requirements for and the use of personal protective equipment shall conform to all other applicable requirements of this standard, as well as the following provisions. Nothing in this standard shall be construed to prohibit better or otherwise safer conditions than specified herein. (7-1-00)

02. Definitions. For other definitions of terms used in this section, see sub-section 010 of this standard. (7-1-97)

a. Face-piece is the portion of a respirator that covers the wearer's nose and mouth in a half-mask face-piece or nose, mouth, and eyes in a full face-piece. It is designed to make a gas-tight or dust-tight fit with the face and includes the headbands, exhalation valve(s) and connections for air-purifying device or respirable-gas source or both. (7-1-97)
b. Immediately dangerous to life or health (IDLH) is an atmosphere that poses an immediate threat to life, would cause irreversible adverse health affects, or would impair an individual’s ability to escape from a dangerous atmosphere. (7-1-00)

c. Physician or other licensed health care professional (PLHCP) is an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provided, some or all of the health care services required by section 050.07 of this standard. (7-1-00)

d. Powered air-purifying respirator is an air-purifying respirator that uses a blower to force the ambient air through air purifying elements to the inlet covering. (7-1-00)

e. Respirator is an apparatus worn over the face to protect the wearer from inhalation of harmful atmospheres. (7-1-97)

03. General Requirements: (7-1-97)

a. Protective equipment, including personal protective equipment for eyes, face, head, and extremities; protective clothing, respiratory devices, and protective shields and barriers; shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact. (7-1-97)

b. Equipment. Personal safety equipment or clothing such as non-prescription safety glasses, prescription safety glasses, hard hats, ear protection, respirators, rubber gloves, rubber boots, safety shoes, leggings, aprons, safety harnesses, positioning belts, life lines, and buoyant vests, when exposed to hazards where such devices may be expected to prevent injury, all of which equipment, except safety shoes and prescription safety glasses, shall be made without cost to the employee, and where safety shoes and prescription safety glasses are made available by the employer, the same shall be provided at cost price to the employee. (7-1-97)

c. Any safety equipment or apparel so furnished by the employer as required above shall, upon termination of employment of any employee, be immediately returned to the employer. (7-1-97)

d. Where employees provide their own protective equipment, the employer shall be responsible to assure its adequacy, including proper fit, maintenance, and sanitation of such equipment. (7-1-97)

e. All personal protective equipment shall be of safe design and construction for the work to be performed. (7-1-97)

f. The employer shall assess the workplace to determine if hazards are present, or likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall: select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the
hazards assessment; communicate the selection decision to each affected employee; and, select PPE that properly fits each affected employee. The employer shall use material safety data sheets, product labels, operators manuals, industry standards, this standard, and any other applicable nationally recognized standards in performing the workplace hazard assessment. (7-1-97)

g. Defective and damaged personal protective equipment shall not be used. (7-1-97)

h. The employer shall provide training to each employee who is required by this standard to use personal protective equipment. Each such employee shall be trained to know at least the following: when personal protective equipment is necessary; what personal protective equipment is necessary; how to properly don, doff, adjust, use, and wear personal protective equipment; the limitation of the personal protective equipment; and the proper care, maintenance, useful life, and disposal of the personal protective equipment. Each affected employee shall demonstrate an understanding, ability, and skill required by this sub-section, to use personal protective equipment properly, before being allowed to perform work requiring the use of personal protective equipment. When the employer has reason to believe that any affected employee, who has already been trained, does not have the understanding and skill required by this sub-section, the employer shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where: changes in the workplace render previous training obsolete; or changes in the types of personal protective equipment to be used render previous training obsolete; or inadequacies in an affected employee's knowledge or use of assigned personal protective equipment indicate that the employee has not retained the requisite understanding or skill. (7-1-97)

04. Eye and Face Protection: (7-1-97)

a. Protective eye and face equipment shall be required and used where there is a reasonable probability of injury that can be prevented by such equipment. In such cases, employers shall make conveniently available a type of eye and face protector suitable for the work to be performed, and employees shall use such protectors. No unprotected person shall knowingly be subjected to a hazardous environmental condition. Suitable eye and face protectors shall be provided where machines or operations present the hazard of flying particles, molten metal, glare, liquid chemicals, acids or caustic liquids, liquids with biological contamination, chemical gases or vapors, injurious light radiation, or a combination of these hazards. (7-1-97)

b. Each affected employee shall use appropriate eye and face protection when exposed to eye and face hazards. (7-1-97)

c. Each affected employee shall use eye protection that provides side protection when there is a hazard from flying objects. Detachable side protection (e.g. clip-on or slide-on side shields) meeting pertinent requirements of this sub-section are acceptable. (7-1-97)

d. Each affected employee who wears prescription lenses while engaged in operations that involve eye hazards shall wear eye protection that incorporates the prescription in its design, or
shall wear eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses. (7-1-97)

e. Eye and face personal protective equipment shall be distinctly marked to facilitate identification of type of protection and manufacturer. (7-1-97)

f. Eye and face protectors shall: provide adequate protection against the particular hazards for which they are designed; be reasonably comfortable when worn under the designated conditions; fit snugly and shall not unduly interfere with the movement of the wearer; be durable; be capable of being disinfected; be easily cleanable. (7-1-97)

g. Eye and face protectors shall be kept clean and in good repair. (7-1-97)

h. When limitations or precautions are indicated by the manufacturer, they shall be transmitted to the user and care taken to see that such limitations and precautions are strictly observed. (7-1-97)

i. Each affected employee shall use protective equipment with filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation, see Table 050.04-A. (7-1-97)

<table>
<thead>
<tr>
<th>TABLE 050.04-A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FILTER LENSES FOR PROTECTION AGAINST RADIANT ENERGY</strong></td>
</tr>
<tr>
<td>Operations</td>
</tr>
<tr>
<td>Shielded metal arc welding</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Gas metal arc welding and flux cored arc welding</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Gas Tungsten arc welding</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Process</td>
</tr>
<tr>
<td>-------------------------</td>
</tr>
<tr>
<td>Air carbon</td>
</tr>
<tr>
<td>Arc cutting</td>
</tr>
<tr>
<td>Plasma arc welding</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Plasma arc cutting</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Torch brazing</td>
</tr>
<tr>
<td>Torch soldering</td>
</tr>
<tr>
<td>Carbon arc welding</td>
</tr>
<tr>
<td>Gas Welding</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Oxygen cutting</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<sup>1</sup>As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxy-fuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.

<sup>2</sup>These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the work piece.

