

## **4123:1-3-03 Personal protective equipment.**

### **(A) Scope.**

The requirements of this rule relate to the personal protective equipment listed immediately below, as required for employees on operations described in this rule in which there is a known hazard, recognized as injurious to the health or safety of the employee.

(1) Eye and face protection.

(2) Foot (toe) protection.

(3) Respiratory protection – includes respirators, masks, canister type masks, supplied-air helmets, etc., for protection of the respiratory system from inhalation of particulate matter, noxious gases and vapors, and oxygen deficiency. Although this rule does not cover engineered protective measures (for example, ventilation), exposure control shall be accomplished as far as is feasible by accepted engineering methods before considering or instituting use of respirators (see rule 4121:1-3-18 of the Administrative Code).

(4) Head and hair protection – includes all operations where employees are required to be present in areas where a hazard to their head exists from falling or flying objects, or from physical contact from rigid objects, or from exposures where there is a risk of injury from electrical shock or hair entanglement.

(5) Protective clothing.

(6) Hearing protection.

(7) Safety belts, lifelines and lanyards.

(8) Seat belts.

(9) Safety nets.

(10) Working over or near water.

### **(B) Definitions.**

(1) "Head protection devices" means:

(a) "Bump cap or hat" means a thin-shelled plastic headgear worn to provide protection to the head from bumps or lacerations but does not meet the requirements for protective helmets.

- (b) "Crown straps" means that part of the suspension which passes over the head.
- (c) "Hair enclosure" means a hat or cap (other than a protective helmet or bump cap) or a hair net specifically designed to protect the wearer from hair entanglement in moving parts of machines, equipment, or where there is exposure to sparks, hot metal, or ignition.
- (d) "Protective helmet" means a rigid headgear also known as a safety or hard hat, or as a safety or hard cap that is worn to provide protection for the head, or portions thereof, against impact, flying particles, or electrical shock, or any combination thereof; and which is held in place by a suitable suspension.
- (e) "Suspension" means the internal cradle of a protective helmet or bump cap which holds it in place on the head and is made up of the head band and crown straps.
- (2) "Lanyard" means a rope, suitable for supporting one person. One end is fastened to a safety belt or harness and the other end is secured to a substantial object or a safety line.
- (3) "Lifeline" means a rope, suitable for supporting one person, to which a lanyard or safety belt (or harness) is attached.
- (4) "O.D." means optical density and refers to the light refractive characteristics of a lens.
- (5) "Radiant energy" means energy that travels outward in all directions from its sources.
- (6) "Respiratory devices" means:
- (a) "Air-purifying device" means a device which removes contaminants from the atmosphere and can be used only in atmospheres containing sufficient oxygen to sustain life (at least nineteen and one-half per cent by volume at sea level) and within specified concentration limitations of the specific device.
- (i) "Mechanical-filter respirator" means a device which provides respiratory protection against particulate mater, such as non-volatile dusts, mists, or metal fumes.
- (ii) "Chemical-cartridge respirator" means a device which provides respiratory protection against certain gases and vapors in concentrations not in excess of one-tenth per cent by volume.
- (iii) "Gas mask" means a device which provides respiratory protection against certain specific gases and vapors in concentrations up to two per cent by volume or as specified on the canister label and against particulate matter.

(b) "Supplied-air device" means a device which delivers breathing air through a supply hose connected to the wearer's facepiece.

(c) "Self-contained breathing apparatus" means a device which provides complete breathing protection for various periods of time based on the amount of breathing air or oxygen supplied and the breathing demand of the wearer. The basic types of self-contained breathing apparatus are:

(i) Closed-circuit devices (rebreathers):

(a) Compressed oxygen type.

(b) Chemical oxygen type.

(c) Liquid oxygen type.

(ii) Open-circuit devices:

(a) Demand type.

(b) Pressure demand type.

(7) "Safety belt or harness" means a device, worn around the body, which, by reason of its attachment to a lanyard and lifeline or a structure, will prevent an employee from falling.

(C) Specific requirements of general application.

