



UBC Facilities Personal Protective Equipment Program

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1. Introduction & Background

Hazards exist in every workplace so strategies to protect workers are essential. Whenever feasible, workplace hazards must be eliminated or minimized through the use of the hierarchy of controls (see Section 8. Risk Controls) which includes employing substitution, engineering, and/ or administrative control(s) of the hazards at their source or along the path between the source and the worker, prior to resorting to the use of personal protective equipment (PPE). PPE is considered as the last level of protection when all other methods are not available or possible. PPE should only be used as an interim measure before controls are implemented; where other controls are not available or adequate; during activities such as maintenance, clean up, and repair where controls are not feasible or effective; and/ or during emergency situations.

Personal protective equipment is equipment worn by a worker to reduce or minimize exposure or contact to injurious hazards, such as physical, chemical, ergonomic, or biological agents. Examples of PPE includes but is not limited to respirators, gloves, eye, head and foot protection. Using PPE is only one element of a complete hazard control program that would use a variety of strategies to maintain a safe and healthy environment. PPE does not reduce the hazard itself nor does it guarantee permanent or total protection. In some work environments, PPE must be provided and used to protect personnel against hazards capable of causing injury, illness, or impairment.

The purpose of this document is to ensure the selection, fit, use and care of PPE and clothing in the workplace is conducted in accordance with recognized standards and provides effective protection for the work being performed.

2. Scope

This PPE Program document is designed for all UBC Facilities staff whose job duties and work conditions may have the potential for exposure to a hazard requiring the use of personal protective equipment as a means of hazard control.

3. References

- [Workers' Compensation Act, Part 2, Division 4, Sections 21 - 30](#)
- [British Columbia's Occupational Health and Safety Regulation, Part 7, Noise, Vibration, Radiation and Temperature](#)
- [British Columbia's Occupational Health and Safety Regulation, Part 8, Personal Protective Clothing and Equipment](#)



- [Canadian Centre for Occupational Health and Safety, PPE](#)
- [University Health and Safety Policy - SC1](#)
- UBC Respiratory Protection Program
- UBC Hearing Conservation Program
- Canadian Standards Association (CSA) Standards

4. Legal Requirements

Everyone in the workplace has responsibilities as it pertains to PPE. UBC Facilities is responsible for ensuring a safe and healthy workplace to protect workers. When all other measures have been considered and found impractical or ineffective in controlling hazards, PPE may be necessary, either alone or in addition to other measures. In such cases, UBC Facilities must provide and maintain PPE as outlined in Occupational Health and Safety (OHS) legislation and corresponding employment agreements. Supervisors and workers must work collaboratively to ensure PPE knowledge, understanding, and use is consistently employed to facilitate safe work in accordance with OHS legislation and UBC guidelines.

5. Definitions

Hazard – any source of potential damage, harm or adverse health effects on something or someone; workplace hazards can come from a wide range of sources (i.e. substance, material, process, practice etc.); hazards can be classified by category such as biological, chemical, ergonomic, physical, psychosocial (i.e. stress, bullying/ violence) or safety (i.e. electrical, machinery, tools, confined space)

Hazard Identification – part of a systematic approach used to evaluate if any particular situation, item, thing etc. may have the potential to cause harm.

Risk Assessment – a systematic approach that identifies any hazards and risk factors that have the potential to cause harm (hazard identification), analyzes and evaluates the risk associated with the hazards, and determines appropriate ways to eliminate the hazards, or control the risk when the hazard cannot be eliminated (risk control)

Risk Control – part of the systematic approach in which methods for neutralizing or reduction of identified risks are implemented to protect workers and the workplace

Hierarchy of Controls – a system used for controlling risks in the workplace that provides a step-by-step approach to eliminating or reducing risks and it ranks risk controls from the highest level of protection and reliability through to the lowest and least reliable protection. Eliminating the hazard and risk is the highest level of control in the hierarchy, followed by reducing the risk through substitution and engineering controls, then reducing the risk through administrative controls. Reducing the risk through the use of personal protective equipment (PPE) is the lowest level of control.

Personal Protective Equipment (PPE) – equipment worn by a worker to reduce or minimize exposure or contact to injurious hazards, such as physical, chemical, ergonomic, biological, psychosocial, or safety (i.e. equipment malfunctions, lack of machine guarding); See Appendix A – Generalized PPE Requirements and Appendix B – Location-specific PPE Requirements.



6. Roles and Responsibilities

The roles and responsibilities described in this document are in accordance with British Columbia's Occupational Health and Safety Regulation (OHSR) and [University Health and Safety Policy - SC1](#).