(7-1-97)
j. Protective eye and face devices purchased after July 5, 1994 shall comply with ANSI Z87.1-
1989, "American National Standard Practice for Occupational and Educational Eye and Face Protection," or shall be demonstrated by the employer to be equally effective. Protective eye and face protection purchased before July 5, 1994 shall comply with ANSI Z87.1-1968, "American National Standard for Occupational and Educational Eye and Face Protection," or shall be demonstrated by the employer to be equally effective. (7-1-97)

k. Employees whose occupation or assignment requires exposure to laser beams shall be furnished suitable laser safety goggles which will protect for the specific wavelength of the laser and be of optical density (O.D.) adequate for the energy involved. Table 050.04-B lists the maximum power or energy density for which adequate protection is afforded by glasses of optical densities from 5 through 8. Output levels falling between lines in Table 050.04-B shall require the higher optical density. All protective goggles shall bear a label identifying the following data: (7-1-00)

i. The laser wavelengths for which use intended; (7-1-00)

ii. The optical density of those wavelengths; (7-1-00)

iii. The visible light transmission. (7-1-00)

<table>
<thead>
<tr>
<th>Intensity, CW maximum power density (watts/cm(2))</th>
<th>Optical Density (O.D.)</th>
<th>Attenuation Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>10(-2)</td>
<td>5</td>
<td>10(5)</td>
</tr>
<tr>
<td>10(-1)</td>
<td>6</td>
<td>10(6)</td>
</tr>
<tr>
<td>1.0</td>
<td>7</td>
<td>10(7)</td>
</tr>
<tr>
<td>10.0</td>
<td>8</td>
<td>10(8)</td>
</tr>
</tbody>
</table>

(7-1-00)

05. Respiratory Protection: (7-1-97)

a. Permissible practice. In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials.) When
effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to the following requirements: (7-1-97)

b. Respirators shall be provided by the employer when such equipment is necessary to protect the health of the employee. The employer shall provide the respirators which are applicable and suitable for the purpose intended. The employer shall be responsible for the establishment and maintenance of a respiratory protective program which shall include the requirements outlined in sub-section 050.05.d of this standard. (7-1-97)

c. The employee shall use the provided respiratory protection in accordance with instructions and training received. (7-1-97)

d. Requirements for a minimally acceptable respiratory protection program shall include the following: written standard operating procedures governing the selection and use of respirators shall be established; respirators shall be selected on the basis of hazards to which the worker is exposed; the user shall be instructed and trained in the proper use of respirators and their limitations; respirators shall be regularly cleaned and disinfected; those issued for the exclusive use of one (1) worker shall be cleaned after each day's use, or more often if necessary; where practicable, the respirators shall be assigned to individual workers for their exclusive use; those used by more than one (1) worker shall be thoroughly cleaned and disinfected after each use; respirators shall be stored in a convenient, clean and sanitary location; respirators used routinely shall be inspected during cleaning, worn or deteriorated parts shall be replaced; respirators for emergency use such as self-contained devices shall be thoroughly inspected at least once a month and after each use; appropriate surveillance of work area conditions and degree of employee exposure or stress shall be maintained; there shall be regular inspection and evaluation to determine the continued effectiveness of the program; persons should not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. (The local physician shall determine what health and physical conditions are pertinent. The respirator user's medical status should be reviewed periodically, for instance, annually); respirators shall be selected from among those jointly approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health. (7-1-97)

e. Air quality. Compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration shall be of high purity. Oxygen shall meet the requirements of the United States Pharmacopoeia for medical or breathing oxygen. Breathing Air shall meet at least the requirements of the specification for grade d breathing air as described in Compressed Gas Association Commodity Specification G-7.1-1966.* Compressed oxygen shall not be used in supplied-air respirators or in open circuit self-contained breathing apparatus that have previously used compressed air. Oxygen shall not be used with air line respirators. (7-1-97)

*This document describes the specification requirements for air, including atmospheric air and air synthesized by blending oxygen and nitrogen in the proper proportions. It is different from other gas specifications because atmospheric air is not a manufactured product but is naturally occurring. Atmospheric air contains a large variety of trace constituents on many of which it is
impractical to set individual limits. However, this specification qualifies certain grades of air by limiting the concentrations of specific trace constituents. (7-1-97)

g. Breathing air may be supplied to respirators from cylinders or air compressors. Cylinders shall be tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation 49 CFR Part 178. The compressor for supplying air shall be equipped with necessary safety and standby devices described in this item. A breathing air-type compressor shall be used. Compressors shall be constructed and situated so as to avoid entry of contaminated air into the system and suitable in-line air purifying sorbet beds and filters installed to further assure breathing air quality. A receiver of sufficient capacity to enable the respirator wearer to escape from a contaminated atmosphere in the event of compressor failure and overheating shall be installed in the system. If an oil-lubricated compressor is used, it shall be equipped with suitable in-line air purifying absorbent beds, filters, high temperature alarm, and carbon monoxide alarm. (7-1-97)

h. Air lines couplings shall be incompatible with outlets for other gas or non-breathing air systems to prevent inadvertent supplying of air line respirators with non-respirable gases or oxygen. (7-1-97)


06. Selection of Respirators: (7-1-00)

a. The employer shall select and provide an appropriate respirator based on the respiratory hazard(s) to which the employee is exposed and workplace and user factors that affect respirator performance and reliability. (7-1-00)

b. The employer shall select a NIOSH-certified respirator. The respirator shall be used in compliance with the conditions of its certification. (7-1-00)

c. The employer shall identify and evaluate the respiratory hazard(s) in the workplace; this evaluation shall include a reasonable estimate of employee exposures to respiratory hazard(s) and an identification of the contaminant’s chemical state and physical form. Where the employer cannot identify or reasonably estimate the employee exposure, the employer shall consider the atmosphere to be IDLH. (7-1-00)

d. The employer shall select respirators from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits the user. (7-1-00)

e. The employer shall provide the following respirators for employee use in IDLH atmospheres: a full face-piece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or a combination full face-piece pressure demand supplied air respirator (SAR) with auxiliary self-contained air supply. Respirators provided only for escape from IDLH atmospheres.
shall be NIOSH certified for escape from the atmosphere in which they will be used. All oxygen-deficient atmospheres shall be considered IDLH. (7-1-00)

f. For non-IDLH atmospheres the employer shall provide a respirator that is adequate to protect the health of the employee and ensure compliance with all other provisions and requirements of these standards, under routine and reasonably foreseeable emergency situations. The respirator selected shall be appropriate for the chemical state and physical form of the contaminant. For protection against gases and vapors, the employer shall provide: an atmosphere supplying respirator, or an air purifying respirator, provided that: the respirator is equipped with an end-of-service indicator (ESLI) certified by NIOSH for the contaminant; or if there is no ESLI appropriate for conditions in the employer’s workplace, the employer implements a change schedule for canisters and cartridges that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life. The employer shall describe in the respirator program the information and data relied upon and the basis for the canister and cartridge change schedule and the basis for reliance on the data. For protection against particles, the employer shall provide: an atmosphere supplying respirator; or an air purifying respirator equipped with a filter certified by NIOSH as a high efficiency particulate air (HEPA) filter, or an air purifying respirator equipped with a filter certified for particles by NIOSH. For contaminants consisting primarily of particles with mass median aerodynamic diameters (MMAD) of at least 2 micrometers, an air purifying respirator equipped with any filter certified for particles by NIOSH. (7-1-00)