(1) Personal protective equipment furnished by the employer shall be issued to the employee in sanitary and proper condition so that it will effectively protect against the hazard involved.

(2) Where employees provide their own protective equipment, such equipment shall give equal or greater protection than that furnished by the employer.

(D) Eye and face protection.

(1) Responsibility.

The employer shall provide eye protection for all employees engaged in the operations listed in paragraph(D)(2) of this rule and exposed to an eye hazard. Eye protection shall also be provided for any other employees required to work in the immediate area and who are exposed to the hazards of the operations listed. It shall be the responsibility of the employee to use the eye protection provided by the employer (see sections 4101.12 and

4101.13 of the Revised Code). (See also appendix to paragraph(D) of this rule for "Eye and Face Protector Selection Guide".)

(2) Operations requiring eye protection.

(a) Eye protection shall be provided to employees performing the following operations:

(i) When using hand tools or mechanical equipment to cut, chip, drill, clean, buff, grind, polish, shape, or surface masonry, plaster, stone, plastics, or other hardened substances. This also covers demolition work where the materials listed are part of the operation;

(ii) Where acids, sand or shot blast are used in building cleaning operations;

(iii) Welding or cutting operations involving the use of gas flames or electric arc. For all electric welding operations the employer shall provide suitable helmets, hoods, or hand shields. (See appendix to this rule);

(iv) Where portland cement or similar dust-producing material is taken from an elevated bin, hopper, or similar structure by a chute;

(v) All spray paint operations where the employee's eyes are exposed to paint mist in the atmosphere;

(vi) All sand or shot blast operations where the employee's eyes are exposed to the blasting;

(vii) In the handling of molten metal, hot tars, hot pitch, hot asphalt, hot plastic, or similar hot substances;

(viii) Dressing grinding wheels;

(ix) Cleaning operations where wire wheels are used;

(x) In handling injurious acids, alkalis, or other chemicals;

(xi) When working in close proximity to a laser beam in excess of five milliwatts;

(xii) Cutting, drilling, turning, planing, jointing, and sanding of wood with power tools;

(xiii) Operations of portable explosive-actuated fastening tools and portable pneumatically powered fasteners;

(xiv) Operations requiring the use of compressed air for cleaning purposes.

(b) This rule does not apply where a shield or exhaust equipment provides adequate eye protection for employees otherwise exposed to the hazards covered in paragraphs (D)(2)(a)(i) to (D)(2)(a)(xiv) of this rule.

(3) Face shields.

Face shields may be used in lieu of other forms of eye protection if they provide the required protection against the particular hazards for which they are designed and they shall be provided where additional protection for the face is necessary.

(4) Material requirements for eye protection.

(a) Lens thickness – glass and plastic.

(i) No less than 3.0mm.

(ii) No more than 3.8mm.

(b) Impact test.

Must withstand one-inch diameter steel ball (weight approximately 2.4 ounces) dropped in free fall from a height of fifty inches onto the horizontal upper surface of the lens, impinging the lens within a circular area of five-eighths-inch diameter of the lens' mechanical center.

(c) Penetration resistance test – plastic only.

(i) A pointed projectile of suitable size, consisting of a new Singer number 25, size 135×17 needle, fastened into a holder weighing approximately 1.56 ounces shall be freely dropped, pointed downward, from a height of fifty inches onto the outer surface of the lens. The projectile may be guided but not restricted in its fall by being dropped through a tube extending to within four inches of the lens.

(ii) The lens shall not be pierced through from the impact.

(d) Frames, flammability test.

A section at least one inch long of the plastic components of the frame shall be exposed to a test for determining the flame propagation rate. For this purpose the

frame components (eye wire, temples, and sideshields) shall be ignited individually by holding one end of the specimen horizontally at the top of a luminous three-quarter-inch Bunsen burner flame in a draft-free room. The rate of propagation determined by a stop watch shall be twenty-four seconds per inch or less. A faster rate of propagation shall be cause for rejection.

(e) Frames, marking.

