



## 10.1. Personal Protective Equipment - Program

### Designing a PPE Program

1. Ensure engineering controls, e.g. elimination or substitution of the hazard, are considered first. PPE is the last line of defense.
2. Secure active participation of all parties.
3. Ensure a program coordinator has been appointed.
4. Observe the gradual phasing in of the program on a pre-arranged time schedule.
5. Re-evaluate program on an on-going basis.

### Promotional Strategy

1. Publicize commitment to the program.
2. Ensure a clear, concise Board policy has been formulated.
3. Examine the education program.

### Workplace Survey

1. Review work practices, job procedures and equipment layout.
2. Use job hazard analysis techniques to integrate accepted safety and health principles and practices into specific operations.
3. At any rate - safety glasses must be used when toolbox is open.

### Selection

1. Choose PPE to match the hazard.
2. Obtain advice on proper selection.
3. Institute workplace trials.
4. Consider the physical comfort of PPE.
5. Evaluate cost considerations of PPE usage.
6. Ensure PPE meets standards/certification (CSA, GCSB, NIOSH, ANSI).

### **Fitting and Wearing**

1. Ensure program includes the individual fitting of PPE.
2. Survey users to ensure PPE is worn properly.

### **Maintenance**

1. Inspect PPE before and after each use.
2. Take care of PPE at all times.
3. Clean all PPE after use.
4. Replace damaged or broken PPE.
5. Store PPE in clean dry air, free from exposure to sunlight or contaminants.
  - a) Locate and assemble all manufacturers' information with equipment

### **Training**

1. Ensure you have been trained in how to fit, wear and maintain PPE.
2. Ensure training program includes information that explains when and what PPE should be worn, and why it should be worn.
3. Ensure all users, staff and supervisors are trained.

### **Support**

1. Ensure education programs are ongoing.

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## 10.2. Personal Protective Equipment - Care of Safety Belts, Harnesses and Lanyards

### Equipment

1. Inspect your equipment before use.
2. Replace defective equipment.
3. Replace any equipment involved in a fall. Refer any questionable deficit to manufacturer.

### Webbing (Body of Belt, Harness or Lanyard)

1. Inspect entire surface of webbing for damage. Beginning at one end, bend the webbing in an inverted "U". Holding the body side of the belt toward you, grasp the belt with your hands six to eight inches apart.
2. Watch for frayed edges, broken fibers, pulled stitches, cuts or chemical damage. Broken webbing strands generally appear as tufts on the webbing surface.
3. Replace according to manufacturer's guidelines.

### Buckle

1. Inspect for loose, distorted or broken grommets. Do not cut or punch additional holes in waist strap or strength members.
2. Check belt without grommets for torn or elongated holes which could cause the buckle tongue to slip.
3. Inspect the buckle for distortion and sharp edges. The outer and center bars must be straight. Carefully check corners and attachment points of the center bar. They should overlap the buckle frame and move freely back and forth in their sockets. The roller should turn freely on the frame.
4. Check that rivets are tight and cannot be moved. The body side of the rivet base and outside rivet burr should be flat against the material.
5. Inspect for pitted or cracked rivets which indicate chemical corrosion.

## Rope

1. Rotate the rope lanyard and inspect from end to end for fuzzy, worn, broken or cut fibers. Weakened areas have noticeable changes in the original rope diameter.
2. Replace when rope diameter is not uniform throughout, following a short break-in period.

## Hardware (Forged Steel Snaps, AD Rings)

1. Inspect hardware for cracks or other defects. Replace the belt if the AD $\cong$  ring is not at a 90 degree angle and does not move vertically independent of the body pad or AD $\cong$  saddle.
2. Inspect tool loops and belt sewing for broken or stretched loops.
3. Check bag rings and knife snaps to see that they are secure and working properly. Check tool loop rivets. Check for thread separation or rotting, both inside and outside the body pad belt.
4. Inspect snaps for hook and eye distortions, cracks, corrosion, or pitted surfaces. The keeper (latch) should be seated into the snap nose without binding and should not be distorted or obstructed. The keeper spring should exert sufficient force to close the keeper firmly.

## Safety Strap Inspection

1. Inspect for cut fibers or damaged stitches inch by inch by flexing the strap in an inverted AU $\cong$ . Note cuts, frayed areas or corrosion damage.
2. Check friction buckle for slippage and sharp buckle edges.
3. Replace when tongue buckle holes are excessively worn or elongated.

## Cleaning

1. Basic care prolongs the life of the unit and contributes to its performance.
  - a) Dry belt and other equipment away from heat, steam, and out of long periods of sunlight.
  - b) Store in a clean, dry area, free of fumes, sunlight or corrosive materials.
  