07. Medical Elevation: (7-1-00)

a. The employer shall provide a medical evaluation to determine the employee’s ability to use a negative pressure respirator, before the employee is fit tested or required to use the respirator in the workplace. The employer may discontinue an employee’s medical evaluations when the employee is no longer required to use a respirator. (7-1-00)

b. The employer shall identify a physician or other licensed health care professional (PLHCP) to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire figure 050.07A. The medical evaluation shall obtain the information requested in the questionnaire. (7-1-00)

c. The employer shall ensure that a follow-up medical examination is provided for an employee who gives a positive response to any question among questions 1 through 8 in part A section 2 or whose initial medical examination demonstrates the need for a follow-up medical examination. The follow-up medical examination shall include any medical tests, consultations, or diagnostic procedures that the PLHCP deem necessary to make a final determination. (7-1-00)

d. The medical questionnaire (Figure 050.07-A) and examinations shall be administered confidentially during the employee’s normal working hours or at a time and place convenient to the employee. The medical questionnaire shall be administered in a manner that ensures that the employee understands its content. The employer shall provide the employee with an opportunity to discuss the questionnaire with the PLHCP. (7-1-00)
e. The employer shall provide the following information to the PLHCP before the PLHCP makes a recommendation concerning an employee’s ability to use a respirator: the type and weight of the respirator to be used by the employee; the duration and frequency of respirator use (including use for rescue and escape); the expected physical work effort; additional protective clothing and equipment to be worn; and temperature and humidity extremes that may be encountered. Any supplemental information provided previously to the PLHCP regarding an employee need not be provided for a subsequent medical evaluation if the information and the PLHCP remain the same. The employer shall provide the PLHCP with a copy of the written respiratory protection program and a copy of IGSHS section 050.05 through 050.10. When the employer replaces a PLHCP, the employer must ensure that the new PLHCP obtains this information, either by providing the documents directly to the PLHCP or having the documents transferred from the former PLHCP to the new PLHCP. Employees do not have to be medically reevaluated solely because a new PLHCP has been selected. (7-1-00)

f. In determining the employee’s ability to use a respirator, the employer shall: obtain a written recommendation regarding the employee’s ability to use the respirator from the PLHCP. The recommendation shall provide only the following information: any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator; the need, if any, for follow-up medical evaluations; and a statement that the PLHCP has provided the employee with a copy of the PLHCP’s written recommendation. If the PLHCP finds a medical condition that may place the employee’s health at increased risk if the respirator is used, the employer shall provide a PAPAR if the PLHCP’s medical evaluation finds that the employee can use such a respirator; if a subsequent medical evaluation finds that the employee is medically able to use a negative pressure respirator, then the employer is no longer required to provide a PAPAR. (7-1-00)

g. At a minimum, the employer shall provide additional medical evaluations that comply with the requirements of this section if: an employee reports medical signs or symptoms that are related to ability to use a respirator; a PLHCP, supervisor, or the respirator program administrator informs the employer that an employee needs to be reevaluated; information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; a change occurs in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on the employee.

Figure 050.07-A

Respirator Medical Evaluation Questionnaire

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:

Can you read (circle one): Yes / No
Your employer must allow you to answer this questionnaire during normal working hours, or at a
time and place that is convenient to you. To maintain your confidentiality, your employer or
supervisor must not look at or review your answers, and your employer must tell you how to
deliver or send this questionnaire to the health care professional who will review it.

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. You age (to nearest year):

4. Sex (circle one): Male / Female

5. Your height: ft. in.


7. Your job title:

8. A phone number where you can be reached by the health care professional who reviews this
questionnaire (include the 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 this
questionnaire (circle one): Yes / No

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

a. N, R, or P disposable respirator (filter-mask, non-cartridge type only).

b. Other type (for example, half- or full-face-piece type).

12. Have you worn a respirator (circle one): 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 (please circle "yes" or "no").

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

2. Have you ever had any of the following conditions?
a. Seizures (fits): Yes / No

b. Diabetes (sugar disease): Yes / No

c. Allergic reactions that interfere with your breathing: Yes / No

d. Claustrophobia (fear of closed-in places): Yes / No

e. Trouble smelling odors: Yes / No

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

a. Asbestosis: Yes / No

b. Asthma: Yes / No

c. Chronic bronchitis: Yes / No

d. Emphysema: Yes / No

e. Pneumonia: Yes / No

f. Tuberculosis: Yes / No

g. Sillicosis: Yes / No

h. Pneumothorax (collapsed lung): Yes / No

i. Lung cancer: Yes / No

j. Broken ribs: Yes / No

k. Any chest injuries or surgeries: Yes / No

l. Any other lung problem that you’ve been told about: Yes / No

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

a. Shortness of breath: Yes / No

b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes / No

c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes / No
d. Have to stop for breath when walking at your own pace on level ground: Yes / No

e. Shortness of breath when washing or dressing yourself: Yes / No

f. Shortness of breath that interferes with your job: Yes / No

g. Coughing that produces phlegm (thick sputum): Yes / No

h. Coughing that wakes you early in the morning: Yes / No

i. Coughing that occurs mostly when you are lying down: Yes / No

j. Coughing up blood in the last month: Yes / No

k. Wheezing: Yes / No

l. Wheezing that interferes with your job: Yes / No

m. Chest pain when you breathe deeply: Yes / No

n. Any other symptoms that you think may be related to lung problems: Yes / No

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

a. Heart attack: Yes / No

b. Stroke: Yes / No

c. Angina: Yes / No

d. Heart failure: Yes / No

e. Swelling in your legs or feet (not caused by walking): Yes / No

f. Heart arrhythmia (heart beating irregularly): Yes / No

g. High blood pressure: Yes / No

h. Any other heart problem that you’ve been told about: Yes / No

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

a. Frequent pain or tightness in your chest: Yes / No

b. Pain or tightness in your chest during physical activity: Yes / No
c. Pain or tightness in your chest that interferes with your job: Yes / No

d. In the past two years, have you noticed your heart skipping or missing a beat: Yes / No

e. Heartburn or indigestion that is not related to eating: Yes / No

f. Any other symptoms that you think may be related to heart or circulation problems: Yes / No

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

a. Breathing or lung problems: Yes / No

b. Heart trouble: Yes / No

c. Blood pressure: Yes / No

d. Seizures (fits): Yes / No

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:)

a. Eye irritation: Yes / No

b. Skin allergies or rashes: Yes / No

c. Anxiety: Yes / No

d. General weakness or fatigue: Yes / No

e. Any other problem that interferes with your use of a respirator: Yes / No

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 employee who has been selected to use a full-face-piece respirator. For employees 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?

a. Wear contact lenses: Yes / No

b. Wear glasses: Yes / No
c. Color blind: Yes / No

d. Any other eye or vision problem: Yes / No

12. Have you ever had an injury to your ears, including a broken ear drum: Yes / No

13. Do you currently have any of the following hearing problems?
   a. Difficulty hearing: Yes / No
   b. Wear a hearing aid: Yes / No
   c. Any other hearing or ear problem: Yes / No

14. Have you ever had a back injury: Yes / No

15. Do you currently have any of the following musculoskeletal problems?
   a. Weakness in any of your arms, hands, legs, or feet: Yes / No
   b. Back pain: Yes / No
   c. Difficulty fully moving your arms and legs: Yes / No
   d. Pain or stiffness when you lean forward or backward at the waist: Yes / No
   e. Difficulty fully moving your head up or down: Yes / No
   f. Difficulty fully moving your head side to side: Yes / No
   g. Difficulty bending at your knees: Yes / No
   h. Difficulty squatting to the ground: Yes / No
   i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: Yes / No
   j. Any other muscle or skeletal problem that interferes with using a respirator: Yes / No

Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. 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
2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g. gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes / No

If "yes," name the chemicals if you know them:

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:
   a. Asbestos: Yes / No
   b. Silica (e.g. in sandblasting): Yes / No
   c. Tungsten/cobalt (e.g., grinding or welding this material): Yes / No
   d. Beryllium: Yes / No
   e. Aluminum: Yes / No
   f. Coal (for example, mining): Yes / No
   g. Iron: Yes / No
   h. Tin: Yes / No
   i. Dusty environments: Yes / No
   j. Any other hazardous exposures: Yes / No

If "yes," describe these exposures:

4. List any second jobs or side businesses you have:

5. List your previous occupations:

6. List your current and previous hobbies:

7. Have you been in the military services? Yes / No

If "yes," were you exposed to biological or chemical agents (either in training or combat) Yes / No

8. Have you ever worked in a HAZMAT team? Yes / No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes / No
If "yes," name the medications if you know them:

10. Will you be using any of the following items with your respirator(s)?
   a. HEPA Filters: Yes / No
   b. Canisters (for example, gas masks): Yes / No
   c. Cartridges: Yes / No

11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:
   a. Escape only (no rescue): Yes / No
   b. Emergency rescue only: Yes / No
   c. Less than 5 hours per week: Yes / No
   d. Less than 2 hours per week: Yes / No
   e. 2 to 4 hours per day: Yes / No
   f. Over 4 hours per day: Yes / No

12. During the period you are using the respirator(s), is your work effort:
   a. Light (less than 200 kcal per hour): Yes / No
      If "yes," how long does this period last during the average shift: hrs. mins.
      Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.
   b. Moderate (200 to 350 kcal per hour): Yes / No
      If "yes," how long does this period last during the average shift: hrs. mins.
      Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at truck level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.
   c. Heavy (about 350 kcal per hour): Yes / No
If "yes," how long does this period last during the average shift: hrs. mins.

Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you’re using your respirator: Yes / No

If "yes," describe this protective clothing and/or equipment:

14. Will you be working under hot conditions (temperature exceeding 77 deg. F): Yes / No

15. Will you be working under humid conditions: Yes / No

16. Describe the work you’ll be doing while you’re using your respirator(s):

17. Describe any special or hazardous conditions you might encounter when you’re using your respirator(s) (for example, confined spaces, life-threatening gases):

18. Provide the following information, if you know it, for each toxic substance that you’ll be exposed to when you’re using your respirator(s):

Name of the first toxic substance:

Estimated maximum exposure level per shift:

Duration of exposure per shift:

Name of the second toxic substance:

Estimated maximum exposure level per shift:

Duration of exposure per shift:

Name of the third toxic substance:

Estimated maximum exposure level per shift:

Duration of exposure per shift:

The name of any other toxic substance that you’ll be exposed to while using your respirator:

19. Describe any special responsibilities you’ll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security): (7-1-00)
08. Use of Respirators: (7-1-97)

a. Standard written procedures shall be developed for respirator use. These procedures shall include all information and guidance necessary for their proper selection, use and care. Possible emergency and routine uses of respirators shall be anticipated and planned for in the standard written procedures. (7-1-97)

b. The correct respirator shall be specified for each job. The respirator type shall be specified in the work procedures by a qualified individual supervising the respiratory protection program. The individual issuing them shall be adequately instructed to insure that the correct respirator is issued. Each respirator permanently assigned to an individual shall be durably marked to indicate to whom it was assigned. This mark shall not affect the respirator performance in any way. The date of respirator issuance shall be recorded. (7-1-97)

c. Written procedures shall be prepared covering safe use of respirators in dangerous atmospheres that might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available respirators. (7-1-97)

d. The employer shall in all IDLH atmospheres where the wearer, with failure of the respirator, could be overcome by a toxic or oxygen-deficient atmosphere, at least one additional person shall be present who is trained and equipped to provide effective emergency rescue. Communications (visual, voice or signal line) shall be maintained between both or all individuals present. Planning shall be such that one individual will be unaffected by any likely incident and have the proper rescue equipment to be able to assist the other(s) in case of emergency. (7-1-00)

e. When self-contained breathing apparatus or hose masks with blowers are used in atmospheres immediately dangerous to life or health, standby person(s) with suitable self-contained breathing apparatus must be present at the nearest fresh air source with suitable rescue equipment. (7-1-97)

f. Persons using air line respirators in atmospheres immediately hazardous to life or health shall be equipped with safety harnesses and safety lines for lifting or removing persons from hazardous atmospheres or other and equivalent provisions for the rescue of persons from hazardous atmospheres shall be used. A standby person(s) with suitable self-contained breathing apparatus shall be at the nearest fresh air source for emergency rescue. (7-1-97)

g. Respiratory protection is no better than the respirator in use, even though it is worn conscientiously. Frequent random inspections shall be conducted by a qualified individual to assure that respirators are properly selected, used, cleaned and maintained. (7-1-97)

h. For safe use of respirators, it is essential that both supervisors and workers be properly instructed in respirator selection, use, and maintenance and shall be instructed by persons trained to so instruct. Training shall provide the workers an opportunity to handle the respirator, have it fitted properly, test its face piece-to-face seal, wear it in normal air for a long familiarity period, and finally, to wear it in a test atmosphere. (7-1-97)
i. The employer shall provide fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly. Respirators shall not be worn under the following conditions: a growth of beard, sideburns, a skull cap, or temple pieces of glasses that projects under the face-piece. Also, the absence of one or both dentures can seriously affect the fit of a face-piece. The worker's diligence in observing these factors shall be evaluated by periodic check. To assure the proper protection, the face-piece shall be checked by the wearer each time he puts on the respirator. This may be done by following the manufacturer's face-piece fitting instructions. (7-1-97)

j. Providing respiratory protection for individuals wearing corrective eye glasses is a serious problem. A proper seal cannot be established if the temple bars of eye glasses extend through the sealing edge of the full face-piece. As a temporary measure, glasses with short temple bars or without temple bars may be taped to the wearer's head. Wearing of contact lenses in contaminated atmospheres with a respirator shall be allowed. Systems have been developed for mounting corrective lenses inside full face-piece respirator. When a worker must wear corrective lenses as part of the face-piece, the face-piece and lenses shall be fitted by qualified individuals to provide good vision comfort and a gas-tight seal. (7-1-97)

k. If corrective spectacles or goggles are required, they shall be worn so as not to affect the fit of the face-piece. Proper selection of equipment will minimize or avoid the problem. (7-1-97)