(i) Safety spectacles require special frames. Combination of streetwear frames with safety lenses meeting the standard are not in compliance.

(ii) Frames shall bear the trademark, identifying the manufacturer, on both fronts and temples.

(f) Lens marking – glass or plastic.

Each lens shall be distinctly marked in a permanent legible manner with manufacturer's monogram. Such marking shall be so placed as not to interfere with the vision of the wearer. Each filter lens shall be marked with the shade designation. Each glass filter lens shall be marked with the letter "H" to indicate treatment for impact resistance.

(5) Laser protection.

The employer shall provide laser safety goggles which will protect the employee from direct or reflected laser light equal to or greater than 0.005 watts (five milliwatts) per square centimeter. The laser safety goggles shall provide protection for the specific wavelength of the laser and be of optical density (O.D.) adequate for the energy involved. Table 3-3 lists the maximum power or energy density for which adequate protection is afforded by glasses of optical densities from five through eight. Output levels falling between lines in this table shall require the higher density.

(a) Labeling of eye protection.

All protective goggles shall bear a label identifying the following data:

(i) The laser wavelength for which use is intended;

(ii) The optical density of those wavelengths;

(iii) The visible light transmission.

(b) Labeling of laser equipment.

The employer shall furnish equipment provided with labels containing the following minimum information for continuous-wave (cw) lasers:

- (i) Wavelength or wavelength range;
- (ii) Emergent beam size;
- (iii) Beam divergence;
- (iv) Maximum average power output;
- (v) Maximum emergency beam irradiance;
- (vi) Manufacturer's name and address;
- (vii) Product identification number.

(c) Posting.

The employer shall post notices in prominent locations in which lasers are being operated. (For examples see appendix to this rule.)

(d) Beam shutters or caps shall be utilized, or the laser turned off, when laser transmission is not actually required. When the laser is left unattended for a substantial period of time, such as during lunch hour, overnight or at change of shifts, the laser shall be turned off.

(e) Atmospheric conditions.

The employer shall require the employee to keep away from the source, range and target of the laser when there is exposure to rain or snow or when there is dust or fog in the air.

(E) Foot (toe) protection.

Foot protection shall be made available by the employer and shall be worn by the employee where an employee is exposed to machinery or equipment that represents a foot hazard or where an employee is handling material which presents a foot hazard.

(F) Respiratory equipment.

(1) The employer shall furnish approved respiratory equipment where there are air contaminants as defined in paragraph (B)(1) of rule 4121:1-3-01 of the Administrative Code. It shall be the responsibility of the employee to use the respirator or respiratory

equipment provided by the employer, guard it against damage and report any malfunction to the employer (see sections 4101.12 and 4101.13 of the Revised Code). Note: See appendix to this rule for basic guides for the selection of respirators.

(2) This requirement does not apply where an effective exhaust system or other means of equal or greater protection has been provided.

(G) Head and hair protection.

(1) Responsibility.

(a) Employer.

(i) Whenever employees are required to be present in areas where the potential hazard mentioned in paragraph (A)(4) of this rule are present, employers shall provide them with suitable protective headgear or hair enclosures.

(ii) When required, employers shall provide accessories designed for use with protective headgear and which are suitable for their intended purpose.

(iii) Protective helmets and bump caps, or parts thereof, and hair enclosures shall be sanitized before reissue and damaged parts of protective headgear shall be replaced.

(b) Employees.

Employees shall not alter any head or hair protective equipment that lessens its effectiveness, and shall use such equipment in accordance with instructions and training received.

(2) Protective helmets.

(a) Classes of helmets.

(i) Protective helmets as defined in paragraph (B)(1)(d) of this rule shall be of the following classes:

(a) Class A-limited voltage protection.

(b) Class B-high voltage protection.

(c) Class C – no voltage.

(d) Class D- limited voltage protection. Firefighters' service helmets with full brim only.

(b) Winter liners and chin straps.

(i) All winter liners shall be fabricated of materials that will not support combustion.

