



HEALTH, SAFETY &  
ENVIRONMENTAL MANUAL

### 3.2 Personal Protective Equipment Procedure

Revision Number: **R0**

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## PERSONAL PROTECTIVE EQUIPMENT PROCEDURE

### PURPOSE

The purpose of this procedure is to identify the specific requirements for the selection, use, and requirements for personal protective equipment (PPE).

J-AAR acknowledges that there is a hierarchy of controls which will protect our workers from workplace hazards when using them in the order of: Elimination, Substitution, Engineering, Administrative, and PPE.

### DEFINITIONS

**Control:**

Procedures, methods, tools, machines, or training adopted to minimize risks, injury, adverse health effects and damage to equipment or the environment.

**Competency:**

Capable of applying or using related knowledge, training, experience, skills, and abilities required to successfully perform risk analysis as set out in the OHSMS as it applies to a job, task, operation, or function in a defined work setting.

**Hazard:**

A source of potential damage, harm or adverse health effects on something or someone.

**Human Factors:**

Human factors (also known as ergonomics) is the study of how humans behave physically and psychologically in relation to particular environments, products, or services.

**JHA:**

A documented hazard, risk, and control assessment completed at the time and place of a specific task or job.

**Daily Safety Meeting:**

An active discussion between supervisors, employees, and visitors where job safety information including scope of work, hazards, JHA and other safety information is communicated.



**Personal Protective Equipment (PPE):**

Equipment worn to minimize exposure to hazards. It is a type of control.

### SCOPE

Personal Protective Equipment as a control is not desirable. PPE is only to be considered if other methods of control are not practicable, or if it is used as a supplemental control.

The following procedure applies to all workplace parties – from Top Management to visitors – at all specified J-AAR worksites.

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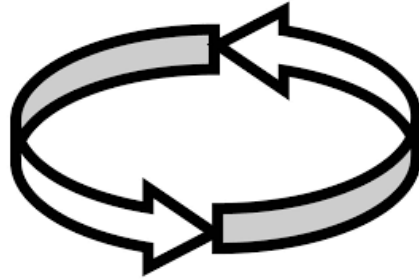
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Requirements for specialized PPE will be communicated by J-AAR supervision to workers at the daily safety meeting, during the JHA (if applicable), and/or at the time tasks are assigned to workers.

### Basic PPE

#### Head Protection

Head protection must be worn if there is a risk of impact, laceration, penetration, or contact with electrical hazards. Examples of these hazards are falling objects; head striking a fixed object; potential of accidental contact with live electrical hazards. All hardhats must be worn facing forward. Only hard hats with the following image stamped on them may be worn backwards.





- Hard hats must be CSA approved – Class E, Type 1, or Type 2.
- They consist of an outer shell and a four-point inner suspension.
- Hard hats must be inspected before each use for cracks, deformation, or other damage. If found defective tag it and remove it from service immediately. Let your supervisor know and a replacement will be supplied.
- Hard hats must not be painted by the user.
- Only hard hat compliant stickers and wraps will be applied.
- Ensure that the hard hat is properly adjusted to your head before beginning any work.
- J-AAR supplies hardhats to workers
- Consult the manufacturer’s instructions for use and care.

#### High Visibility Clothing

All high-visibility safety vests and clothing must meet the current CSA standards and be Class 2, Level 2 as a minimum. High visibility clothing is a layer of protection when working near any kind of mobile equipment, vehicular traffic, and low light/low visibility areas.

- Activities that take place during nighttime hours require the use of reflective arm and legs bands as well as J-AAR minimum standards when working in the vicinity of traffic.
- As per the Regulations any “worker who may be endangered by vehicular traffic shall wear a garment that covers at least his or her upper body and has the following features:
  - a) The garment shall be fluorescent blaze or international orange in colour.

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- b) On the front and the back, there shall be two yellow stripes that are 5 centimeters wide. The yellow area shall total at least 500 square centimeters on the front and at least 570 square centimeters on the back.
- c) On the front, the stripes shall be arranged vertically and centered and shall be approximately 225 millimeters apart, measured from the center of each stripe. On the back, they shall be arranged in a diagonal “X” pattern.
- d) The stripes shall be retro-reflective and fluorescent.
- e) If the garment is a vest, it shall have adjustable fit.
- f) A nylon vest to which this section applies shall also have a side and front tear-away feature.
- g) In addition, a worker who may be endangered by vehicular traffic during night-time hours shall wear retro-reflective silver stripes encircling each arm and leg, or equivalent side visibility-enhancing stripes with a minimum area of 50 square centimeters per side.

- Do not use plastic vests as they are highly flammable.
- It is J-AAR policy that shirts with sleeves at least six inches in length and long pants must be worn on all jobsites unless you are provided with a uniform.
- Disposable coveralls may be provided for use on certain jobsites.
- J-AAR supplies high visibility vests to workers. Different sizes are available.
- Follow the manufacturer’s instructions for care, cleaning, and storage.