09. Maintenance and Care of Respirators: (7-1-97)

a. A program for maintenance and care of respirators shall be initiated and be adjusted to the type of workplace, working conditions, and hazards involved and shall include the following basic services: inspection for defects (including a leak check); cleaning and disinfecting; repair; and storage. (7-1-97)

b. Respiratory equipment shall be properly maintained to retain its original effectiveness. All respirators shall be inspected routinely before and after each use. A respirator that is not routinely used but is kept ready for emergency use shall be inspected after each use and at least monthly to assure that it is in satisfactory working condition. Self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be fully charged according to the manufacturer's instructions. It shall be determined that the regulator and warning devices function properly. Respirator inspection shall include a check of the tightness of the connections and the condition of the face-piece, head bands, valves, connecting tube, and canisters. Rubber or elastomer parts shall be inspected for pliability and signs of deterioration. Stretching and manipulating rubber or elastomer parts with a massaging action will keep them pliable and flexible and prevent them from taking a set during storage. (7-1-97)

c. A record shall be kept of inspection dates and findings for all respirators. The inspection record for respirators maintained for emergency use shall be kept with the respirator. (7-1-97)

d. A respirator that has been used shall be cleaned and disinfected before it is issued. Routinely used respirators shall be collected, cleaned and disinfected as frequently as necessary to insure
that proper protection is provided for the wearer. Each worker shall be briefed on the cleaning procedure and be assured of receiving a clean and disinfected respirator. (7-1-97)

e. Respirators maintained for emergency use shall be cleaned and disinfected after each use. (7-1-97)

f. Replacement or repairs shall be done only by experienced person with parts designed for the respirator. No attempt shall be made to replace components or to make adjustments or repairs beyond the manufacturer's recommendations. No interchange of parts or fittings from one type of respirator to another shall be made. Reducing or admission valves or regulators shall be returned to the manufacturer or to a trained technician for adjustments or repair. (7-1-97)

g. After inspection, cleaning, and necessary repair, respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirators placed at stations and work areas for emergency use should be quickly accessible at all times and should be stored in compartments built for the purpose. The compartments shall be clearly marked. Routinely used respirators, such as dust respirators, may be placed in plastic bags. Respirators shall not be stored in such places as lockers or tool boxes unless they are in carrying cases or cartons. Respirators shall be packed or stored so that the face-piece and valve assemblies will rest in a normal position and function will not be impaired by the elastomer setting in an abnormal position. NOTE: Instructions for proper storage of emergency respirators, such as gas masks and self-contained breathing apparatus, are found in "use and care" instructions usually mounted inside the carrying case lid. (7-1-97)

10. Identifications of Gas Mask/Respirator Canisters: (7-1-97)

a. The primary means of identifying a gas mask canister shall be by means of properly worded labels. The secondary means of identifying a gas mask canister shall be by a color code. (7-1-97)

b. Employers or their representative who issue or use gas masks/respirators falling within the scope of this sub-section shall see that all gas mask/respirator canisters purchased or used by them are properly labeled and colored in accordance with these requirements before they are placed in service and that the labels and color codes are properly maintained at all times thereafter until the canisters have completely served their purpose. (7-1-97)

c. On each canister shall appear in bold letters the following:

Canister for or Type N Gas Mask Canister. (Name for atmospheric contaminant)

In addition, essentially the following wording shall appear beneath the appropriate phrase on the canister label: "For respiratory protection in atmospheres containing not more than percent by volume of . (Name of atmospheric contaminant)

All of the markings specified above should be placed on the most conspicuous surface or surfaces of the canister. (7-1-97)
d. Canisters having a special high-efficiency filter for protection against radio-nuclide and other highly toxic particles shall be labeled with a statement of the type and degree of protection afforded by the filter. The label shall be affixed to the neck end of, or to the gray stripe which is around and near the top of the canister. The degree of protection shall be marked as the percent of penetration of the canister filter medium by a zero point three (0.3) micron diameter dioctylphthalate (DOP) smoke at a flow rate of eighty-five (85) liters per minute. (7-1-97)

e. Each canister shall have a label warning that gas masks/respirators should be used only in atmospheres containing sufficient oxygen to support life (at least 16 percent by volume), since gas mask/respirator canisters are only designed to neutralize or remove contaminants from the air. (7-1-97)

f. Each gas mask canister shall be coated with a distinctive color or combination of colors indicated in Table 050.08-A. All colors used shall be such that they are clearly identifiable by the user and clearly distinguishable from one another. The color coating used shall offer a high degree of resistance to chipping, scaling, peeling, blistering, facing, and the effects of the ordinary atmospheres to which they may be exposed under normal conditions of storage and use. Appropriately colored pressure sensitive tape may be used for the stripes. (7-1-97)

<table>
<thead>
<tr>
<th>ATMOSPHERIC CONTAMINANTS TO BE PROTECTED AGAINST</th>
<th>COLORS ASSIGNED*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid Gases</td>
<td>White</td>
</tr>
<tr>
<td>Hydrocyanic Acid Gas</td>
<td>White with 1/2-inch Green Stripe completely around the canister near the bottom</td>
</tr>
<tr>
<td>Chlorine Gas</td>
<td>White with 1/2-inch Yellow Stripe completely around the canister near the bottom</td>
</tr>
<tr>
<td>Organic Vapors</td>
<td>Black</td>
</tr>
<tr>
<td>Ammonia Gas</td>
<td>Green</td>
</tr>
<tr>
<td>Acid Gases and Ammonia Gas</td>
<td>Green with ½-inch White Stripe completely around the canister near the bottom</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>Blue</td>
</tr>
<tr>
<td>Acid Gases and Organic Vapors</td>
<td>Yellow</td>
</tr>
<tr>
<td>Hydrocyanic Acid Gas and Chloropicrin Vapor</td>
<td>Yellow with 1/2-inch Blue Stripe completely around the canister near the bottom</td>
</tr>
<tr>
<td>Acid Gases, Organic Vapors, and Ammonia Gases</td>
<td>Brown</td>
</tr>
<tr>
<td>Atmospheric Contaminants</td>
<td>Canister Color Details</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Radioactive Materials, excepting Tritium and Noble Gases</td>
<td>Purple (Magenta)</td>
</tr>
<tr>
<td>Asbestos Fibers</td>
<td>Purple (Magenta)</td>
</tr>
<tr>
<td>Particulates (Dusts, Fumes, Mists, Fogs, or Smokes) in combination with any of the above Gases or Vapors</td>
<td>Canister color for contaminant, as designated above, with ½-inch Gray Stripe completely around the canister near the top</td>
</tr>
<tr>
<td>All of the above atmospheric Contaminants</td>
<td>Red with ½-inch Gray Stripe completely around the canister near the top</td>
</tr>
</tbody>
</table>

* Gray shall not be assigned as the main color for a canister designed to remove acids or vapors.