(ii) Winter liners and chin straps used in conjunction with class B helmets for protection from electricity shall not contain any metallic or other conductive material.

(c) Physical requirements for helmets.

(i) Impact resistance.

Helmets shall be capable of withstanding the impact of an eight-pound steel ball, approximately three and three-quarters inches in diameter, dropped onto the center of the top of the helmet from a height of five feet without transmitting an average force of more than eight hundred fifty pounds.

(ii) Crown strap clearance.

Crown straps shall not allow the distance between the top of the head and the underside of the helmet to be adjusted to less than one inch when a twenty-five pound weight is placed on top of the helmet.

(iii) Penetration resistance.

Class A, B, and D helmets shall not be pierced more than three-eighths-inch and Class C helmets not more than seven-sixteenths-inch, including the thickness of the shell material, when subjected to a one-pound steel plumb bob with a point having an included angle of 35+1 degrees and a maximum point radius of 0.010 inch, dropped ten feet vertically onto the top of the helmet.

(iv) Insulation resistance.

Class A and D helmets shall be capable of withstanding two thousand two hundred volts alternating-current sixty hertz (rms) for one minute, with leakage current not in excess of three milliamperes. This test is not applicable to Class C helmets. Class B helmets shall be capable of withstanding twenty thousand volts alternating-current sixty hertz for nine milliamperes.

(v) Helmet shell materials.

(a) Materials used in Class A and Class B helmets shall be water resistant and slow burning. Materials in Class D helmets shall be fire resistant (self-extinguishing) and nonconductors of electricity.

(b) Class B headgear shall have no holes in the shell nor metal parts.

(3) Bump caps.

Bump caps or hats shall never be used as a substitute for safety helmets where there is danger from falling objects, flying particles, or electrical shock.

(4) Hair enclosures.

(a) A hat, cap, or net shall be worn where there is danger of hair entanglement in moving parts of machinery or equipment, or where there is exposure to means of ignition. It shall be designed to enclose all loose hair and be adjustable to accommodate all head sizes. Material used for a hair enclosure shall be durable, fast-dyed, nonirritating to the skin and capable of withstanding frequent cleaning. It shall not be reissued from one employee to another unless it has been thoroughly sanitized.

(b) Hair enclosures used in areas where there is exposure to sparks, hot or molten metals, or ignition from heat, flames, or chemical reaction shall be made of materials that are nonburning or flame retardant and do not melt.

(H) Protective clothing.

(1) When handling chemicals injurious to the skin. The employer shall provide rubber or plastic gloves, sleeves and aprons for all operations involving the handling of injurious concentrations of acids, alkalis, epoxy or similar substances.

(2) Welding, cutting, brazing, and molten metal exposures.

(a) All employees exposed to the hazards created by welding, cutting, brazing, or molten metal operations shall be protected by personal protective equipment.

(b) Specified protective clothing.

(i) The employer shall provide durable flame-resistant gloves for all welders and oxygen cutters. Insulated linings shall be provided when the employee is exposed to high radiant energy.

(ii) The employer shall provide cape sleeves or shoulder covers with bibs made of leather or other flame-resistant materials for employees required to perform overhead welding or cutting operations.

(iii) Clothing treated with nondurable flame-retardant materials shall be treated after each wetting or cleaning.

(3) When working by hand on circuits in excess of two hundred fifty volts.

Unless deenergized and grounded, the employer shall provide electricians' rubber gloves with protectors, or other means of insulating employees from ground or current of opposite polarity when working on circuits in excess of two hundred fifty volts.

(4) When handling hot asphaltic materials.

The employer shall provide suitable foot protection to prevent burns when employees are required to handle hot asphaltic materials.

(I) Hearing protection.

Employees exposed to continuous noise levels of ninety or more decibels (dBA) slow response shall be provided with approved ear protection. (Variations in noise level involving maxima at intervals of one second or less, are to be considered continuous.) If ear plugs that require fitting are provided, they shall be fitted to the individual employee by a competent person.

(J) Safety belts, lifelines and lanyards.