### **Safety Footwear**

Safety footwear is the last line of defense to protect the feet from crushing and penetrating hazards. Any time an activity involves working around heavy objects being moved, sharp objects, slippery or hot surfaces, corrosive or irritating chemicals, or electrical hazards, safety footwear must be worn. All safety footwear must be CSA-approved Grade 1 with a reinforced toe and insole. They are easily identifiable by their green CSA triangle and Omega symbol, pictured below.



All boots must be kept in good condition and inspected daily before use. Follow the manufacturer’s instructions for care, cleaning, and use.

### **Specialized PPE**

The selection and use of specialized PPE is to be determined through risk analysis carried out by the J-AAR health and safety team in collaboration with supervisors and workers. Workers are also encouraged to review J-AAR’s safe work practices, safe job procedures, and/or HIRA list. A daily JHA or safety meeting is the best time for supervisors and workers to communicate the need for specialized PPE. Feedback from workers about new procedures, different types of PPE to examine, and potential



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administrative controls from safety meetings/JHA's will be reported to their direct supervisor and discussed with the J-AAR safety team. J-AAR is constantly striving for improvement in our health and safety policies and procedures and recognizes that workers have insights into their tasks and activities that management may not.

### Eye Protection

There are many different types of eye protection. In order to ensure proper eye protection is selected potential hazards must first be identified. Always consult the manufacturer's instructions for limitations, care, cleaning, and use. Regardless of the type of eye protection required they must all meet current CSA standards. Regular prescription glasses are not suitable as eye protection.

Basic eye protection includes:

- safety glasses – with or without side shields
- over glasses protection
- mono-frame goggles
- eye-cup goggles

J-AAR finds that safety glasses with side shields (for flying object and impact protection) provides sufficient protection for typical tasks carried out by field staff. However, if basic eye protection does not provide sufficient protection for potential hazards eye and face protection may be required.

Examples include:

- welder's shields/helmets
- filter plates/lenses
- face shields
- impact/chemical resistant face shields

Regardless of the eye protection used, ensure it fits properly – improper fitting eye protection greatly decreased its efficacy.

### Hearing Protection

Depending on the noise level and duration, hearing loss may result if proper hearing protection is not used. There is a risk of hearing loss in environments where workers are exposed to 85 dBA or more over an eight-hour period. However, for every 3dBA added to 85, the allowable exposure time is halved. Typically – correctly used – foam ear plugs are provided with an NRR of 29dB. These generally provide sufficient protection to J-AAR workers in the field. However, there are some situations where further over-ear protection is required. Always select PPE based on the task being carried out. If there is any doubt consult your supervisor, daily hazard assessments or SWP's. Consult the manufacturer's instructions for levels of protection provided, care, cleaning, and use recommendations.

J-AAR will always try and utilize engineering controls (such as new operators cabs) before PPE to reduce workers exposure to noise. However, this is not always sufficient or practicable. Based on a workplace hygiene study commissioned by J-AAR, equipment operators must always wear some form of hearing protection in older machines, even with all windows and doors closed.



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### Respiratory Protection Selection

**Note:** In 2014 J-AAR Excavating hired an occupational hygienist to conduct an air and noise sampling study across several positions in the company. The following procedure is based on exposure levels found in this study. Relevant information will be quoted as needed. The study in its entirety is available if required for reference.

### PURPOSE

The purpose of this procedure is to identify the specific requirements for the selection, use, and requirement for respiratory protective equipment.

J-AAR acknowledges that there is a hierarchy of controls that will be used to protect workers from workplace hazards using strategies in order of: Elimination, Substitution, Engineering, Administrative, and PPE controls.

The first control against dust related hazards is to use water as a suppressant. Where this is not practicable, this procedure is to help supervisors and workers select the right PPE as a last line of defense.

### GUIDELINES

During the hygiene study the largest exposure to total respirable particulate (including silica quartz) was found in a top worker who had spent the last 40 minutes of their shift continuously cutting into a concrete culvert. The time weighted average for the top worker was 0.8 mg/m<sup>3</sup>. Current TWA Ontario guidelines are determined to be 0.1 mg/m<sup>3</sup>. At the time this worker was wearing a disposable N95 respirator (N95), which the hygienist determined to be adequate protection for the duration of the cut. The hygienist advised that if workers were dry cutting concrete for an extended period of their shift, a fit-tested full-face respirator be used. Based on the findings, MOL guidelines, and other Canadian sand and gravel best practices, J-AAR has determined PPE selection as follows:

#### Disposable N95:

- Suggested if you are close to a cut when applying water or if you are working within 25m of extended dry cutting or concrete grinding work.
- Required at a minimum when dry cutting or chipping for short durations.
- Short durations are considered to be:
- Cumulative time throughout a shift is no greater than two hours
- Each cutting and chipping task is no greater than 30 minutes in duration.