2. Nylon and Polyester
  - a. Wipe off all surface dirt with a sponge dampened in plain water. Rinse sponge and squeeze it dry. Drop the sponge in a mild solution of water and commercial soap or detergent. Work up a thick lather with a vigorous back and forth motion.
  - b. Rinse webbing in clean water.
  - c. Wipe the belt dry with a clean cloth. Hang freely to dry, but away from excessive heat.
  
3. Cotton
  - 1) Clean like nylon. For heavy dirt or grease, soak belts in a solution of one tablespoon of grease cutter to one gallon of water. Consult supplier.
  - 2) After soaking, rinse again and then hang to dry.

### 10.3. Personal Protective Equipment - Checklist

#### General

1. Do you know what PPE is required by government regulations for the jobs you perform?
2. Do you know your organization's written policy or practice governing the proper use of PPE?
3. Do you know the written standards/rules governing the use of PPE for specific jobs?
4. Are you aware of management's commitment to the PPE program?
5. Do you or your health and safety committee or representatives review the PPE rules and procedures?
6. Do you or your health and safety committee or representatives help identify the needs for PPE?
7. Do you review MSDS's and labels when working with chemicals to find out what PPE is required?
8. Is your PPE certified for its intended use by a standards authority (CSA, CGSB, NIOSH, and ANSI)?
9. Have you been properly instructed in the need for and use of PPE?
10. Have you been involved in discussions about usage?
11. Do you select the proper PPE from a number of choices?
12. Is appropriate PPE made available to you?
13. Are you using the PPE as prescribed?
14. Are you being individually fitted for appropriate PPE?
15. Does your PPE fit properly?
16. Have you been instructed on how to test that PPE is being worn properly (for example, respirator fit testing)?

17. Have you been instructed on how to properly care for and maintain your PPE?
18. Do you have proper storage and cleaning facilities?
19. Do you return used or damaged equipment in order to receive a reissue?
20. Do you maintain PPE regularly?
21. Does your supervisor check PPE to ensure that it is serviceable?
22. Does the PPE program record usage of PPE?
23. Does your workplace annually review usage in order to re-evaluate the need for the selection and use of PPE?

## 10.4. Personal Protective Equipment - Safety Footwear

### General

1. Safety footwear is designed to protect feet against a wide variety of injuries. Impact, compression and puncture are the most common types of foot injury.
2. Choose footwear according to the hazard.
3. Select CSA certified footwear. Ensure that it has the proper rating for the hazard and the proper sole for the working conditions.
4. Walk in new footwear to ensure it is comfortable.
5. Lace up boots fully. High cut boots provide support against ankle injury.
6. Use a protective coating to make footwear water-resistant.
7. Inspect footwear regularly for damage.
8. Repair or replace worn or defective footwear.

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## 10.5. Personal Protective Equipment - Hearing Protection

### General

1. Hearing protectors reduce the amount of sound energy reaching the ears.
2. Improper fit and a low percentage of time worn greatly reduce the effectiveness of hearing protection.
3. Select hearing protection that is:
  - 1) Correct for the job.
  - 2) Capable of adequately reducing sound frequencies.
  - 3) Comfortable enough to be accepted and worn during all exposure to noise.
4. Ear plugs are inserted to block the ear canal. They may be premolded (preformed) or moldable (such as glass down, foam plastic, waxed cotton).
5. Canal caps are compressed of two ear plugs held over the ends of the ear canal by a rigid headband.
6. Ear muffs are compressed of sound-attenuating material and soft ear cushions which fit around the ear and hard outer cups. They are held together by a head band.
7. Do not use radio headsets as a substitute for hearing protectors.
8. Do not modify hearing protectors.

### Care

1. Refer to manufacturers instructions.
2. Check hearing protection regularly for wear and tear.
3. Replace ear cushions or plugs that are no longer pliable.
4. Replace unit when head bands are so stretched that they do not keep ear cushions snugly against the head.
5. Disassemble ear muffs to clean.
6. Wash hearing protectors with a mild liquid detergent in warm water, and then rinse in clear warm water.

7. Ensure that sound-attenuating material inside cushions does not get wet.
8. A soft brush to remove skin oil and dirt which can harden ear cushions.
9. Squeeze excess moisture from the plugs or cushions and then place on a clean surface to air dry.

**Fit**

1. Follow manufacturer’s instructions.
2. Ensure hearing protector tightly seals within the ear canal or against the side of the head.