6.1 Employer Responsibilities

The employer must:

- Ensure that employees are protected from known hazards within the workplace through the implementation of the hierarchy of controls, in order of effectiveness, with personal protective equipment only being used when other control options are not feasible or adequate at mitigating the identified risk(s)
- Ensure personal protective equipment is available and appropriate for the type of hazard and task being performed
- Ensure compliance with the OHSR

6.2 Department Manager/Supervisor Responsibilities

The Manager/ Supervisor/ Head must:

- Ensure workplace conditions are evaluated through an appropriate hazard identification and risk assessment (i.e. job specific risk assessment, OHSR Designated Qualified Person Assessment) to determine appropriate PPE. The evaluation process must include the workers, heads, and managers and be reviewed by the Joint Occupational Health and Safety Committee. As new work processes are introduced, they must be evaluated and added to the risk assessment. The risk assessment should be reviewed and updated annually.
- Ensure the hierarchy of controls are considered and implemented accordingly and in conjunction with safe work procedures
- Develop safe work procedures against known hazards
- Provide appropriate PPE to workers
- Ensure appropriate PPE is selected and used in accordance with recognized standards, and that it provides effective protection
- Ensure instruction and training in the correct use and maintenance of the PPE is provided
- Ensure PPE is properly cleaned, inspected, maintained, and stored
- Provide appropriate alternate equipment or safe measures are provided if the personal protective equipment provided by the employer causes allergenic or other adverse health effects

6.3 Employee Responsibilities

An employee who is required to use personal protective equipment must:

- Work in a safe and professional manner
- Actively participate in the [UBC Health and Safety Program](#)



- Understand and follow safe work procedures and immediately report any additional hazards identified to their supervisor
- Actively participate in education and training sessions provided by the employer
- Use the equipment in accordance with training and instruction received
- Be prepared to add/remove PPE required for the safe performance of their duties should job duties and work conditions change
- Inspect the equipment before use for fit, proper use, and care of their PPE properly and guard against damage and contamination
- Participate in UBC's Occupational Preventive Health program where necessary (i.e. respiratory protection).
- Refrain from wearing protective equipment outside of the work area where it is required if to do so would constitute a hazard
- Report any equipment malfunction to the supervisor or employer
- Report to UBC First Aid and the supervisor any incident that results in, or had the potential for, injury

6.4 Safety & Risk Services (SRS) Responsibilities

- Ensure the UBC Facilities PPE Program is complete and current with the OHSR requirements
- Assist with the implementation of this program, where applicable
- Assist with the appropriate selection of PPE
- Assist in the interpretation of the OHSR and providing appropriate recommendations or guidance
- Consult with supervisors, employees, JOHSC members during the updating of this program
- Respond to PPE-related inquiries

6.5 Joint Occupational Health & Safety Committee Responsibilities

- Consult with the employer and employees on topics related to PPE including respiratory and hearing protection
- Provide recommendations on the improvement of the health and safety of workers
- Participate in incident investigations
- Participate in regular review of the PPE program

7. Risk Identification & Assessment

As per the University Health and Safety Policy – SC1, the supervisor must conduct an appropriate hazard identification and risk assessment to identify hazards, assess their impact on workers, and develop and implement plans designed to eliminate, minimize or control the hazards prior to the start of any work activities or the start of a project.

In order to provide adequate protection from the identified hazards, the selection and use of appropriate PPE must be conducted in accordance to recognized standards (See Appendix C). An evaluation of workplace conditions to determine appropriate PPE must be done in consultation with the joint occupational health and safety committee or

a worker safety representative, where practicable, in conjunction with the worker(s) who will use the equipment. This process must be verified through written documentation and reassessed on an annual basis or as new work conditions or processes arise.

8. Risk Controls

Hazards can be found in every workplace, and can come from a wide range of sources. The types of hazards that may be encountered in the workplace include, but are not limited to chemical, ergonomic (i.e. manual material handling, repetitive motion, lighting); biological (i.e. viruses, mould, bacteria); physical (i.e. temperature, noise, ventilation, radiation); safety (i.e. electrical, machinery, tools, confined space); and psychosocial (i.e. stress, bullying/ violence). Given the diverse and dynamic work environments at the UBC Vancouver campus, the identification and effective control of hazards is critical to ensuring the health and safety of staff, faculty and students.

Based on Figure 1, eliminating or substituting a hazard is the most effective control option. Next, engineering controls are ideal for mitigating a hazard as no additional precautionary steps are needed by the worker. If engineering controls are not feasible, administrative controls should be implemented. Finally, only when all other options are exhausted should personal protective equipment (PPE) be used as it ranks lowest on the hierarchy of controls. Whenever possible, the use of PPE should always be done in conjunction with other more effective controls. At minimum, the use of PPE will involve administrative controls such as training and education.

Listed below are example methods for controlling respiratory hazards without using PPE:

- **Elimination Controls:** Removing the hazardous substance or process from the workflow.
- **Substitution Controls:** Replacing a hazardous substance or process with one that is non-hazardous or less hazardous.
- **Engineering Controls:** Enclosing the process so that contaminants are not released into the workspace, improving ventilation, and changing the equipment for a given process. For example, carrying out processes in fume hood or biological safety cabinet, increasing mechanical ventilation rates, or using equipment with local exhaust.
- **Administrative Controls:** Restricting access to contaminated areas, limiting the total time workers are exposed to respiratory contaminants and establishing housekeeping procedures to control exposure.