(1) Lifelines, safety belts or harnesses and lanyards shall be provided by the employer, and it shall be the responsibility of the employee to wear such equipment when engaged in securing or shifting thrustouts, inspecting or working on overhead machines that support scaffolds, or on other high rigging, when working on steeply pitched roofs, when working on poles or steel frame construction, when working on all swinging scaffolds, when exposed to hazards of falling where the operation being performed is more than six feet above ground or above a floor or platform, except as otherwise specified in this chapter, and when required to work on stored material in silos, hoppers, tanks, and similar storage areas. Lifelines and safety belts or harnesses shall be securely fastened to the structure and shall sustain a static load of no less than five thousand pounds.

(2) Lifelines, safety belts or harnesses and lanyards shall be used only for employee safeguarding. Any lifeline, safety belt, safety harness, or lanyard actually subjected to in-service loading, as distinguished from static load testing, shall be removed from service and shall not be used again for employee safeguarding until inspected and determined by an authorized person to be undamaged and suitable for reuse.

(3) Lifelines used on rock-scaling operations, or in areas where the lifeline may be subjected to cutting or abrasion, shall be a minimum seven-eighths-inch wire core manila rope or equivalent. For all other lifeline applications, a minimum of three-fourths-inch manila rope or equivalent shall be provided.

(4) Safety belt or harness lanyard shall be a minimum of one-half-inch nylon, or equivalent, with a maximum length to provide for a fall of no more than six feet. The lanyard shall have a breaking strength of no less than five thousand pounds.

(5) All safety belt or harness and lanyard hardware shall be drop forged or pressed steel, cadmium plated. Surface shall be smooth and free from sharp edges.

(6) All safety belt or harness and lanyard hardware shall be capable of withstanding a tensile loading of four thousand pounds without cracking, breaking, or becoming permanently deformed.

(7) Safety nets may be used in lieu of lifelines and safety belts or harnesses.

(K) Seat belts.

Seat belts shall be provided for crawler-type tractors, bulldozers, rubber-tired earth-moving equipment, off-highway trucks and graders except on equipment that is designed for standup operations only or that has no rollover protective structure.

(L) Safety nets.

(1) Safety nets shall be provided when workplaces are more than twenty-five feet above the ground, water, or other surface where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines or safety belts or harnesses is impractical.

(2) Where safety net protection is required by this rule operations shall not be undertaken until the net is in place and has been tested.

(3) Safety nets shall extend outward from the outermost projection of the work surface in accordance with the following table to this rule and shall be installed as close under the work surface as practical but in no case more than thirty feet below such work surface with the exception of bridge construction where only one level of nets is required. Nets shall be hung with sufficient clearance to prevent employees' contact with the surfaces or structures below. Such clearance shall be determined by impact load testing.

(4) The mesh size of nets shall not exceed six inches. All new nets shall meet accepted performance standards of seventeen thousand five hundred foot-pounds 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 pounds.

(5) Forged steel safety hooks or shackles shall be used to fasten the net to its supports. Attachment of safety nets to the working platform is prohibited.

(6) Connections between net panels shall maintain the full strength of the net.

(M) Working over or near water.

(1) Where employees are working over or near water, and where the depth or current of the water creates a danger of drowning, the employer shall provide U.S. coast guard-approved life jackets or buoyant work vests for each employee.

(2) Ring buoys with no less than ninety feet of line attached shall be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed two hundred feet.

(3) At least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water.

(4) In cribs and cofferdams where employees are exposed to danger of falling inside of the enclosure containing water, a life raft shall be provided.

(N) Employee's responsibility.

