Personal Protective Equipment (PPE) Program

Safety & Security Services

March, 2003

ALGONQUIN COLLEGE

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1.0 Glossary

CSA: Canadian Standards Association, create safety standards to be used as guidelines.

Competent Person: A person who, because of training and experience, is capable of identifying hazardous or dangerous conditions.

Hazard Assessment: Investigating the work environment for potential dangers which could result in injury or illness.

Personal Protective Equipment (PPE): Devices worn by the employees to protect against hazards in the environment. Examples include safety glasses, face shields, respirators, gloves, hard hats, steel-toe shoes, and hearing protection.

Permissible Exposure Limit (PEL): The PEL for a substance is the 8-hour time-weighted average or ceiling concentration above which workers may not be exposed.

Qualified Person: A person designated by the employer who is knowledgeable about and familiar with all relevant manufactures' specifications and recommendations; is capable of identifying existing or potential hazards in specific surroundings or working conditions which may be hazardous or dangerous to employees; and has been trained for the specific task assigned. When work is to be supervised by a qualified person, the qualified person shall have the necessary authority to carry out the assigned work responsibilities.

2.0 REFERENCES

University of Maryland - Personal Protective Program.

Constuction Safety Association of Ontario (CSAO) - Personal Protective Equipment – User’s Guide.

Centre for Disease Control (CDC) – Personal Protective Equipment Program

3.0 PREAMBLE

The Personal Protective Equipment (PPE) Program is in place to provide the College community with the necessary information to identify hazardous work situations that require the use of PPE, the proper selection and use of PPE, and documentation of this information. This information is important to help ensure the safety and health of all employees at Algonquin College and to achieve regulatory compliance with the Occupational Health & Safety Act.

4.0 SCOPE

College employees who currently utilize PPE or have the potential to encounter hazards to the eyes, face, head, feet, hands, or who conduct work involving electrical or fall hazards, as identified during a hazard assessment of the workplace, will be required to participate in this PPE Program. PPE will be selected and used to protect employees from the hazards and potential hazards that are likely to be encountered.

PPE includes all clothing and work accessories designed to protect employees from workplace hazards. PPE should not be used as a substitute for engineering, work practices, and/or administrative controls to protect employees from workplace hazards. PPE should be used in conjunction with permanent protective measures, such as engineered guards, substitutions of less hazardous chemicals, and prudent work practices.

5.0 RESPONSIBILITIES

Senior Management, Deans, Directors,

- Provide the resources and direction necessary to ensure that an effective Personal Protective Equipment program is in place and is strictly adhered to
- Designate and empower individuals who must participate in and who will be responsible for the preparation and implementation of the PPE Program
- Provide administrative and financial support for this program within individual departments
- Ensure the PPE Program is implemented and maintained within the department and area

Managers, Supervisors

- Implement all aspects of this program, including documentation of the hazard assessment and training
- Conduct hazard assessments and ensure that employees are informed, trained, and provided with appropriate PPE to be protected from potential hazards associated with job tasks
- Be familiar with the applicable Occupational Health and Safety Act, Safety Standards, and prudent safety practices to protect themselves and their fellow employees

Employees

- Comply with the Program and any further safety recommendations provided by supervisors and/or Safety and Security Services regarding PPE.
- Employees must wear all assigned PPE, and Conduct all assigned tasks in a safe manner.
- Report any unsafe or unhealthy work conditions and job related injuries or illnesses to the supervisor immediately.

Occupational Health & Safety Section (OHS)

- Provide technical information and assist departments in implementing an effective PPE program in their workplace.
- Coordinate training for PPE instruction, as needed.
- Review and revise the PPE program, as needed for compliance with applicable regulations and Safety Standards.

6.0 HEAD PROTECTION

The College will adopt CSA Standard Z94.1 "Industrial Protective Headwear"; where the worker is exposed to the hazard of head injury. The Canadian Standards Association Z94.1-M1977 rated protective headwear into three classes.

Class A - General Use, limited voltage protection
Class B - High Voltage Protection
Class C - General Use, metallic, no voltage protection

This standard has been superseded by Z94.1-92 (current edition)

The above classes are no longer considered acceptable protection.