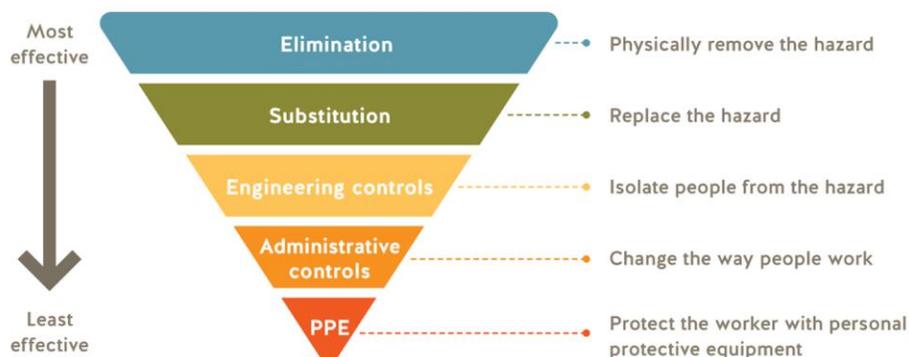


Figure 1 : Hierarchy of Controls Diagram received from [Controlling risks - WorkSafeBC](#)



The PPE required for a task or project is dependent upon location specific requirements, department generalized PPE requirements, and/or the documented hazard assessment.

9. Education and Training

Any worker required to wear PPE must receive training in its proper use and care prior to being allowed to perform work. The training must include, but is not limited to the following:

- When is PPE required to be worn
- What PPE is required
- How to properly don (to put on), doff (to remove), adjust, and wear PPE
- The limitations of PPE
- The proper care, maintenance, useful life, and required disposal of the PPE

Upon completion of training, employees will demonstrate that they understand how to use PPE properly.

The need for retraining will be indicated when:

- An employee's work habits or knowledge indicated a lack of the necessary understanding, motivation, and skills required to use the PPE (i.e. uses the PPE improperly or not at all);
- New equipment is installed
- Changes in the workplace make previous training out-of-date
- Changes in the types of PPE to be used make previous training out-of-date

10. Use of Personal Protective Equipment

Prior to the commencement of any work, task, or project assignment, the supervisor must:

- Ensure employee(s) assigned to the work have completed training in the proper use and care of PPE;
- Review the appropriate documented hazard assessment with the employee(s) assigned to the job;
- Ensure that all employee(s) have appropriate PPE in accordance with the safe work procedure.

Upon assignment of work, employee(s) must demonstrate they understand the safe work procedure and are outfitted with the appropriate PPE as outlined and be prepared to add/ remove PPE for the safe performance of the work.

Employee(s) must inspect the condition of PPE and expiry date for applicable PPE (i.e. disposable respirators, hard hats, safety harnesses, lanyards, sunscreen, etc.) before use.

Employee(s) are to don and doff PPE in accordance with training and instruction received for the safe performance of work.



11. Storage and Maintenance of Personal Protective Equipment

PPE shall be properly stored to protect against environmental conditions that might reduce the effectiveness of the equipment or result in contamination during storage. PPE having a shelf-life limitation shall be checked by the worker periodically to ensure compliance with the expiration date.

PPE, including employee-owned PPE, shall be maintained in a sanitary and serviceable condition. PPE requiring specialized servicing by the manufacturer shall be serviced by qualified personnel.

PPE issued for exclusive use by an individual employee shall be visually inspected for defects or wear by the employee before each use. Such PPE shall be inspected periodically by the supervisor to ensure its serviceability.

PPE subject to use by more than one individual, such as visitor's PPE or PPE used only occasionally, shall be cleaned and disinfected by the last individual to use it, before being made available for use by subsequent personnel.

Where disinfection of PPE is not applicable (i.e. thermal gloves, leather gloves, etc.), it is recommended to wash hands or use hand sanitizer before and after use.

PPE intended for emergency use shall be cleaned, disinfected, and placed in operable condition after each use by the last individual to use it. Such equipment shall be inspected monthly to ensure serviceable condition. Records shall be kept of these inspections.

Defective, damaged PPE, or expired PPE will not be used and will be immediately removed from, discarded and replaced.

Any contaminated PPE which cannot be decontaminated is to be disposed of in a manner that protects employees from exposure to hazards.

12. Personal Clothing & Accessories

Clothing, worn by the employee at work, must be of a type and in a condition that will not expose the employee to any unnecessary or avoidable hazard.

As per Section 8.10 of the OHS Regulations, if there is a danger of contact with moving parts of machinery or with electrically energized equipment, or if the work process presents similar hazards

- The clothing of the worker must fit closely about the body,
- Dangling neckwear, bracelets, wristwatches, rings or similar articles must not be worn, except for medical alert bracelets which may be worn with transparent bands that hold the bracelets snugly to the skin, and
- Cranial and facial hair must be confined, or worn at a length which will prevent it from being snagged or caught in the work process.