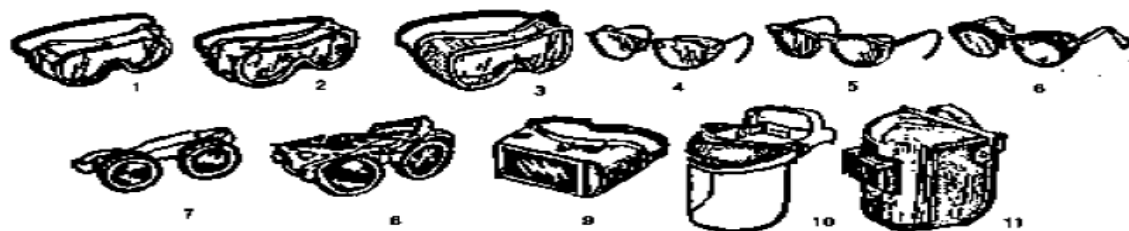
It shall be the responsibility of the employee to properly use the equipment provided by the employer provided by the employer as required in this rule (See also sections 4101.12 and 4101.13 of the Revised Code)

Effective Date: 4/1/99

Prior Effective Dates: 4/1/68; 11/1/79

## Appendix A

**Table 3-1 Eye and Face Protector Selection Guide.**



- 1. Goggles, Flexible Fitting, Regular Ventilation
- 2. Goggles, Flexible Fitting, Hooded Ventilation
- 3. Goggles, Cushioned Fitting, Rigid Body
- \*4. Spectacles, Metal Frame, with Sideshields
- \*5. Spectacles, Plastic Frame, with Sideshields
- \*6. Spectacles, Metal-Plastic Frame, with Sideshields

- \*\*7. Welding Goggles, Eyecup Type, Tinted Lenses (Illustrated)
- 7A. Chipping Goggles, Eyecup Type, Clear Safety Lenses (Not Illustrated)
- \*8. Welding Goggles, Coverspec Type Tinted Lenses (Illustrated)
- 8A. Chipping Goggles, Coverspec Type, Clear Safety Lenses (Not Illustrated)
- \*\*9. Welding Goggles, Coverspec Type, Tinted Plate Lens
- 10. Face Shield (Available with Plastic or Mesh Window)
- \*\*11. Welding Helmets

### APPLICATIONS

**Operation**

Acetylene –Burning  
 Acetylene –Cutting  
 Acetylene –Welding  
 Chemical Handling  
 Chipping  
 Electric (Arc) Welding  
  
 Furnace Operations  
 Grinding –Light  
 Grinding –Heavy  
 Laboratory  
 Machining  
 Molten Metals  
 Spot Welding

**Hazards**

Sparks, Harmful Rays,  
 Molten Metal,  
 Flying Particles  
 Splash, Acid Burns, Fumes  
 Flying Particles  
 Sparks, Intense Rays,  
 Molten Metal  
 Glare, Heat, Molten Metal  
 Flying Particles  
 Flying Particles  
 Chemical Splash, Glass Breakage  
 Flying Particles  
 Heat, Glare, Sparks, Splash  
 Flying Particles, Sparks

**Recommended Protectors:**

7, 8, 9,  
  
 2, 10 (For severe exposure add 10 over 2)  
 1, 3, 4, 5, 6, 7A, 8A  
 9, 11 (11 in combination with 4, 5, 6, in tinted lenses,  
 advisable)  
 7, 8, 9 (For severe exposure add 10)  
 1, 3, 4, 5, 6, 10  
 1, 3, 7A, 8A (For severe exposure add 10)  
 2 (10 when in combination with 4, 5, 6)  
 1, 3, 4, 5, 6, 10  
 7, 9 (10 in combination with 4, 5, 6, in tinted lenses)  
 1, 3, 4, 5, 6, 10

\*Non-side shield spectacles are available for limited hazard use requiring only frontal protection.  
 \*\*See Table 3-2, in this appendix, Filter Lens Shade Numbers for Protection Against Radiant Energy.