REQUIREMENT:

The Canadian Standards Association Z94.1-92 (current edition) rates protective headwear into three classes:

Class G - General Use, limited voltage protection
Class E - Electrical, high voltage protection
Class C - Conducting, general use

The primary distinction in the new standard is that all helmets are required to offer protection not only from impact to the top but also lateral protection. These helmets can be distinguished by the addition of foam liners such as the ones used in bicycle helmets or expanded accordion type liners.

a) The College shall adopt Class E on the new revised CSA standard as the College standard.

b) Class E protective headwear is most commonly used on construction sites, renovations and in areas where protection from electrical and impact protection is required.

i) Class E protective headwear are available in polycarbonate and polyethylene. The choice of material depends on temperature exposure and chemical exposure.

Polyethylene is the most popular helmet material as it offers good general protection and chemical protection.

Polycarbonate is used where high and low temperature exposure occurs, it also provides better protection against impact. It is preferred by the electrical companies. It is also more expensive than polyethylene.

ii) For your information, Class E protective headwear in both materials may be available in hat (Type I) and cap (Type II) style. Cap style is the most common style of protective headwear. However, where the possibility of water or small debris going down the back of the neck exists, the hat is more applicable.

iii) Where the possibility of the protective headwear falling off exists during the course of normal duties, a chin strap shall be installed that will firmly keep the protective headwear in place.

c) Alterations such as drilling holes, painting, and applying adhesives, stickers and decals are not acceptable.

Only stickers approved by the manufacturer for use on protective headwear shall be used.

7.0 FOOT PROTECTION

CSA approved protective footwear must be worn whenever there is a hazard of foot injury. Supervisors are responsible to ensure foot protection appropriate for the task being performed is supplied to workers, in accordance with the collective agreement, and that workers wear the protective footwear when working.

In instances where the applicability of these guidelines is unclear, OHS and a worker designate will assess the work area, at the request of workers or supervisors, to determine the requirement for and/or appropriate type of protective footwear. Further, the Joint Occupational Health & Safety Committee (JOHSC) may recommend the payment of protective footwear allowance under circumstances, which fall outside of these guidelines, in accordance with the collective agreement.

REQUIREMENTS:

1. CSA Grade I footwear can be divided into two types:

    i. Green triangle - CSA Grade I - has a steel plate running the length of the sole to provide puncture resistance in the sole.

    ii. Green tag - CSA Grade I - has no steel plate in the sole and therefore offers no puncture resistance in the sole.

2. Electrical shock resistant footwear shall prominently display the omega symbol utilized to designate that the footwear is approved as electrical shock resistance.

3. Safety footwear can be divided into three basic types, shoes, leather boots and some form of chemical compound boot for special applications.

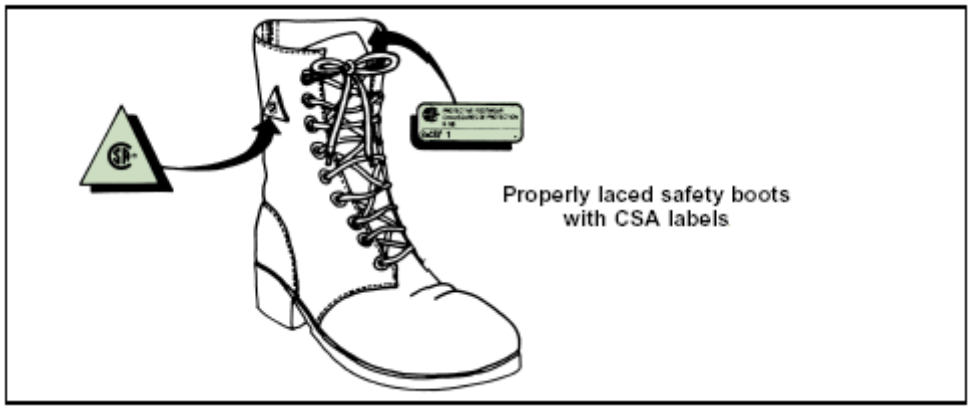
    i. Green tag - CSA Grade I shoes should be worn where protection of the ankle and shin is not required. This includes, but is not limited to, laboratories, shipping and receiving areas, carpentry, machine shops, and interior custodial staff.

    ii. Green triangle - CSA Grade I boots should be worn where the possibility of ankle, shin and sole injury could occur. This includes, but is not limited to, construction labs, automotive, buildings and grounds, sheet metal shop, heating and cooling shops.

    iii. Green triangle - CSA Grade I rubber boots shall be worn under the same conditions as in ii and where the work involved necessitates working in wet environments. This includes, but is not limited to;

buildings and grounds, food and beverage wash areas, fire protection labs.