In addition, employees may be exposed to injury from, but not limited to:

- The material being handled (i.e. materials which could burn through, splash, irritate skin, or emit fumes or radiant heat);
- Contact with an abrasive surface or object (i.e. carrying lumber, masonry products);



- Contact with a surface at a temperature which could cause a burn injury (i.e. unshielded parts of operating equipment, hot materials such as tar, asphalt); or
- Contact with discharges from operating equipment (i.e. exhaust, grass clippings or rocks thrown from grass trimmers)

Employees must at all times wear suitable and appropriate personal clothing adequately covering the body, arms, and legs. The condition of the clothing must be whole and not such where rips or tears may expose skin to the hazard(s). It is also expected that personal clothing be reasonably clean and presentable.

As job duties or work conditions change, the employee may have to change or add clothing at the request of, or with the prior permission, of the employee's management supervisor.

Removal of clothing during outdoor work in warm weather exposes workers to UV from the sun. Ultraviolet radiation from the sun is a "natural element," and under OHS regulation (paragraph 8.2(1)(a), a worker is responsible for providing any necessary clothing to protect against it. Workers and employers need to be aware of the hazard from solar radiation, and need to take measures to limit exposure, such as by use of appropriate attire and the use of sun block creams.

All staff in maintenance and construction classifications, where there is an expectation to wear safety approved footwear will wear long pants throughout their working shift.

13. Documentation and Record Keeping

Training in the proper use and care of PPE must be documented and a record kept of individuals who have participated in the training.

14. Emergency Response

In the event an injury occurs during the performance of a work tasks, contact UBC Occupational First Aid immediately at 604.822.4444 and notify your supervisor. Ensure the incident is also reported to your Manager and entered into the Centralized Accident Incident Reporting System (CAIRS).

15. Program Review

The UBC Facilities Personal Protective Equipment Program will be reviewed and updated as needed by Safety & Risk Services and Facilities stakeholders to include any necessary changes.

16. Appendices

- Appendix A: Generalized PPE Requirements
- Appendix B: Location Specific PPE Requirements
- Appendix C: General Guidance on the Selection of PPE



Appendix A: Generalized PPE Requirements

Type of PPE	Conditions requiring PPE	General PPE required
Footwear	<ul style="list-style-type: none"> Potential for impact, crushing, corrosive, puncture, electrical shock, slipping, tripping, uneven terrain, ankle protection and foot support 	<ul style="list-style-type: none"> Type of footwear dependent on specific task being performed during work hours. If toe protection, metatarsal protection, puncture resistant soles, dielectric protection or any combination of these are required, the footwear must meet requirements of CSA Z185-M92 Protective Footwear
Head Protection	<ul style="list-style-type: none"> Danger of contact from falling objects, above head hazard, flying debris, or in any other situation where potential injury or head trauma may occur As required by regulations and guidelines (i.e. traffic control, working below another worker, operating a chainsaw, etc.) 	<ul style="list-style-type: none"> Appropriate protective headgear Chin straps or other effective means of retention is required when climbing or working from a height exceeding 3m (10ft) or exposed to high winds, or other conditions that may cause loss of headgear.
Eye and Face Protection	<ul style="list-style-type: none"> Potential for injuries or irritation to the eyes or skin while handling materials (i.e. grinding, sandblasting, removing ceiling tiles, operating lawnmower, overhead work, working with chemicals etc.) 	<ul style="list-style-type: none"> Properly fitting safety eyewear/ face protection appropriate to the conditions of the work being conducted.
Limb and Body Protection	<ul style="list-style-type: none"> Potential for skin puncture, abrasion, or adverse skin reaction, or absorption through the skin (i.e. materials which could burn through, splash, irritate skin, or emit fumes or radiate heat; carrying lumber or masonry products; unshielded parts of operating equipment, hot materials; exhaust, grass clippings, rocks thrown from grass trimmers). Activities where kneeling is required for prolonged periods of time (i.e. setting floor tiles, weeding garden beds, scrapping glue residue from floor) Potential for injury, occupational disease, muscular skeletal injuries or exposure to irritants/ contaminants (i.e. vibration, handling chemicals) 	<ul style="list-style-type: none"> Appropriate clothing to provide protection. Appropriate method of knee protection. Appropriate hand protection
Respiratory Protection	<ul style="list-style-type: none"> Potential for exposure to irritants, allergens, disease causing dust, fumes, gases and oxygen deficient atmosphere within a work area. 	<ul style="list-style-type: none"> Suitable respiratory protection as per the UBC Respiratory Protection Program document.