NOTE: Orange shall be used as a complete body or stripe color to represent gases not included in this table. The user will need to refer to the canister label to determine the degree of protection the canister will afford. (7-1-97)

---

**11. Occupational Head Protection:** (7-1-97)

a. Each affected employee shall wear protective helmets when working in areas where there is a potential for injury to the head. (7-1-97)

b. Protective helmets designed to reduce electrical shock hazard shall be worn by each effected employee when near exposed electrical conductors which could contact the head. (7-1-97)

c. Helmets for the protection of employees against impact, penetration of falling and flying objects, and from limited electric shock and burn shall meet the specifications contained in American National Standards Institute, Z89.1; Protective Head-wear for Industrial Workers. (7-1-97)

d. Persons working in the shops around machinery or in locations which present a hair catching or hair fire hazard shall wear caps or other types of head covering which completely covers the hair. Caps with metal buttons or metal visors shall not be worn around electrical hazards. (7-1-97)

e. Helmets shall be worn by employees who work around or under scaffolds or other overhead structures or who are otherwise exposed to the hazards of falling materials and propelled objects. (7-1-97)

---

**12. Personal Flotation Devices:** (7-1-97)

a. Employees working on, over, or along water where the danger of drowning exists shall be provided with and shall wear approved personal flotation devices. (7-1-97)
b. Personal flotation devices shall be of types approved by the United States Coast Guard, pursuant to 46CFR 160, Coast Guard Life Saving Equipment Specifications and 23CFR 175, Personal Flotation Devices. Personal flotation devices are categorized into types according to their performance characteristics: (7-1-97)

i. Type I - Life Preserver - has the greatest required buoyancy, twenty-two (22)-pounds, and is designed to turn most unconscious persons in the water from face down to a vertical and slightly backward position, and maintain them in that position. The Type I - Life Preserver is suitable for all waters, especially where there is a possibility of delayed rescue. The Type I - Life Preserver is easiest to don in an emergency because it is reversible and has a maximum of three (3) fasteners. The Type I - Life Preserver is the bulkiest and most uncomfortable to wear. (7-1-97)

ii. Type II - Buoyant Vest - has fifteen and one-half (15.5) pounds of buoyancy, and is designed to turn the wearer to a vertical and slightly backward position in the water. The turning action is not as pronounced as with the Type I Life Preserver and will not turn as many persons under the same conditions as the Type I - Life Preserver. The Type II - Buoyant Vest is normally sized for ease of emergency donning. The Type II - Buoyant Vest is usually more comfortable to wear. (7-1-97)

iii. Type III - Marine Buoyant Device - has fifteen and one-half (15.5) pounds of buoyancy, and is not designed to turn an unconscious victim to a vertical or slightly backward position in the water. However, once a person assumes this position, this flotation device will maintain the position. The Type III - Marine Buoyant Device is normally the most comfortable to wear. (7-1-97)

iv. Type IV - Throwable Flotation Device - is designed to be grasped or held by the user or thrown to a person in the water. This type of flotation device is suitable only where there is probability of quick rescue. The effects of fatigue or hypothermia make it very difficult to hold on to a Type IV flotation device for an extended period. The Type IV flotation device is a poor choice for non-swimmers. (7-1-97)

v. Type V - Restricted Special Purpose Flotation Devices - are approved only for the purposes listed on the label. (7-1-97)

c. Employees are not considered exposed to danger of drowning when: the water depth is known to be less than chest deep on the exposed individual; working behind standard height and strength guardrails; working inside operating cabs or stations which eliminate the possibility of accidentally falling into the water; wearing approved safety harness with lifeline attached so as to preclude the possibility of falling into the water. (7-1-97)

d. Type III, Type V, or better personal flotation devices shall be provided and worn by all persons wherever there is a drowning hazard: when on floating pipelines, pontoons, rafts, or float stages; when alone at night where there are drowning hazards regardless of other safeguards provided; and in skiffs, small boats, or launches. (7-1-97)
e. Requirements for personal flotation devices in boats are as follows: boats less than sixteen (16) feet in length, all canoes, and kayaks shall be equipped with one (1) Type I, II, III, or V for each person on board; boats sixteen (16) feet or over in length must be equipped with one (1) Type I, II, III, or V for each person on board plus one (1) Type IV throwable flotation device in case someone falls overboard; a Type V personal flotation device may be carried in lieu of any personal flotation device but only if the Type V is approved for the activity in which the boat is being used. (7-1-97)

f. Ski belts and inflatable type personal flotation devices are specifically prohibited. (7-1-97)

g. Prior to and after each use, personal flotation devices shall be inspected for defects which would reduce their designed effectiveness. Flotation devices shall be periodically tested for buoyancy. Buoyancy material shall be inspected for absorption of or retention of water. Straps shall be examined to make sure they are attached securely. The buckles and metal fasteners must be functional and free of rust. The fabric shall not be torn or ripped. Defective personal flotation devices shall not be used. (7-1-97)

h. Personal flotation devices will last many years if given reasonable care. During winter storage, remove them from boats and work-sites. Always dry personal flotation devices before storing them. Store personal flotation devices in a dry, well ventilated accessible place. Do not store personal flotation devices near oil or grease as these materials deteriorate flotation devices reducing their performance. Never use personal flotation devices as boat fenders as this will crush them rendering them unusable. Personal flotation devices are survival equipment and shall be treated as such. (7-1-97)

i. Life rings, buoys, and waterlights are required: along docks, walkways, or other fixed installations, or adjacent to open water more than five (5) feet deep, approved life rings, buoys, or waterlights with line attached shall be provided; to be spaced at intervals not to exceed two-hundred (200) feet and shall be kept in easily visible and readily accessible locations; when employees are assigned work at other casual locations where the exposure to drowning exists, at least one (1) approved life rings, buoys, and waterlights with line attached shall be provided in the immediate vicinity of the work assigned; when work is assigned over water where the vertical drop from an accidental fall would exceed twenty-five (25) feet, shall be subject to specific procedures as outlined in this sub-section; to have lines attached and shall be at least ninety (90) feet in length, at least one-fourth (1/4) inch in diameter and have a minimum breaking strength of five-hundred (500) pounds; to be United States Coast Guard approved Type V personal flotation devices; along with attached lines must be maintained to retain at least seventy-five percent (75%) of their designed buoyancy and strength. (7-1-97)

j. At least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water. (7-1-00)

13. Safety Harness, Lifelines, Lanyards, and Nets: (7-1-97)

a. Safety Harnesses, Lifelines, and Lanyards shall: (7-1-97)
i. be used only for employee safeguarding; (7-1-97)

ii. be secured above the point of operations to an anchorage or structural member capable of supporting a minimal dead weight of five-thousand-four-hundred (5,400) pounds; (7-1-97)

iii. have drop forged or pressed steel cadmium plated hardware in accordance with Type L, Class B plating specified in Federal Specification QQ-P-416 with smooth surfaces and free of sharp edges; (7-1-97)

iv. have hardware (except rivets) capable of withstanding a tensile loading of four-thousand (4,000) pounds without cracking, breaking, or taking a permanent deformation; (7-1-97)

v. be inspected periodically by the supervisor in charge and daily by the user. Any defective safety harnesses, life lines or lanyards shall be discarded or repaired before use. (7-1-97)

vi. Lifelines used on rock-scaling operations, or in areas where the lifeline may be subjected to cutting or abrasion, shall be a minimum of seven-eights (7/8) inch wire core manila rope. (7-1-97)

vii. For all other lifeline applications, a minimum, breaking strength of five-thousand-four-hundred (5,400) pounds. shall be used. (7-1-97)

viii. Safety belt lanyard shall be a minimum of one-half (1/2) inch nylon or equivalent with a maximum length to provide for a fall of not greater than six (6) feet. The rope shall have a nominal breaking strength of two-thousand-four-hundred (2,400) pounds. (7-1-97)

ix. Safety belts are not approved for use. (7-1-97)