#### Fit Tested Half-Mask with P100 Filter:

- Required when water is not used as a suppressant and:
- Cutting, Chipping, or Grinding is taking place outside of a confined space;
- Cumulative time throughout a shift is expected to be greater than two hours and less than six hours per shift; and
- Each task is no greater than two hours in duration.

#### Fit Tested Full-Face Respirator with P100 Filter:



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- Full-face respirators with P100 filters are the only respiratory protection to be used when cutting or grinding concrete in a confined space. They are additionally required when:
  - Cumulative time throughout a shift is expected to exceed six hours.
  - Each task is expected to be more than two hours.
  - There is an increased risk of eye injury due to excessive debris.

### **Workplace Hygiene Study (J-AAR sampled)**

In July and September 2014, J-AAR hired an independent hygiene consultant (MACCK) to test employee noise exposure in the workplace. Employees were tested in the following lines of employment:

1. Top man
2. Pipe layer
3. Operator
4. Labourer- cutting asphalt and concrete

### **Noise**

The study determined that some workers required a form of hearing protection for an 8 hour or more workday.

The report, “MACCK Air and Noise Sampling Survey” is available for all the details and data. Based on the information our PPE policy regarding noise is:

### **Machine Operation**

- All employees may wear appropriate hearing protection when operating machinery.
- Foam earplugs in this application are generally acceptable, but earmuffs may be required when operating open cabs (packers).

### **Labour**

- The labourer and pipe layer exceeded the allowable noise regulations, but all employees must wear the appropriate hearing protection when working with equipment such as quick-cut saws and plate tampers. Foam earplugs are generally acceptable in the trench for a pipe layer but are not enough protection in applications using very loud tools like the quick-cut saw. Earmuffs are needed in that application.

Hearing protection must be used where engineering controls are not practicable to ensure workers are not exposed to noise that exceeds 85 dBA over an 8-hour period. At client sites there may be other noise regulations or requirements in place. Please observe all signs or instructions.



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14-4: Typical Noise Levels of  
Tools and Equipment

Equipment	Noise Level (dBA)
Cranes	78 - 103
Backhoes	85 - 104
Loaders	77 - 106
Dozers	86 - 106
Scrapers	97 - 112
Trenchers	95 - 99
Pile drivers	119 - 125
Compactors	90 - 112
Grinders	106 - 110
Chainsaws	100 - 115
Concrete saw	97 - 103
Sand blasting nozzle	111 - 117
Jackhammers	100 - 115
Compressors	85 - 104

**NOTE:** These noise levels are measured at the operator's position.

### Respiratory Protection

As with all specialized PPE, before selecting the appropriate type of respiratory protection a hazard assessment must be completed. For typical activities on J-AAR sites, a disposable N95 respirator can be used to provide sufficient protection from particles and dust.

If a task requires further protection, or prolonged use, a half face respirator and filters/cartridges will be provided (picture below). Regardless of the type of respiratory protection used, they must comply with current CSA standards. Always consult the manufacturer's instructions for limitations, care, use, cleaning, and storage.



Filter/cartridge selection will be determined by the type of hazards in the work environment. Typically, for particulates, P100 filters are used. To select the correct filter/cartridge a hazard assessment must be carried out by a competent person and supervisor.



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If a respirator is selected as PPE, the user must be fit-tested and trained in its use. This is carried out by J-AAR's health and safety team. Fit testing will be conducted at least once every two years. Records will be stored on HCSS Skills or be digitally filed.

General respirator care and use guidelines:

- The respirator must be inspected before each use for defects. If any defects are found, tag and remove from service immediately.
- Examine all plastic parts for cracking/wear/damage.
- Examine the face seal for cracks, tears, or dirt build up. Dirt builds up and can break the seal.
- Examine exhalation valves for distortion, cracks, tears.
- To safely clean your respirator, remove all cartridges/filters. Disassemble the respirator. Immerse it in a warm, plastic safe, cleaning solution. Scrub with a soft bristle brush or cloth until clean. Solution/water should not exceed 49 degrees Celsius. Rinse in fresh warm water. Place dry respirator in a clean bag when not in use.
- Respirators must be fit tested as required.
- Workers requiring a respirator must be clean shaven around the face seal. Facial hair can cause a loose seal.

**Please note that the respirators above are NOT for use as protection in oxygen deficient environments or where toxic or hazardous chemicals, gases, vapours etc. are present (i.e. confined spaces). They are only to be used for dust and particulate filtering.**

If a project/worksite requires employees to use respirators that protect against harmful vapours and/or oxygen deficient atmospheres, a specific procedure must first be developed and reviewed by a competent person before work proceeds.