<p>Hearing Protection</p>	<ul style="list-style-type: none"> • Areas where noise levels cannot be reduced below the exposure limit of 85dBA Lex daily noise exposure level or 140 dBA peak sound level. • Hearing damage can occur from short- or long-term exposure to excessive noise level (i.e. Dentistry, mechanical room, operation of power tools, power washing, driving gators, etc.) <p>NOTE: <i>if you are within 1 meter of another person and it is necessary to raise your voice in order to be heard, the noise level is likely excessive and hearing protection is necessary.</i></p>	<ul style="list-style-type: none"> • Suitable hearing protection as per the UBC Hearing Conservation Program document.
<p>High Visibility & Distinguishing Apparel</p>	<ul style="list-style-type: none"> • All employees performing traffic control duties, guiding mobile equipment or in areas of restricted/ limited visibility. 	<ul style="list-style-type: none"> • Appropriate reflective clothing/ apparel required for the task.
<p>Buoyancy Equipment (Personal Flotation Device)</p>	<ul style="list-style-type: none"> • A worker under conditions which involve a risk of drowning 	<ul style="list-style-type: none"> • A personal floatation device (PFD) or lifejacket with sufficient buoyancy to keep the worker’s head above water as per the WorkSafe BC OHS Buoyancy Equipment compliance standards
<p>Flame Resistant Clothing</p>	<ul style="list-style-type: none"> • Workers must wear flame resistance clothing appropriate to the risk if working in areas where they may be exposed to flash fires, molten metal, welding and burning or similar hot work hazards 	<ul style="list-style-type: none"> • Flame resistant clothing that protects against flash fires is subject to Canadian General Standards Board-155.20; otherwise, garments should meet the ASTM F2733 for rainwear and FNPA 70E for protection against electrical fires.



Appendix B: Location-Specific PPE Requirements

Location	Examples	PPE Required
Production Shops	Includes Carpentry, Paint, Garage, Mechanical Maintenance, Plumbing, Steam fitting, Sheet Metal, Locksmith, Stores	<p>The following PPE is required when outside designated safe area as indicated by the yellow hatch marked lines on the floor:</p> <ul style="list-style-type: none"> • CSA Z195-M92 approved footwear mandatory at all times; • Use of goggles, face shields, ear protection hard hats, fall protection (i.e. harness, lanyards, etc.) and other PPE is mandatory as required by work being performed • No loose clothing or jewelry shall be worn which can get caught in machinery and cause injury
Service Spaces	Mechanical or electrical rooms	<p>The following PPE is mandatory:</p> <ul style="list-style-type: none"> • CSA Z195-M92 approved footwear • Use of safety headwear, goggles, face shield, hearing protection, respiratory protection and other PPE is mandatory in mechanical service rooms and in all other service rooms as required by work being performed
Campus laboratories		<p>The following PPE is mandatory:</p> <ul style="list-style-type: none"> • Liquid-resistant, closed-toed footwear; • Long sleeved clothing; • Long pants; • Other task dependent PPE may be required (i.e. isolation gowns, shoe coverings, head coverings, safety eyewear)
Construction Sites		<p>The following PPE is mandatory:</p> <ul style="list-style-type: none"> • CSA Z195-M92 approved footwear; • Protective headgear; • High-visibility vest; • Additional PPE as required by construction site
Thermal Energy Plants	Campus Energy Centre (CEC) Bioenergy Research Demonstration Facility (BRDF)	<p>The following PPE is mandatory:</p> <ul style="list-style-type: none"> • CSA Z195-M92 approved footwear; • CSA Z195-M92 approved Protective headgear (i.e. hard hat); • Safety eyewear; • Long sleeved shirts and pants; • Hearing Protection (BRDF and Green Zone in CEC); • Use of face shield, hearing protection (non-Green Zone in CEC), respiratory protection and other PPE is mandatory as required by work being performed.

Appendix C: General Guidance on the Selection of PPE

Selection of Safety Footwear

The following symbols, or markings, will help to determine which safety footwear is appropriate for the job.

Marking	Criteria	Intended Application
	Green triangle indicates sole puncture protection with a Grade 1 protective toecap.	For heavy industrial work environments, especially that of construction where sharp objects (such as nails) are present.
	Yellow triangle indicates sole puncture protection with a Grade 2 protective toecap.	For light industrial work environments requiring puncture protection as well as toe protection.
	Blue rectangle indicates a Grade 1 protective toecap with no puncture-resistance sole.	For industrial work environments not requiring puncture protection.
	Grey rectangle indicates a Grade 2 protective toecap with no puncture-resistant sole.	For industrial and non-industrial work environments not requiring puncture protection.
	White rectangle with orange Greek letter omega indicates electric-shock protective footwear.	For industrial work environments where accidental contact with live electrical conductors can occur. Warning: Electrical shock resistance deteriorates with wear and in a wet environment.
	Yellow rectangle with black SD letters indicates static-dissipative footwear.	For industrial work environments where a static discharge can create a hazard for workers or equipment. Warning: This footwear should not be used where contact with live electrical conductors can occur.
	Yellow rectangle indicates sole puncture protection with a Grade 2 protective toecap. (super-static dissipative footwear)	For industrial work environments where a static discharge can create a hazard for workers or equipment. Warning: This footwear should not be used where contact with live electrical conductors can occur.
	Red rectangle with white C letter indicates electrically conductive footwear.	For industrial work environments where low-power electrical changes can create a hazard for workers or equipment. Warning: This footwear should not be used where contact with live electrical conductors can occur.
	Dark grey rectangle with M letter indicates metatarsal protection. Note: Toe protection is required for all metatarsal protective footwear.	For industrial work environments where heavy objects can hurt the metatarsal region of the foot.
	White label with green fir tree symbol footwear provides protection when using chainsaws.	For forestry workers and others who work with or around hand-held chainsaws and other cutting tools.