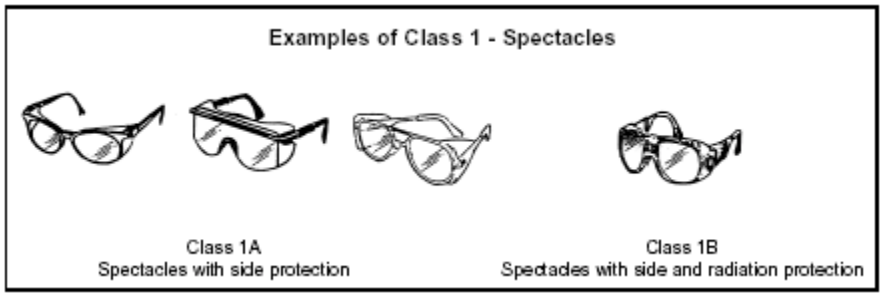
Green triangle - CSA Grade I chemical-resistive boots shall be worn where the possibility of chemical splash could cause injury.



8.0 EYE PROTECTION

CSA approved protective eyewear must be worn wherever there is a risk of eye injury. Supervisors are responsible to ensure eye protection appropriate for the task being performed is supplied to workers, in accordance with the collective agreement, and that workers wear the protective eyewear when working. Section 81 of the Industrial Regulations provides the legal framework.

OHS and a worker designate will assess the work area, at the request of workers or supervisors, to determine the requirement for and/or appropriate type of protective eyewear. Upon such determination, the JOHSC may recommend payment of an allowance to affected workers in accordance with the collective agreement.



REQUIREMENT:

1. Only CSA approved safety eyewear shall be worn; this eyewear shall bear the CSA mark.

2. Hardened prescription glasses are not to be considered as approved. Only a combination of prescription glasses with a CSA approved goggle or face shield shall constitute compliance with this requirement.

   Prescription lenses mounted into CSA approved frames cannot be considered approved.

3. Safety eyewear can be broken down into three types:

   a. Glasses with side shields which are normally rated for impact protection only but may be rated for radiation protection;

      Glasses with side shields rated for radiation protection;

   b. Goggles which are rated for impact protection, chemical splash protection, radiation protection; and

   c. Face shields, which are rated for impact protection, chemical splash protection, and for use in some welding and metal pouring operations.

4. Only chemical protective goggles, face shields, a combination of safety glasses and face shield, or a combination of goggles and face shield shall be worn when working with chemicals.

5. Only protective goggles, face shields and helmets approved for welding shall be worn when welding is carried out.

- Suitable protectors shall be used when employees are exposed to hazards from flying particles, molten metal, acids or caustic liquids, chemical liquids, gases, or vapors, bioaerosols, or potentially injurious light radiation.
- Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment.
- Side protectors shall be used when there is a hazard from flying objects.
- Goggles and face shields shall be used when there is a hazard from chemical splash.
- Face shields shall only be worn over primary eye protection (safety glasses or goggles).
- Protectors shall be marked to identify the manufacturer.
- Equipment fitted with appropriate filter lenses shall be used to protect against light radiation. Tinted and shaded lenses are not filter lenses unless they are marked or identified as such. Refer to “Eye and Face Selection Chart”
- Emergency eyewash stations and showers are to be maintained in accordance with Appendix A “Emergency Eyewash and Shower Procedures”