b. Safety nets shall be provided when work places are more than twenty-five (25) feet above the ground or water surface, or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety harnesses are impractical. Where safety net protection is required by this sub-section, operations shall not be undertaken until the net is in place and has been tested. Safety nets shall be installed as close as practicable under the walking/working surface on which employees are working but in no case more than twenty-five (25) feet below such level. Nets shall be hung with sufficient clearance under them to prevent contact with the surface or structures below when subjected to an impact force equal to the drop test specified in this sub-section, It is intended that only one (1) level of nets be required for bridge construction. Safety nets shall extend outward from the outermost projection of the work surface where employees are exposed, see Table 050.11-A. The mesh size of nets shall not exceed six by six (6 x 6) inches. All new nets shall meet accepted performance standards of seventeen-thousand-five-hundred (17,500) foot pound minimum impact resistance as determined and certified by the manufacturer, and shall bear a label of proof test. Edge ropes shall provide a minimum breaking strength of five-thousand (5,000) pounds. Forged steel safety hooks or shackles shall be used to fasten the net to its support. Connections between the net panels shall develop the full strength of the net. Safety nets shall be inspected at least once a week for wear, damage, and other deterioration. Safety nets shall also be inspected after any occurrence which could affect the
integrity of the safety net system. Materials, scrap pieces, equipment, and tools which have fallen into the safety net shall be removed as soon as possible from the net and at least before the next work shift. The drop-test shall consist of a four-hundred (400) pound bag of sand thirty (30) +/- two (2) inches in diameter dropped into the net from the highest walking/working surface at which employees are exposed to fall hazards, but not less than forty-two (42) inches above that level. Defective nets shall not be used. (7-1-97)

<table>
<thead>
<tr>
<th>Vertical distance from working level to horizontal plane of net</th>
<th>Minimum required horizontal distance of outer edge of net from the edge of the working surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 5 feet</td>
<td>8 feet</td>
</tr>
<tr>
<td>More than 5 feet up to 10 feet</td>
<td>10 feet</td>
</tr>
<tr>
<td>More than 10 feet</td>
<td>13 feet</td>
</tr>
</tbody>
</table>

(7-1-97)

c. Employees working over or near water where the danger of drowning exists, shall be subject to the provisions of sub-section 050.10 of this standard. (7-1-97)

14. Occupational Foot and Leg Protection: (7-1-97)

a. Employees shall wear foot and/or leg protection for the work assigned and the hazards that may reasonably be encountered. (7-1-97)

b. Workers who work in areas where there is a possibility of foot injury due to falling or rolling objects, or objects piercing the sole, and where employee's feet are exposed to electrical hazards shall wear safety-type footwear. Where safety-type footwear are made available by the employer, the same shall be provided at no cost or at cost price to the employee. Safety-toe footwear for employees shall meet the requirements and specifications in American National Standard for Protective Footwear, Z41. (7-1-97)

c. Workers who work in areas where there is a possibility of falls due to slipping shall wear sharp caulk soled boots or other suitable footwear that will afford reasonable protection from slipping. (7-1-97)

d. Special types or designs of shoes or foot guards shall be worn under those conditions where their use is required. (7-1-97)
e. Leggings or high top boots of leather, rubber, or other suitable material shall be worn by climbers, persons exposed to hot substances, cryogenic materials, caustic or acid solutions, and where poisonous snakes may be encountered. (7-1-97)

f. Employees who are required to operate chain saws shall wear ballistic nylon, leather, or equivalent protection covering each leg from upper thigh to boot top except when working from a bucket truck. (7-1-97)

15. Electrical Protective Devices. (7-1-97)

a. Electrical protective devices made of rubber shall meet the following requirements: blankets, gloves, and sleeves shall be produced by a seamless process; each item shall be clearly marked as specified in Table 050.13-A; markings shall be nonconducting and shall be applied in such a manner as not to impair the insulating qualities of the device; and markings on gloves shall be confined to the cuff portion of the glove. (7-1-97)

<table>
<thead>
<tr>
<th>TABLE 050.13-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>Non-ozone-resistant equipment other than matting</td>
</tr>
<tr>
<td>Ozone-resistant equipment other than matting</td>
</tr>
</tbody>
</table>

(7-1-97)

b. Rubber protective devices for electrical workers shall conform to the requirements established in the American Society for Testing and Materials as specified in Table 050.13-B. (7-1-97)

<table>
<thead>
<tr>
<th>TABLE 050.13-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM</td>
</tr>
</tbody>
</table>

(7-1-97)
Rubber Insulating Gloves  
ASTM D 120

Rubber Matting for use around Electric Apparatus  
ASTM D 178

Rubber Insulating Blankets  
ASTM D 1048

Rubber Insulating Covers  
ASTM D 1049

Rubber Insulating Line Hose  
ASTM D 1050

Rubber Insulating Sleeves  
ASTM D 1051

In-Service Care of Insulating Line Hose and Covers  
ASTM D 478

In-Service Care of Insulating Blankets  
ASTM D 479

In-Service Care of Insulating Gloves and Sleeves  
ASTM D 496

<table>
<thead>
<tr>
<th>Class of equipment</th>
<th>Proof-test A-C voltage rms V</th>
<th>Proof-test D-C voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5,000</td>
<td>20,000</td>
</tr>
<tr>
<td>1</td>
<td>10,000</td>
<td>40,000</td>
</tr>
<tr>
<td>2</td>
<td>20,000</td>
<td>50,000</td>
</tr>
<tr>
<td>3</td>
<td>30,000</td>
<td>60,000</td>
</tr>
</tbody>
</table>

(7-1-97)

c. Electrical protective devices shall be capable of withstanding the a-c proof-test voltage or the d-c proof-test voltage specified in Table 050.13-C. The proof test shall reliably indicate that the devices can withstand the voltage involved. The specifications for conducting the various tests for electrical protective devices is contained in the standards in Table 050.13-B. Equipment that has been subjected to a minimum breakdown voltage test shall not be used for electrical protection. Material used for Type II insulating equipment shall be capable of withstanding an ozone test, with no visible effects. The ozone test shall reliably indicate that the material will resist ozone exposure in actual use. Any visible signs of ozone deterioration to the material, such as checking, cracking, breaks, or pitting, is evidence of failure to meet the requirements for ozone-resistant material. (7-1-97)
d. Electrical protective equipment shall be free of harmful physical irregularities that can be detected by tests or inspections required under this sub-section. Surface irregularities that may be present on all rubber goods because of imperfections on forms or molds or because of inherent difficulties in the manufacturing process and that may appear as indentedations, protuberances, or imbedded foreign material are acceptable under the following conditions: the indentation or protuberance blends into a smooth slope when the material is stretched; the foreign material remains in place when the insulating material is folded and stretches with the insulating material surrounding it. (7-1-97)