Note: Footwear will also be marked to indicate the level of slip resistance. These markings may be on the packaging, the footwear, or on a product sheet. *(Source: Canadian Centre for Occupational Health & Safety, October 2020.)*

Selection of Protective Headwear

To select the proper protective headwear, follow the guidance in the table below.

Headwear classification	Protection provided	Application
Type 1 Class E	Impact and penetration to the crown only; 20,000 V electric current rating (provides head protection against high voltage conductors)	For use where it can be shown that there is no hazard related to lateral impact, reversible headwear should be selected if procedure requires wearing the headwear backwards (i.e. welding). Where high visibility headwear is required, refer to CSA – Z96 for color and retro-reflective tape requirements.
Type 1 Class G	Impact and penetration to the crown only; 2,200 V electric current rating (provides head protection against low voltage conductors – general trades)	
Type 1 Class C	Impact and penetration to the crown only; NO electrical current rating	
Type 2 Class E	Impact and penetration to the crown and laterally; 20,000 V electrical current rating	For use where moving objects are present (medium to large manufacturing operations), construction and demolitions sites, when the hazard assessment cannot determine the type.
Type 2 Class G	Impact and penetration to the crown and laterally; 2,200 V Electrical current rating	
Type 2 Class C	Impact and penetration to the crown and laterally; NO electrical current rating	

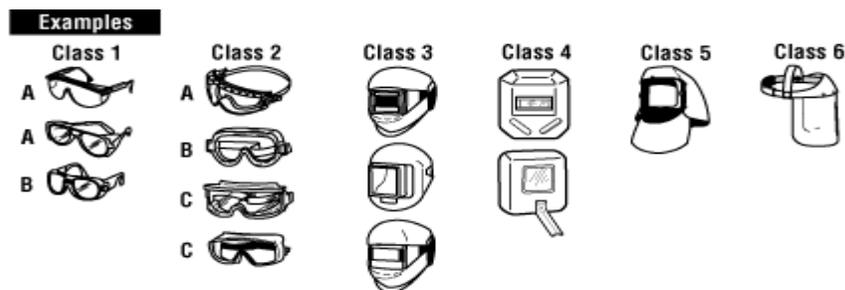
(Source: CSA Standard Z94.1-05, 2018)

NOTE*: Where a hazard assessment is not carried out, a Type 2 Class # shall be selected because it has the highest level of dielectric (20,000 V), crown (55 j) and lateral (30 j) protection.

NOTE:** Bump caps are intended for use in area with low head clearance where protection is needed from head bumps and laceration where the use of a hard hat is not possible and/ or may create additional hazards. Bump caps are not to be used to protect against falling, flying or thrown objects in which a hard hat would need to be worn.

Selection of Eye and Face Protection

To select the proper eye and face protection, follow the guidance in the table below.



**Selection of Eye and Face Protection continued...**

Nature of hazard	Hazardous activities involving but not limited to	Recommended protectors
Flying objects	Chipping, scaling, stonework, drilling, grinding, buffing, polishing, hammer mills, crushing, heavy sawing, planing, wire and strip handling, hammering, unpacking, nailing, punch press, lathwork	Class 1A – Spectacles Class 2A, 2B – Goggles Class 5A, 5B – Hoods Class 6A, 6D – Face shields
Flying particles, dust, wind, etc.	Woodworking, sanding, light metal working and machining, exposure to dust and wind, resistance welding (no radiation exposure), sand, cement, aggregate handling, painting, concrete work, plastering, material batching and mixing	Class 1A – Spectacles Class 2A, 2B – Goggles Class 5A, 5B – Hoods Class 6A, 6D – Face shields
Heat, sparks, and splash from molten materials	Babbling, casting, pouring, molten metal, brazing, soldering, spot welding, stud welding, hot dipping operations	Class 1B – Spectacles Class 2C – goggles Class 5C, 5D, Hoods Class 6B, 6C, 6D – Face Shields
Acid splash, chemical burns	Acid and alkali handling, degreasing, pickling and plating operations, glass breakage, chemical spray, liquid bitumen handling	Class 2B - Goggles
Abrasive blasting materials	Sand blasting, shot blasting, shotcreting	Class 2B – Goggles Class 5B – Non-rigid hoods Class 6A – Face shields
Glare, stray light (where slight reduction of visible radiation is required)	Torch cutting, welding, brazing, furnace work, metal pouring, spot welding, photographic copying	Class 1B – Spectacles Class 2C – Goggles Class 5C – Hoods Class 6B – Face Shields
Injurious optical radiation (where large reduction of optical radiation is required)	Babbling, casting, pouring, molten metal; brazing, soldering, spot welding, stud welding, hot-dipping operations	Class 3 – Helmet Class 4 - Handshield
Laser radiation	Laser cutting, laser surgery, laser etching	Class 2D - Goggles
Electric arc flash	Electrical installation, electrical maintenance, troubleshooting of electrical systems, disconnecting live electrical systems	Class 2E – Goggles Class 5E – Hoods Class 6D – Face shields

(Source: Canadian Centre for Occupational Health and Safety, 2017; CSA Standard Z94.3.1-16 Guideline for selection, use and care of eye and face protectors, 2016.)