Eye and Face Protection Selection Chart		
Source	**Assessment of Hazard**	**Protection**
IMPACT - Chipping, grinding, machining, drilling, chiseling, riveting, sanding, etc.	Flying fragments, objects, large chips, particles, sand, dirt, etc.	Spectacles with side protection, goggles, face shields. For severe exposure, use face shield over primary eye protection.
CHEMICALS - Acid and chemicals handling	Splash Irritating mists	Goggles, eyecup and cover types. For severe exposure, use face shield over primary eye protection Special-purpose goggles
DUST - Woodworking, buffing, general dusty conditions	Nuisance dust	Goggles, eyecup and cover types.
LIGHT and/or RADIATION Welding - electric arc Welding - gas Cutting, torch brazing, torch soldering Glare	 Optical radiation Optical radiation Optical radiation Poor vision	 Welding helmets or welding shields. Typical shades: 10-14 Welding goggles or welding face shield. Typical shades: gas welding 4-8, cutting 3-6, brazing 3-4 Spectacles or welding face shield. Typical shades: 1.5-3 Spectacles with shaded or special-purpose lenses, as suitable.

8.1 Prescription Safety Eyewear

Occupational Health and Safety Act regulations require that each affected employee who wears prescription lenses while engaged in operations that involve eye hazards shall wear eye protection that incorporates the prescription in its design, or shall wear eye protection that can be worn over the prescription lenses (goggles, faceshields) without disturbing the proper position of the prescription lenses or the protective lenses. Personnel required to wear

prescription glasses and protective eyewear must notify their supervisor who will consult with OHS regarding the most appropriate means of protection.

9.0 HAND PROTECTION

Suitable gloves shall be worn when hazards from chemicals, cuts, lacerations, abrasions, punctures, burns, biologicals, and harmful temperature extremes are present. Glove selection shall be based on performance characteristics of the gloves, conditions, durations of use, and hazards present. One type of glove will not work in all situations.

The first consideration in the selection of gloves for use against chemicals is to determine, if possible, the exact nature of the substances to be encountered. Read instructions and warnings on chemical container labels and MSDS's before working with any chemical. Recommended glove types are often listed in the section for personal protective equipment.

Chemicals eventually permeate all glove materials. However, they can be used safely for limited time periods if specific use and other characteristics (i.e., thickness and permeation rate and time) are known. OHS can assist in determining the specific type of glove material that should be worn for a particular chemical.

Skin contact is a potential source of exposure to toxic materials; it is important that the proper steps be taken to prevent such contact. Most accidents involving hands and arms can be classified under four main hazard categories: chemicals, abrasions, cutting, and heat. There are gloves available that can protect workers from any of these individual hazards or any combination thereof.
Gloves should be replaced periodically, depending on frequency of use and permeability to the substance(s) handled. Gloves overtly contaminated should be rinsed and then carefully removed after use.

Gloves should also be worn whenever it is necessary to handle rough or sharp-edged objects, and very hot or very cold materials. The type of glove materials to be used in these situations include leather, welder's gloves, aluminum-backed gloves, and other types of insulated glove materials.

Careful attention must be given to protecting your hands when working with tools and machinery. Power tools and machinery must have guards installed or incorporated into their design that prevent the hands from contacting the point of operation, power train, or other moving parts. To protect hands from injury due to contact with moving parts, it is important to:

- Ensure that guards are always in place and used.

- Always lock-out machines or tools and disconnect the power before making repairs.
- Treat a machine without a guard as inoperative; and
- Do not wear gloves around moving machinery, such as drill presses, mills, lathes, and grinders.

Degradation

Degradation due to contact with chemicals causes the glove material to soften, swell, shrink, stretch, dissolve, or to become hard and brittle.

Permeation

Permeation is the result of molecular diffusion of a chemical through a glove material. There may be permeation with out obvious signs of degradation. Permeation is quantified by breakthrough time and permeation rate.

Breakthrough Time

Breakthrough Time is the time it takes for a particular chemical to pass through a protective material.

Permeation Rate

The speed at which the chemical moves through the protective material once it has broken through.

Exposure

Glove performance is decreased significantly as chemical exposure increase by the following:

- Chemical concentration
- Direct immersion
- Pervious exposures

Temperature

Permeation test data are obtained at room temperature (20 to 25 degrees Celsius). If chemicals are being used at temperatures significantly higher or lower than this, glove performance may be affected.

Glove Thickness

Any chemical will permeate a protective material given enough time. The breakthrough time for a thicker material will be longer than that of a thinner material, providing superior chemical resistance. When choosing a chemical resistant glove manual dexterity must also be taken into account.