**Table 3-2. Filter lens shade numbers for protection against Radiant Energy.**

| <b>WELDING OPERATION</b>   | <b>SHADE<br/>NUMBER</b> |
|--|-------------------------|
| Shielded metal-arc welding 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes.....            | 10                      |
| Gas-shielded arc welding (nonferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes..... | 11                      |
| Gas-shielded arc welding (ferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes.....    | 12                      |
| Shielded metal-arc welding 3/16-, 7/32-, 1/4-inch diameter electrodes.....                   | 12                      |
| 5/16-, 3/8-inch diameter electrodes.....   | 14                      |
| Atomic hydrogen welding.....   | 10-14                   |
| Carbon-arc welding.....  | 14                      |
| Soldering.....   | 2                       |
| Torch brazing.....   | 3 or 4                  |
| Light cutting, up to 1 inch.....   | 3 or 4                  |
| Medium cutting, 1 inch to 6 inches.....  | 4 or 5                  |
| Heavy cutting, over 6 inches.....  | 5 or 6                  |
| Gas welding (light), up to 1/8-inch.....   | 4 or 5                  |
| Gas welding (medium), 1/8-inch to 1/2-inch.....  | 5 or 6                  |
| Gas welding (heavy), over 1/2-inch.....  | 6 or 8                  |

**Table 3-3. Selecting laser safety glass.**

| <b>INTENSITY</b>                                       | <b>ATTENUATION</b>            |                           |
|--|-------------------------------|---------------------------|
| <b>CW maximum power density (watts/cm<sup>2</sup>)</b> | <b>Optical density (O.D.)</b> | <b>Attenuation factor</b> |
| 10 <sup>-2</sup>                                       | 5                             | 10 <sup>5</sup>           |
| 10 <sup>-1</sup>                                       | 6                             | 10 <sup>6</sup>           |
| 1.0  | 7                             | 10 <sup>7</sup>           |
| 10.0   | 8                             | 10 <sup>8</sup>           |

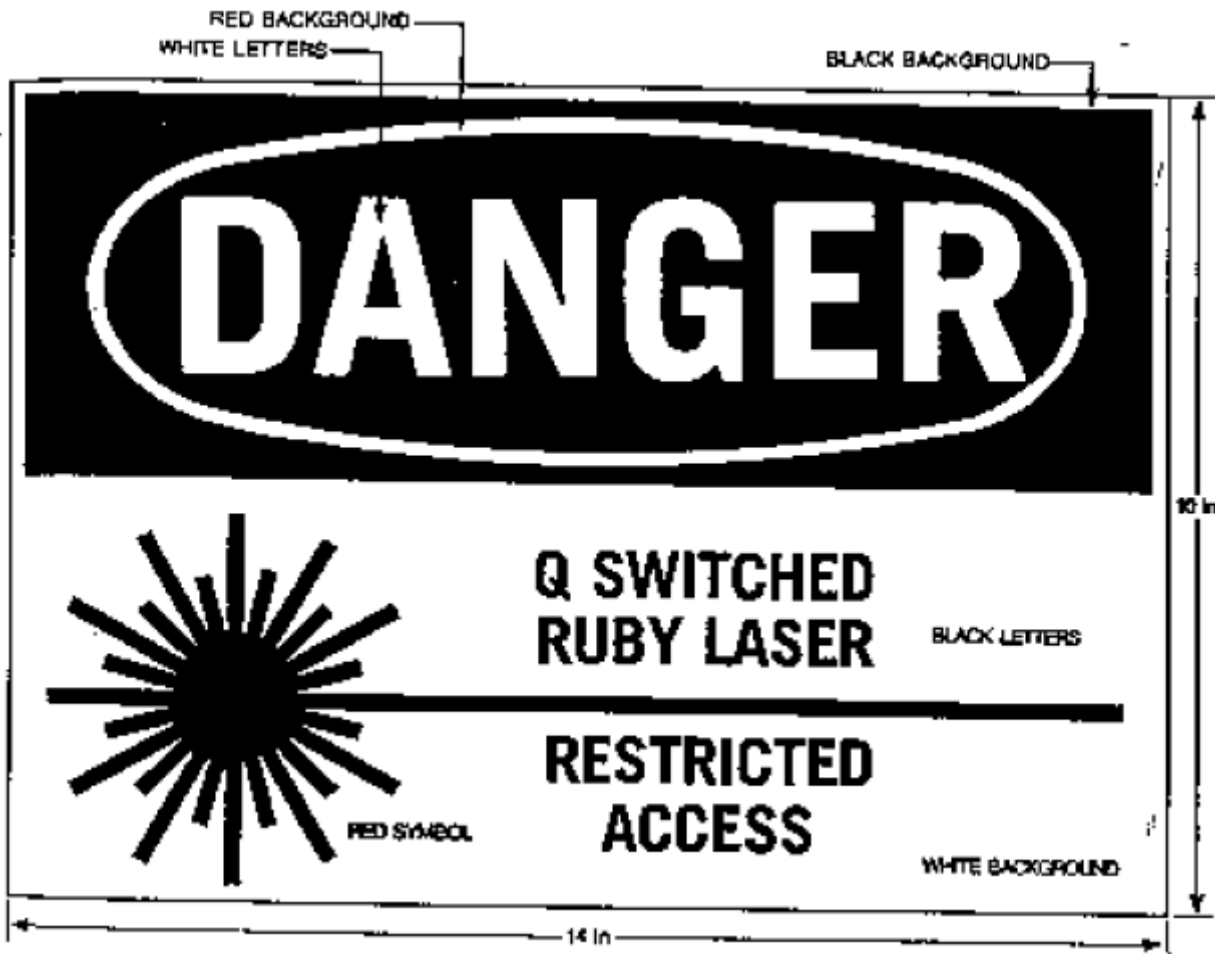
APPENDIX TO RULE 4123:1-3-03 – continued