e. Electrical protective equipment shall be maintained in a safe and reliable condition. The following specific requirements shall apply to insulating blankets, covers, line hose, gloves, and sleeves made of rubber: maximum use voltages shall conform to those listed in Table 050.13-D; insulating equipment shall be inspected for damage before each day's use and immediately following any incident that can reasonably be suspected of having caused damage; insulating gloves shall be given an air test along with a physical inspection. Insulating equipment with any of the following defects shall not be used: a hole, tear, puncture, or cut; ozone cutting or ozone checking; an embedded foreign object; swelling, softening, hardening, or becoming sticky or inelastic; any other defect that damages the insulating properties of the equipment. Insulating equipment found to have other defects that might affect its insulating properties shall be removed from service and returned for testing. Insulating equipment failing to pass inspections or electrical tests may not be used by employees, except as follows: rubber insulating line hose may be used in shorter lengths with the defective portion cut off; rubber insulating blankets may be repaired using a compatible patch that results in physical and electrical properties equal to those of the blanket; rubber insulating blankets may be salvaged by severing the defective area from the undamaged portion of the blanket (The resulting undamaged area may not be smaller than twenty-two (22) inches by twenty-two (22) inches for Class one (1), two (2), three (3), and four (4) blankets); rubber insulating gloves and sleeves with minor physical defects, such as small cuts, tears, or punctures, may be repaired by the application of a compatible patch; rubber insulating gloves may also be repaired with a compatible liquid compound. The patched area of gloves and sleeves shall have the same electrical and physical properties equal to those of the surrounding material. Repairs to gloves are permitted only in the area between the wrist and the reinforced edge of the opening. Repaired insulating equipment shall be retested before it may be used by employees. The employer shall certify that electrical protective equipment has been tested. The certification shall identify the equipment that passes the test and the date it was tested. (Note: Marking of equipment or entering the results of the tests and the dates of testing into logs are two (2) acceptable means of meeting this requirement.) (7-1-97)

f. Insulating equipment shall be cleaned as needed to remove foreign substances. Insulating equipment shall be stored in such a location and in such a manner as to protect it from light, temperature extremes, excessive humidity, ozone, and other injurious substances and conditions. (7-1-97)
g. Protector gloves shall be worn over insulating gloves except as follows: protector gloves need not be used with class zero (0) gloves, under limited use conditions, where small equipment and parts manipulation necessitate unusually high finger dexterity (Note: Extra care is needed in the visual inspection of gloves and in the avoidance of handling sharp objects when protector gloves are not used); any other class of glove may be used for similar work without protector gloves if the employer can demonstrate that the possibility of physical damage to the gloves is small and if the class of glove is one class higher than that required for the voltage involved. Insulating gloves that have been used without protector gloves may not be used at the higher rated voltage until they have been tested. (7-1-97)

h. Electrical protective equipment shall be subjected to periodic electrical tests. Test voltages and the maximum intervals between tests shall be in accordance with Table 050.13-D and Table 050.13-E. (7-1-97)

<table>
<thead>
<tr>
<th>TABLE 050.13-D</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUBBER INSULATING EQUIPMENT VOLTAGE REQUIREMENTS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Class of equipment</th>
<th>Maximum use voltage(^1) A-C-rms</th>
<th>Retest voltage(^2) A-C-rms</th>
<th>Retest voltage(^2) D-C-rms</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1,000</td>
<td>5,000</td>
<td>20,000</td>
</tr>
<tr>
<td>1</td>
<td>75,000</td>
<td>10,000</td>
<td>40,000</td>
</tr>
<tr>
<td>2</td>
<td>17,000</td>
<td>20,000</td>
<td>50,000</td>
</tr>
<tr>
<td>3</td>
<td>26,500</td>
<td>30,000</td>
<td>60,000</td>
</tr>
<tr>
<td>4</td>
<td>36,000</td>
<td>40,000</td>
<td>70,000</td>
</tr>
</tbody>
</table>

\(^1\) If there is no multi-phase exposure in a system area and if the voltage exposure is limited to the phase-to-ground potential; or if the electrical equipment and devices are insulated or isolated or both so that the multi phase exposure on a grounded wye circuit is removed.

\(^2\) The proof-test voltage shall be applied continuously for at least 1 minute, but no more than 3 minutes.

(7-1-97)
Rubber insulating line hose
Upon indication that insulating value is suspect.

Rubber insulating covers
Upon indication that insulating value is suspect.

Rubber insulating blankets
Before first issue and every 12 months thereafter

Rubber insulating gloves
Before first issue and every 6 months thereafter

Rubber insulating sleeves
Before first issue and every 12 months thereafter

1If the insulating equipment has been electrically tested but not issued for service, it may not be placed into service unless it has been electrically tested within the previous 12 months.

(7-1-97)

i. Where switches or fuses of more than one hundred fifty (150) volts to ground are not guarded during ordinary operations, suitable insulating floors, mats or platforms shall be provided on which the operator must stand while handling the switches. (7-1-97)

16. Work Clothing: (7-1-97)

a. Clothing shall be worn that is appropriate to the work being performed and conditions encountered. (7-1-97)

b. Loose sleeves, cuffs, or other loose or ragged clothing shall not be worn near moving machinery. (7-1-97)

c. Clothing with exposed metal buttons, metal belt buckles, metal visors, or other conductive materials shall not be worn around exposed electrical conductors. (7-1-97)

d. Persons working on, along side, or next to a street, road, or highway shall: (7-1-97)

i. Wear high visibility clothing (vest, shirt, or jacket) and a matching colored hard hat or soft cap. The color shall be yellow, strong yellow-green, orange or fluorescent versions of one of these colors. The hard hat is required when working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock or burns. (7-1-97)

ii. In all cases, nighttime operations shall require retroreflective garments be worn. The retroreflective material shall be orange, yellow, white, silver, strong yellow-green, or a
fluorescent version of one of these colors and shall be visible at a minimum of one-thousand (1,000) feet. The retroreflective clothing shall be designed to identify clearly the wearer as a person and be visible through the full range of body motions. (7-1-97)

e. Persons handling cryogenic materials shall: (7-1-97)

i. wear chemical splash goggles with a full coverage face shield; (7-1-97)

ii. wear gloves designed for use with cryogenic materials; (7-1-97)

iii. wear a loose fitting lab coat or jacket with long sleeves and a long apron with over-sleeve arm protection; (7-1-97)

iv. not have open pockets, trouser cuffs, and similar places where a liquid spill might lodge; (7-1-97)

v. have bare parts of the body protected while handling cryogenic materials; (7-1-97)

vi. shall never touch non-insulated cold equipment with any unprotected part of the body. (7-1-97)

f. Clothing contaminated, saturated, or impregnated with flammable liquids, corrosive substances, cryogenic materials, irritants, biological contaminants, toxic materials, or oxidizing agents shall be removed immediately and not worn again until properly cleaned. Cleaning of contaminated, saturated, or impregnated clothing shall be accomplished at the employer's site in facilities specifically for this purpose or sent to a commercial facility capable of performing the required cleaning/decontamination. In no case will contaminated materials be cleaned in facilities used to clean non-contaminated clothing. (7-1-97)

g. Employees whose duties require them to operate a chain saw, shall wear ballistic nylon, kevlar, or equivalent protection covering each leg from upper thigh to boot top. (7-1-00)

17. Hand Protection: (7-1-00)

a. Employers shall select and require employees to use appropriate hand protection when employees’ hands are exposed to hazards such as those from skin absorption of harmful substances; sever cuts or lacerations; severe abrasions; punctures, chemical burns; thermal burns; and harmful temperature extremes. (7-1-00)

b. Employers shall base the selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified. (7-1-00)

051. -- 059. (RESERVED)