Manufacturer

Differences in production of materials results in variations of permeation and degradation between manufactures. Test data for a particular manufacture should be consulted prior to selecting a chemical resistant glove.

Chemical Purity

Permeation testing is conducted using pure chemicals. Mixtures of chemicals will significantly alter the permeation rate and degradation of a material.

Physical Resistance

Chemical penetration through a tear or hole in a glove will cause a much greater chemical exposure potential than caused by molecular permeation.

The following is a guide to the most common types of protective work gloves and the types of hazards they can guard against:

Disposable Gloves. Disposable gloves, usually made of light-weight plastic, poly-vinyl chloride or latex can help guard against mild irritants.

Fabric Gloves. Made of cotton or fabric blends are generally used to improve grip when handling slippery objects. They also help insulate hands from mild heat or cold.

Leather Gloves. These gloves are used to guard against injuries from sparks or scraping against rough surfaces. They are also used in combination with an insulated liner when working with electricity.

Metal Mesh Gloves. These gloves are used to protect hands form accidental cuts and scratches. They are used most commonly by persons working with cutting tools or other sharp instruments.

Aluminized Gloves. Gloves made of aluminized fabric are designed to insulate hands from intense heat. These gloves are most commonly used by persons working with molten materials.

Chemical Resistance Gloves. These gloves may be made of rubber, neoprene, polyvinyl alcohol or vinyl, etc. The gloves protect hands from corrosives, oils, and solvents. The following table is provided as a guide to the different types of glove materials and the chemicals they can be used against. When selecting chemical resistance gloves, be sure to consult the manufacturers' recommendations, especially if the gloved hand will be immersed in the chemical.

Glove Selection Websites

The following websites can aid the user in selecting the proper glove for any chemical.

http://www.chemrest.com/select_chemical_by_name.htm

http://www.pp.okstate.edu/ehs/hazmat/perm-a.htm

Glove Chart

Type	Advantages	Disadvantages	Use Against
Natural rubber	Low cost, good physical properties, dexterity	Poor vs. oils, greases, organics. Frequently imported; may be poor quality	Bases, alcohols, dilute water solutions; fair vs. aldehydes, ketones.
Natural rubber blends	Low cost, dexterity, better chemical resistance than natural rubber vs. some chemicals	Physical properties frequently inferior to natural rubber	Same as natural rubber
Polyvinyl chloride (PVC)	Low cost, very good physical properties, medium cost, medium chemical resistance	Plasticizers can be stripped; frequently imported may be poor quality	Strong acids and bases, salts, other water solutions, alcohols
Neoprene	Medium cost, medium chemical resistance, medium physical properties	NA	Oxidizing acids, anilines, phenol, glycol ethers
Nitrile	Low cost, excellent physical properties, dexterity	Poor vs. benzene, methylene chloride, trichloroethylene, many ketones	Oils, greases, aliphatic chemicals, xylene, perchloroethylene, trichloroethane; fair vs. toluene
Butyl	Speciality glove, polar organics	Expensive, poor vs. hydrocarbons, chlorinated solvents	Glycol ethers, ketones, esters
Polyvinyl alcohol (PVA)	Specialty glove, resists a very broad range of organics, good physical properties	Very expensive, water sensitive, poor vs. light alcohols	Aliphatics, aromatics, chlorinated solvents, ketones (except acetone), esters, ethers
Fluoro-elastomer (Viton) ™ *	Specialty glove, organic solvents	Extremely expensive, poor physical properties, poor vs. some ketones, esters, amines	Aromatics, chlorinated solvents, also aliphatics and alcohols
Norfoil (Silver Shield)	Excellent chemical resistance	Poor fit, easily punctures, poor grip, stiff	Use for Hazmat work