#### **Workplace Hygiene Study (J-AAR)**

In July and September 2014, J-AAR hired an independent hygiene consultant (MACCK) to test employee dust exposure in the workplace. Employees were tested in the following lines of employment:

1. Top man
2. Pipe layer
3. Operator
4. Labourer- cutting asphalt and concrete

The study concluded that the labourer cutting asphalt and concrete using the quick-cut saw had very high levels of total respirable particulate and respirable silica. It was recommended that if a worker were to perform similar tasks for most of their shift, then a full face-piece respirator with P100 filters be used. However, if the cutting was intermittent and only done for a portion of the shift, then an N95 mask is sufficient.



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Workers will use water as a dust suppressant, work upwind of any dust generated and use rotation with other workers for this task if possible.

The study also recommended that operators working outside of cabs (packers) use an N95 as needed.

### Hand Protection

- The correct type of gloves must be used for the specific type of work or job. Gloves will be used based on the specific task.
- In wet conditions rubber gloves may be worn.
- In conditions where lifting or handling materials, leather palmed gloves may be worn.
- Where materials are sharp or abrasive, gloves with a specific ANSI cut level may be worn.
- Determine the correct type of glove to be worn based on a hazard assessment
- Consult manufacturer's instructions for limitations, care, and use of the glove selected
- Ensure that the glove selected is well fitting

### Working at Heights

As per section 26 of the Regulations, where a worker is exposed to a fall hazard they are to be protected by the following means, in ranked order:

1. Guardrail system
2. Travel restraint system
3. Fall restricting system
4. Fall arrest system
5. Safety net

If the installation of a guard rail is not practicable or if a worker faces any kind of other hazard which requires them to don working at heights PPE, they must have specialized training administered through an approved training provider in the province of Ontario.

Working at heights PPE includes:

- CAN/CSA-Z259.1-05: Body Belts and Saddles for Work Positioning and Travel Restraint
- CAN/CSA-Z259.2.5-12: Fall Arresters and Vertical Lifelines
- CAN/CSA-Z259.2.2-98 (R2004): Self-Retracting Devices for Personal Fall-Arrest Systems
- CAN/CSA-Z259.2.3-99 (R2004): Descent Control Devices
- CAN/CSA-Z259.10-06: Full Body Harnesses
- CAN/CSA-Z259.11-05: Energy Absorbers and Lanyards
- CAN/CSA-Z259.12-01 (R2006): Connecting Components for Personal Fall Arrest Systems
- J-AAR issues harnesses to each worker that needs them. All harnesses must be visually inspected before use by the worker.
- Tripods and SRL's are most used in confined space work. As part of the confined space entry permit, SRL's and tripods must be inspected before use.



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- SRL-LE's must be used when performing work at the leading edge. This is a common occurrence at some sites.
- J-AAR's cement plant as well as J-AAR's asphalt plant have written Working at Heights procedures for areas where workers may be exposed to a fall hazard. These must be followed. Supervisors are to train any new workers/subcontractors on these procedures at the time of their orientation.

All working at heights equipment must meet current CSA standards.

### **Sun Protection**

If working in the sun for prolonged periods of time J-AAR recommends a form of sun protection be used.

- Apply a broad-spectrum sunscreen with a sun protection factor (SPF) of 30 or greater.
- Be sure to cover your ears and the back of your neck.
- Apply sunscreen every two hours.
- Use an SPF 30 or greater lip balm and reapply every two hours.
- Wear clothing that covers as much of the skin as possible. Tightly woven material will offer greater protection as a physical block to UV rays.
- If you sweat heavily, you may need to reapply more often.
- Try to find a shaded area for breaks and lunch.
- Examine your skin regularly for any unusual changes

### **MINIMUM PPE REQUIREMENTS**

**All PPE used in J-AAR workplaces must be CSA approved.**

### **Construction Sites:**

At a minimum head protection, foot protection (minimum six-inch-high work boot, safety shoes are not sufficient), and high visibility clothing are required at all jobsites. Task specific PPE must be used as determined by your supervisor.

### **Asphalt Plant:**

Protective footwear is required at all times/locations at the asphalt plant.

Outside of the plant office high-visibility clothing is always required. Task specific PPE must be used as required.

### **Offices:**

No minimum PPE requirements at offices.

### **Surface Mines:**



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The area from the gate to the scale house is generally considered a 'Safe-Zone.' No PPE is required if you remain in this area. Once you have passed the scalehouse, head, foot protection as well as high-visibility clothing is required. Task specific PPE must be used as required. If you have any questions or concerns talk to your supervisor.

#### **Storage Yard:**

CSA approved foot protection is required.

#### **Shops:**

CSA approved foot protection is required.

Task specific PPE must be used as required. If you have any questions or doubts discuss them with your supervisor.

Field techs must adhere to all PPE requirements on any worksite that they are working at.