Note: This table cannot cover all possible hazards and combinations that may occur. Examine each situation carefully and select the appropriate protector or combination of protectors.



Selection of Skin Protection

The following table discusses the most common hazards requiring gloves to be used as personal protective equipment (PPE)

Type of hazard	Considerations
Chemical	Glove selection guides can be found in catalogs of various scientific and safety suppliers. Gloves are rated for degradation, breakthrough, and permeation rates. Choose a glove that provides the best resistance to the chemical being used. For some hazards, double gloving may be needed.
Biological	Standard latex exam gloves provide protection for biological hazards. Non-latex gloves such as synthetic rubber, nitrile, vinyl, or neoprene also provide acceptable barrier protection against biological hazards without the potential to cause severe allergic reactions associated with latex. If required, sterile packaged gloves are also available from various brands. <u>Note:</u> for combination of biological and chemical hazards, the chosen glove must provide protection from both the chemical and the biological material.
Radioactive	For radioactive hazards, glove selection is based on the carrier material (e.g. water, toluene, etc.). Radioiodination procedures require double gloving.
Physical (sharps, extreme temperatures)	Cut resistant gloves should be worn when working with sharp objects or glass that may shatter. Thermally protective gloves are necessary to protect against hot and cold burns. It is important to consider the level of dexterity required by the task as some of the gloves can reduce dexterity.
Combination of chemicals	Where different chemicals have different recommended glove material, the best choice is usually the glove with the greatest resistance to the chemical (e.g. the slowest breakthrough time). In some cases, it may be necessary to double glove when no single type of glove material will provide full protection. In this case, it is advisable to select two sets of gloves made from different materials. If one chemical is significantly more dangerous (e.g. highly toxic) than others, then this may take priority for choice of glove material rather than chemical breakthrough time. Seek advice from your supervisor if you are uncertain about which should take priority (i.e. fastest breakthrough time or highest toxicity).

Depending on the type of hazard identified and contact time, different glove materials will provide different protection as outlined in the table below. For more information, please reference the [Safety & Risk Services Glove Selection Guide](#).

Glove material	Protects against	Advantages	Disadvantages
Butyl 	Peroxide, strong acids and bases, alcohols, aldehyde, ketones, esters.	Protects against a wide variety of chemicals	Do not use with aliphatic and aromatic hydrocarbons and halogenated solvents
Neoprene 	Alcohols, oxidizing acids, hydraulic fluids, phenol, glycol ethers	Good pliability, finger dexterity, high density and tear resistance	Poor for halogenated and aromatic hydrocarbons
Nitrile (disposable or reusable) 	Biological hazards Oils, greases, aliphatic chemicals, xylene, alcohols, acids and caustics	Good dexterity and sensitivity	Poor against strong oxidizing agents, benzene, methylene chloride, phenol, ketones, acetates and aromatic solvents
Polyvinyl chloride (PVC) 	Strong acids and bases, salts, and other water solutions	Can be used for immersion, less dexterity and sensitivity	Plasticizers can be stripped, poor tear resistance
Cryogenic gloves 	Cryogenics	Protects against tissue damage from cryogenics or very cold containers and equipment	Not for immersion
Leather 	Welding, sheet metal work, handling hot or cold objects, gardening	Provides protection against heat, cold, sparks and cuts, they come in a wide variety of styles and fit	Not for working with liquids and when wet will offer poor protection against heat and cold
Kevlar brand fiber 	Work where temperature extremes are an issue	Protects against tear, abrasion and cutting	Thicker gloves can impede movement
Mesh gloves 	Used for work that requires repeated cutting and slicing	Protects against cutting and slicing	Steel mesh gloves can be heavy and impede movement
Aluminized gloves 	Furnace work, handling hot objects	Provides good protection against heat	Not to be used for electrical work
Cotton 	General duty work	Moderate resistance to heat and cold	May need to be thicker to offer full protection

Selection of Respiratory Protection

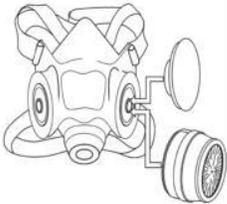
Respirators are used for protection against airborne contaminants when there are no other hazard control methods available. Respirators should never be the primary choice for hazard control.

Individuals can be exposed to an array of airborne hazards in their workplace that can lead to occupational respiratory diseases. Examples of airborne hazards include dusts and fibres, mists, smoke, fumes, gases, vapors, and biological materials.

Various types of respirators are available, but it is important that the right respirator is selected for the type of hazards that are present in the workplace. Please note that all tight-fitting respirators need to be fit tested before use and annually thereafter.

Air-purifying respirators (APR)

Air-purifying respirators clean the air before the worker breathes it in. Please note, APRs WILL NOT supply clean air and is not to be used in an oxygen deficient environment.