*Trademark of DuPont Dow Elastomers

Glove Type and Chemical Use

***Limited service**	**VG= Very Good**	**G= Good**	**F=Fair**	**P=Poor (not recommended)**

Chemical	**Neoprene**	**Natural Latex or Rubber**	**Butyl**	**Nitrile Latex**
*Acetaldehyde	VG	G	VG	G
Acetic acid	VG	VG	VG	VG
*Acetone	G	VG	VG	P
Ammonium hydroxide	VG	VG	VG	VG
*Amyl acetate	F	P	F	P
Aniline	G	F	F	P
*Benzaldehyde	F	F	G	G
*Benzene	F	F	F	P
Butyl acetate	G	F	F	P
Butyl alcohol	VG	VG	VG	VG
Carbon disulfide	F	F	F	F
*Carbon tetrachloride	F	P	P	G
Castor oil	F	P	F	VG
*Chlorobenzene	F	P	F	P
*Chloroform	G	P	P	P
Chloronaphthalene	F	P	F	F
Chromic Acid (50%)	F	P	F	F
Citric acid (10%)	VG	VG	VG	VG
Cyclohexanol	G	F	G	VG
*Dibutyl phthalate	G	P	G	G
Diesel fuel	G	P	P	VG
Diisobutyl ketone	P	F	G	P
Dimethylformamide	F	F	G	G
Dioctyl phthalate	G	P	F	VG
Dioxane	VG	G	G	G
Epoxy resins, dry	VG	VG	VG	VG
*Ethyl acetate	G	F	G	F
Ethyl alcohol	VG	VG	VG	VG
Ethyl ether	VG	G	VG	G

Chemical	Neoprene	Natural Latex or Rubber	Butyl	Nitrile
*Ethylene dichloride	F	P	F	P
Ethylene glycol	VG	VG	VG	VG
Formaldehyde	VG	VG	VG	VG
Formic acid	VG	VG	VG	VG
Freon 11	G	P	F	G
Freon 12	G	P	F	G
Freon 21	G	P	F	G
Freon 22	G	P	F	G
*Furfural	G	G	G	G
Gasoline, leaded	G	P	F	VG
Gasoline, unleaded	G	P	F	VG
Glycerine	VG	VG	VG	VG
Hexane	F	P	P	G
Hydrochloric acid	VG	G	G	G
Hydrofluoric acid (48%)	VG	G	G	G
Hydrogen peroxide (30%)	G	G	G	G
Hydroquinone	G	G	G	F
Isooctane	F	P	P	VG
Isopropyl alcohol	VG	VG	VG	VG
Kerosene	VG	F	F	VG
Ketones	G	VG	VG	P
Lacquer thinners	G	F	F	P
Lactic acid (85%)	VG	VG	VG	VG
Lauric acid (36%)	VG	F	VG	VG
Lineoleic acid	VG	P	F	G
Linseed oil	VG	P	F	VG
Maleic acid	VG	VG	VG	VG
Methyl alcohol	VG	VG	VG	VG
Methylamine	F	F	G	G
Methyl bromide	G	F	G	F
*Methyl chloride	P	P	P	P
*Methyl ethyl ketone	G	G	VG	P

Chemical	Neoprene	Natural Latex or Rubber	Butyl	Nitrile
*Methyl isobutyl ketone	F	F	VG	P
Methyl methacrylate	G	G	VG	F
Monoethanolamine	VG	G	VG	VG
Morpholine	VG	VG	VG	G
Naphthalene	G	F	F	G
Naphthas, aliphatic	VG	F	F	VG
Naphthas, aromatic	G	P	P	G
*Nitric acid	G	F	F	F
Nitromethane (95.5%)	F	P	F	F
Nitropropane (95.5%)	F	P	F	F
Octyl alcohol	VG	VG	VG	VG
Oleic acid	VG	F	G	VG
Oxalic acid	VG	VG	VG	VG
Palmitic acid	VG	VG	VG	VG
Perchloric acid (60%)	VG	F	G	G
Perchloroethylene	F	P	P	G
Petroleum distillates (naphtha)	G	P	P	VG
Phenol	VG	F	G	F
Phosphoric acid	VG	G	VG	VG
Potassium hydroxide	VG	VG	VG	VG
Propyl acetate	G	F	G	F
Propyl alcohol	VG	VG	VG	VG
Propyl alcohol (iso)	VG	VG	VG	VG
Sodium hydroxide	VG	VG	VG	VG
Styrene	P	P	P	F
Stryene (100%)	P	P	P	F
Sulfuric acid	G	G	G	G
Tannic acid (65%)	VG	VG	VG	VG
Tetrahydrofuran	P	F	F	F
*Toluene	F	P	P	F
Toluene diisocyanate	F	G	G	F
*Trichloroethylene	F	F	P	G

Chemical	Neoprene	Natural Latex or Rubber	Butyl	Nitrile
Triethanolamine	VG	G	G	VG
Tung oil	VG	P	F	VG
Turpentine	G	F	F	VG
*Xylene	P	P	P	F

*Limited service	VG= Very Good	G= Good	F=Fair	P=Poor (not recommended)

10.0 HEARING PROTECTION

The College shall adopt CSA Standard Z94.2 (current edition) "Hearing Protectors" and ACGIH (American Conference of Governmental Industrial Hygienists) exposure limits; where the worker is exposed to the hazard of hearing injury. The Industrial Regulations provides the legal framework.