EXAMPLE 3-A. SAMPLE WARNING SIGN FOR LASER USE.



APPENDIX TO RULE 4123:1-3-03 – continued

EXAMPLE 3-B. SAMPLE WARNING SIGN FOR LASER USE.



**APPENDIX TO RULE 4123:1-3-03 – continued**

**Table 3-4. Guide for Selection of Respirators.**

**GUIDE FOR SELECTION OF RESPIRATORS**

| <b>Hazard</b>   | <b>Respirator</b>  |
|---|--|
| OXYGEN DEFICIENCY   | Self-contained breathing apparatus.<br>Hose mask with blower.<br>Combination air-line respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.   |
| GAS AND VAPOR<br>CONTAMINANTS<br>Immediately dangerous                  | Self-contained breathing apparatus.<br>Hose mask with blower.<br>Air-purifying, full facepiece respirator to life or health with chemical canister (gas mask).<br>Self-rescue mouthpiece respirator (for escape only).<br>Combination air-line respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.                  |
| Not immediately dangerous to life or health.                            | Air-line respirator.<br>Hose mask without blower.<br>Air-purifying, half-mask or mouthpiece respirator with chemical cartridge.  |
| PARTICULATE<br>CONTAMINANTS<br>Immediately dangerous to life or health. | Self-contained breathing apparatus.<br>Hose mask with blower.<br>Air-purifying, full facepiece respirator with appropriate filter.<br>Self-rescue mouthpiece respirator (for escape only).<br>Combination air-line respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.  |
| Not immediately dangerous to life or health.                            | Air-purifying, half-mask or mouthpiece respirator with filter pad or cartridge.<br>Air-line respirator.<br>Air-line abrasive-blasting respirator.<br>Hose mask without blower.   |
| COMBINATION GAS,<br>VAPOR, AND<br>PARTICULATE<br>CONTAMINANTS           | Self-contained breathing apparatus.<br>Hose mask with blower.<br>Air-purifying, full facepiece respirator with chemical canister and appropriate filter (gas mask with filter).<br>self-rescue mouthpiece respirator (for escape only).<br>Combination air-line respirator with auxiliary self-contained air supply or an air-storage receiver with alarm. |
| Immediately dangerous to life or health.                                | Air-line respirator.<br>Hose mask without blower.  |
| Not immediately dangerous to life or health.                            | Air-purifying, half-mask or mouthpiece respirator with chemical cartridge and appropriate filter.  |

Table 3-5. Outline for selecting respiratory protective devices.