Air-Purifying Respirator Type	Description
Filtering Facepiece Respirator (e.g. N95) 	<ul style="list-style-type: none"> • Air-purifying respirator • Entire facepiece acts as a filter medium • Have 2 straps (one sits at the crown of the head and the other below the ear) • No replacement parts exist • Mask should be disposed of at end of service life • Only provides protection against particulates <p>* DUST MASKS ARE NOT THE SAME AS N95's.</p> <p>** DUST MASKS ARE NOT NIOSH CERTIFIED RESPIRATORS.</p>
Non-powered Half-face Respirator 	<ul style="list-style-type: none"> • Air-purifying respirator • Comprised of either silicone, thermoplastic or rubber face piece • Different cartridges or filters can be attached onto the respirator • During inhalation: air is pulled one-way through the filter or cartridge where the contaminants become trapped • During exhalation: A one-way valve opens and allows air to leave
Non-powered Full-face Respirator 	<ul style="list-style-type: none"> • Air-purifying respirator • Comprised of either silicone, thermoplastic or rubber face piece alongside a clear lens • Covers the user's entire face from their hairline to chin • Different cartridges or filters can be attached onto the respirator • Good against contaminants that cause eye irritation • Higher degree of protection than half-face respirators

Air-purifying respirators continued...

Air-Purifying Respirator Type	Description
<p>Powered Air Purifying Respirators (PAPR)</p> 	<ul style="list-style-type: none"> • Air purifying respirator • Makes use of a battery powered blower to continuously draw air through the filter or cartridge • Offers a higher degree of protection against contaminants than non-powered respirators • Loose-fitting facepiece can be worn with some facial hair and glasses. Loose-fitting facepieces do not require respirator fit testing.

Air-supplying respirators

Air-supplying respirators supply clean air to worker. Air-supplying respirators do not filter or clean the air. Only NIOSH-approved airlines can be used with air-supplying respirators.

Air-Supplying Respirator Type	Description
<p>Supplied-Air (Airline) Respirator</p> 	<ul style="list-style-type: none"> • Air-supplying respirator • Supplies user with clean air through a hose called an airline. • A NIOSH-approved airline is attached to a source of clean, respirable air • The air can be provided by either a high-pressure system (compressor or compressed air cylinder) or by a low-pressure system with a pump to supply ambient air
<p>Combination Supplied-Air (Airline) Respiratory with Auxiliary Self-contained Air Supply</p> 	<ul style="list-style-type: none"> • Air-supplying respirator • Combines a supplied-air (airline) respirator and a self-contained breathing apparatus (SCBA) • A small auxiliary air cylinder called an escape or egress bottle is worn usually attached to a belt and plumbed into worker's airline system • If supplies air fails or worker needs to disconnect, the bottle will supply clean air for 5 – 20 minutes to allow worker to escape hazardous area • Can be used in Immediately Dangerous to Life or Health (IDLH) conditions
<p>Self-contained Breathing Apparatus (SCBA)</p> 	<ul style="list-style-type: none"> • Air-supplying respirator • Provides air from a cylinder that is carried by the worker • Can be used in Immediately Dangerous to Life or Health (IDLH) conditions • Limitations include limited air supply and added weight for worker to carry



Please see the [UBC Respiratory Protection Program document](#) for information regarding the appropriate selection of respiratory protection.

Selection of Hearing Protection

Please see the [UBC Hearing Conservation Program document](#) for information regarding the appropriate selection of hearing protection.

Selection of High Visibility & Distinguishing Apparel

To select the proper high-visibility safety apparel, follow the guidance in the table below as per [OHSR Part 8, Section 8.24 and the CSA Z96-15 \(R2020\), High-Visibility Safety Apparel Standard.](#)

High-visibility safety apparel classification	Description	Conditions
Class 1	<ul style="list-style-type: none"> Basic harness or strips/ bands over the shoulder(s) and encircling the waist. Provides the lowest recognized coverage and good visibility Examples: harness and striped apparel 	<ul style="list-style-type: none"> Worker(s) exposed to vehicles or mobile equipment travelling at speeds equal to or less than 30 km/h
Class 2	<ul style="list-style-type: none"> Full coverage of upper torso (front, back, sides, and over the shoulders). Provides moderate body coverage and superior visibility. Examples: Vest, jacket, hooded coat, bib overalls 	<ul style="list-style-type: none"> Worker(s) exposed to vehicles or mobile equipment travelling at speeds in excess of 30 km/h
Class 3	<ul style="list-style-type: none"> Class 2 apparel, plus bands encircling both arms and both legs. Bands shall be composed of combined-performance strips/ bands or a combination of retroreflective and background material. Provides greatest body coverage and visibility under poor light conditions and at great distance Examples: jacket & pants, coveralls, long coat or slicker 	<ul style="list-style-type: none"> Worker(s) exposed to vehicles or mobile equipment travelling at speeds in excess of 30 km/h

*Traffic Control Persons must have Class 3 high visibility apparel meeting criteria of CSA Z96-15 and meet the [WorkSafeBC OHSR Part 18, Section 18.9 – 18.10 Criteria](#)

(Source: CSA Z96-15 (R2020), High-Visibility Safety Apparel Standard)