REQUIREMENTS:

a) Hearing protection is available in two forms, earplugs and earmuffs.

b) Although CSA does not currently place their logo on hearing protection, CSA Standard Z94.2 does assist in the selection of the appropriate hearing protection for the job.

c) Earplugs or earmuffs shall be chosen for maximum sound attenuation. Typical minimum attenuation on the NR (noise reduction) scale shall be in the order of 25 dB (decibel) or higher.

d) Proper fit shall be ensured to attain maximum sound reduction.

e) For use with head protection, hearing protectors shall either be of the earplug variety or earmuffs with soft headband or mounted to the head protection.

f) Where sound level values falls between two levels on the chart the stricter exposure level shall apply.

g) Hearing protection shall be used when the values in this table are exceeded.

h) Exposure levels shall be assessed and recorded prior to assignment of hearing protection.

i) Warning signage shall be posted on the outside face of the door to the room where the hazard is located. This signage should also include the minimum level of protection required.

***** Sound level in decibels are measured on a sound level meter, conforming

to the requirements of the American National Standard Specification for Sound Level Meters, S1.4 (1971) Type S2A, and set to use the A-weighted network with slow meter response. This is commonly known as continuous noise. Testing methodologies for impact noise are different that those for continuous noise and should be developed in consultation with OHS.

The College shall adopt the ACGIH exposure limits found in the most current edition of **"Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices"**. The threshold limit values for noise are as follows

TABLE 1. THRESHOLD LIMIT VALUES FOR NOISE

OH&S Act

COLUMN 1	COLUMN 2
Sound Level – in Decibels	**Duration – Hours per 24 hour day**
90	**8**
92	**6**
95	**4**
97	**3**
100	**2**
102	**1 ½**
105	**1**
110	**½**
115	**¼ or less**
Over 115	**No Exposure**

ACGIH

Duration per Day Hours	Sound Level dBA *
16	**80**
8	**85**
4	**90**
2	**95**
1	**100**
1/2	**105**
1/4	**110**
1/8	**115***

The measurement for noise is expressed in decibels (dB). The decibel scale is logarithmic and therefore, a small increase in decibels can represent a significant increase in noise level. There are 3 different scales for measuring noise. The scale most commonly used to measure noise exposure that may harm human hearing is the A scale. Therefore, noise levels are described on the A scale as dBA.

Typical Noise Levels	
SOUND SOURCE	DECIBEL (dBA)
Lowest limit of hearing	0
Rustling leaf	10
Quiet farm setting	20
Whisper	20
Dripping faucet	40
Average office	50
Ordinary conversation	60
Idling car	70
Printing press	80
Heavy street traffic	90
Punch press	100
Riveter	110
Auto horn	120
Pneumatic Rock Drill	130
Jet Airplane	140
*Intermittent or "impulse" sound	

Types of Hearing Protectors

DISPOSABLE EARPLUGS	PERMANENT EARPLUGS	EARMUFFS
		

Selection of Hearing Protection

Managers should consult with OHS before purchasing any forms of hearing protection.

Assessing Noise Levels

The College will adopt CSA Standard Z107.56-94 “Procedures for the Measurement of Occupational Noise Exposure,” which explains how to carry out measurements, what instruments are needed, and how to interpret results. If Managers receive any complaints with regards to noise levels, they are to contact OHS, who will undertake testing, as required.

11.0 TRAINING

Any worker required to wear PPE shall receive training in the proper use and care of PPE. Periodic retraining shall be offered by OHS to both the employees and the supervisors, as needed. The training shall include, but not necessarily be limited to, the following subjects:

- When PPE is necessary to be worn.
- What PPE is necessary
- How to properly don, doff, adjust, and wear PPE.
- The limitations of the PPE.
- The proper care, maintenance, useful life and disposal of the PPE.