<b>COMPARISON OF HEARING PROTECTION</b>	
<b>EAR PLUGS</b>	<b>EAR MUFFS</b>
<p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>- Small and easily carried.</li> <li>- Convenient to use with other personal Protective equipment (can be worn with ear muffs).</li> <li>- More comfortable in hot, humid work areas.</li> <li>- Convenient for use in confined work areas.</li> </ul>	<p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>- Less attenuation variability among users.</li> <li>- Designed so that one size fits nearly all head sizes.</li> <li>- Easily seen at a distance to assist in the Monitoring of their use.</li> <li>- Not easily misplaced or lost.</li> <li>- May be worn with minor ear infections.</li> </ul>
<p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>- Require more time to fit.</li> <li>- More difficult to insert and remove.</li> <li>- Require good hygiene practices.</li> <li>- May irritate the ear canal.</li> <li>- Easily misplaced.</li> <li>- More difficult to see and monitor usage.</li> </ul>	<p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>- Less portable and heavier.</li> <li>- More inconvenient for use with other personal protective equipment.</li> <li>- More uncomfortable in hot and humid work areas.</li> <li>- More inconvenient for use in confined work areas.</li> </ul>

## **10.6. Personal Protective Equipment - Care of Respirators**

### **General**

1. Inspect before and after each use and during cleaning.
2. Replace all parts that are cracked, torn, broken, missing or worn.
3. Follow manufacturer's instruction and CSA Standard for care and maintenance.

### **Face-piece**

1. Ensure that there are no holes or tears.
2. Inspect for cracked, scratched or loose-fitting lenses. For full face-piece, check for missing mounting clips.
3. Ensure that metal nose clip forms easily over the bridge of the nose on disposable respirators.

### **Headstrap/Harness**

1. Check webbing for breaks.
2. Look for deterioration of elasticity.
3. Test excessively worn head harness.

### **Inhalation and Exhalation Valves**

1. Ensure valve and valve set are free of detergent residue, dust particles, or dirt which may cause a poor seal or reduce efficiency.
2. Replace missing or defective valve cover.

**Filter Element**

1. Ensure that filter and mask are certified for use together.
2. Check filters to see that they are approved for the hazard, e.g. make sure to pick the right filter for the job.
3. Inspect both filter threads and face-piece threads for wear.
4. Check filter housing for cracks or dents.

**Air Supply System**

1. Inspect air-supply hose and end-fitting attachments for breaks, cracks or kinks.
2. Test the tightness of connections.
3. Ensure proper operation and condition of all regulators, valves or other air-flow devices.
4. Check for proper settings of regulators and valves. Consult manufacturer's recommendations.
5. Monitor operation of air-purifying elements and carbon monoxide or high-temperature alarms.
6. Check seams in suit or blouse for rips and tears.
7. Ensure that protective screens are intact and fit correctly over face-piece (abrasive blasting hoods and blouses).

**Respirator Battery Pack**

1. Follow manufacturer's instructions for charging/discharging.
2. Fully discharge nicad batteries before charging.
3. Ensure batteries are fully charged before using.

**Repair, Cleaning and Storage**

1. Do not clean with solvents.
2. Follow manufacturer's instructions.
3. Wash with a mild dish detergent or a combination of detergent and disinfectant. Use a brush and warm water (49 - 60 degrees C).
4. Rinse with clean water, or rinse once with a disinfectant and once with clean water. The clean water rinse removes excess detergent or disinfectant that can cause skin irritation or dermatitis.
5. Dry on a rack, clean surface or hang from a clothes line. Position the respirator so that the face-pieces' rubber will not set unevenly as it dries.
6. Store respirator at the end of each shift to protect it from dust, sunlight, heat, extreme cold, excessive moisture, and chemicals.
7. Clean and disinfect shared respirators after each use.
8. Permit only trained and qualified personnel to repair respirators.
9. Do not mix parts from different manufacturers.
10. Record repairs and/or inspections.
11. Remove dirt.

12. Check for distortion caused by improper storage.

## Proper Use of a Respirator

**Understand Respiratory Hazards:** Dusts fumes, gases or vapors, and temperature extremes can penetrate and damage your respiratory system. Dust and fumes can irritate your nose and throat, and in some cases, your lungs (Figure 1). Gases and vapors can be absorbed from your lungs into your bloodstream, where they have the potential to damage your brain and internal organs. Very hot or cold air can damage the fine tissues in your mouth and airway and interfere with your normal breathing.

**Clean your Respirator Regularly:** Regular cleaning and inspection prolongs the respirator's useful life and assures you that it is working as efficiently as possible (see figure 2). For personal hygiene and communicable disease prevention, respirators should not be passed from one person to another without first being cleaned and sanitized.

**Store Respirators in Sealed, Dry Containers:** When not in use, respirators should be stored to prevent conditions that can deform the face piece, and that protect it from excessive exposure to dust, sunlight, extreme temperatures, excessive moisture or damaging chemicals. Plastic containers with lids can provide adequate storage for respirators (see figure 3).

**Inspect Respirators Maintained for Emergency Use at Least Monthly:** Respirators maintained for emergency use, such as canister gas masks and self-contained breathing apparatus (SCUBA), should be inspected at least monthly to assure reliable operation when it is needed (see figure 4). All respirators should be inspected before each use to ensure cleanliness and that all components are present and operable.

**Breathing Through a Respirator Requires More Effort:** Breathing through a respirator may require more effort than normal breathing. This effort can be difficult for some individual, for various reasons (see figure 5). If you have a medical limitation that may interfere with your wearing a respirator, be sure to inform your supervisor. You may be required to have an examination by your physician to determine if you are physically able to perform the work while wearing a respirator.

**Respirators Do Have Limits:** Respirators cannot adequately protect a worker from all

contaminants under all conditions. In general, the typical half-face air-purifying respirator can be used for protection in environments of up to 10 times the Permissible Exposure Level (PEL). However, the cartridges or canisters of air-purifying respirators have a limited capacity to protect against toxic gases and vapors in the air. If you detect an odor or taste, or feel your eyes or throat irritated, leave the hazardous area immediately and go to a safe area (see figure 6). The cartridge or canister on the respirator should be changed.

**Respirators Do Not Provide Oxygen:** Air purifying respirators (canisters or cartridges) do not provide oxygen. They should not be used in situations where the oxygen content in the air is questionable (see figure 7).

**Make Sure the Respirator Fits Snugly On Your Face:** Only a secure and snug fit protects you, so make sure you have the right size respirator for your face. The shape of your face, facial hair and condition of your skin can affect your fit. Try various sizes until you find one where air does not leak in around the edges. You can test the respirator fit by placing the palms of your hands over the cartridges and breathing in for 10 seconds (see figure 8). To fit properly, the mask should suck in tightly around your face.

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## 10.7. Personal Protective Equipment - Hand Protection

### General

1. Hand protection is designed to protect hands against a wide variety of hazards. The protection can be provided in a number of different ways: barrier creams, finger guards, cots and thimbles, hand pads, mitts and gloves.
2. Choose hand protection that adequately protects from the hazard.
3. Follow manufacturer's instructions for care and maintenance of gloves.
4. Ensure gloves fit properly.
5. Ensure all exposed skin is covered by gloves. Gloves should be long enough so that there is no gap between the glove and sleeve.
6. Do not wear gloves with metal parts near electrical equipment.
7. Do not use worn or torn gloves.
8. Do not wear gloves while working on moving equipment; they can become caught.
9. Wash off all chemical protective gloves with water before removing them.
10. Inspect and test gloves for defects before using.
11. Test all rubber or synthetic gloves for leaks by inflating them.

### Protective Gloves

1. Choose a material and style of glove that adequately protects hands from the hazard. When possible, choose vinyl over natural.
2. Review the following sources to determine the materials ability to protect hands against the hazard.
  - 1) MSDS/Label Chemical Manufacturer.
  - 2) Manufacturer of gloves (review recent permeability information).
  - 3) CCOHS Data Bases/Inquiries Service.

3. Inspect and test gloves for defects before using.
4. Follow manufacturer's instructions for care and maintenance.
5. Ensure gloves fit properly.
6. Wash off all chemical-protective gloves with water before removing them.
7. Evaluate material resistance under conditions of use. Resistance of specific materials can vary from product to product.
8. Maintain gloves carefully.

## 10.8. Safety Harness & Lanyards & Lifelines

### General

1. All lifeline harness and lanyards must be CSA certified and inspected before and after use by the person using them.
2. Each time you put your harness on, confirm the harness is readjusted so that the strap fits close to your body and the end of the adjustment straps are secured by the retaining clips or tied off to prevent snagging.
3. Lanyards must be 16 mm (5/8") diameter nylon with shock absorbers.
4. Harness must be snug fitting and full body.
5. Full body harnesses must be tied off with a lanyard to solid structure. The lanyard must be rigged to not more than 3 feet.
6. Lifeline must be 16 mm (5/8") diameter propylene or equivalent.
7. Lifeline must be used only by one worker at a time.
8. Lifeline must be long enough to reach the ground.
9. Fall Protection must be worn when working in excess of 10 ft. above grade when other forms of protection cannot be provided.
10. All rope grabs must be CSA approved.
11. Where a lanyard or lifeline comes in contact with heat or corrosive material, it shall be made of rope that has a diameter of at least 8 mm.
12. When fall protection is subject to a fall arrest situation, it shall be removed from service and checked by the manufacturer or replaced.