After the training, the employees shall demonstrate that they understand the components of the PPE Program and how to use PPE properly, or they shall be retrained.

12.0 RECORD KEEPING

Written records shall be kept of the names of persons trained, the type of training provided, and the dates when training occurred. The Supervisor shall maintain their employees’ training records for at least 3 years. OHS shall maintain the Hazard Assessment Certification Form for each work site evaluated for at least 3 years.

13.0 HAZARD ASSESSMENT

A hazard assessment is a formal means of determining the appropriate PPE selection based on the hazards of a job. When conducting a hazard assessment, a task is investigated and the hazards and the potential hazards associated with the task are determined. This allows selection of personal protective equipment that will protect the employee from the identified hazards.

A hazard assessment may be conducted of a single employee, of a single task, or a group of employees if all the employees perform an identical task. For example, if all employees in a group are exposed to ultraviolet radiation during one type of welding, the hazard assessment could include all of the welders conducting that task. Likewise, painters using similar types of materials or

laboratory employees using similar types of chemicals could be grouped under the same assessment.

During the hazard assessment of each task, inspect the layout of the workplace and look for the following hazardous sources:

- High or low temperature that could result in burns, eye injury, ignition of equipment, heat/cold stress, frostbite, lack of coordination, etc.

- Chemical exposures, including airborne or skin contact, that would have the potential for splash on the skin or eyes, or the potential to breathe vapors or mists.

- Harmful dust or particulates.

- Light radiation, e.g., welding, arc lamps, heat-treating, lasers, growth lights, etc.

- Sources of falling objects, potential for dropping objects, or rolling objects that could cause crush or pinch the feet.

- Sharp objects that may pierce the feet or cut the hands.

- Observe the layout of the workplace and the location of co-workers for the potential for collision with other personnel or objects.

- Electrical hazards.

- Any other identified potential hazard.

Where these hazards could cause injury to employees, personal protective equipment must be selected to substantially eliminate the injury potential. Supervisors are responsible to identify hazards and complete a Certification of Hazard Assessment and a Hazard Assessment Checklist, which must be submitted to OHS. Refer to following page for “Workplace Hazard Assessment Form”.

WORKPLACE HAZARD ASSESSMENT

Location: _____ Task: _____
Performed by: _____ Date: _____

This form may be used as an aid in performing hazard assessment.
Review listed hazard classifications, identify all hazards, possible hazards and their sources.
Hazard classification listing is not intended to be complete but is provided as a guide in the assessment.

1. IMPACT HAZARD ___DOES NOT EXIST ___DOES EXIST	**2. CHEMICAL HAZARD** ___DOES NOT EXIST ___DOES EXIST	**3. DUST HAZARD** ___DOES NOT EXIST ___DOES EXIST
SOURCE OF HAZARD __Chipping __Grinding ___Sawing ___Drilling ___Sanding ___Riveting ___Flying Particles ___Vibration ___Propelled Devices ___Chiseling ___Falling/Dropping Objects ___Moving equipment with stationary object ___Other _____	**SOURCE OF HAZARD** ___Splash/Contact ___Irritating Mist ___Thermal ___Other_____ ___Acid/Caustic ___Solvent ___Oil/Fuel	**SOURCE OF HAZARD** ___Buffing ___Sandblasting ___Grinding ___Other_____
Body Part Affected ___Head ___Face/Eyes ___Hands ___Foot ___Body	**Body Part Affected** ___Head ___Face/Eyes ___Hands ___Foot ___Body	**Body Part Affected** ___Head ___Face/Eyes ___Hands ___Foot ___Body
4. PENETRATION HAZARD ___DOES NOT EXIST ___DOES EXIST	**5. COMPRESSION HAZARD** ___DOES NOT EXIST ___DOES EXIST	**6. ELECTRICAL HAZARD** ___DOES NOT EXIST ___DOES EXIST
SOURCE OF HAZARD ___Sharp Objects ___Metal Shaving ___Propelled Devices ___Grinding ___Other_____	**SOURCE OF HAZARD** ___Heavy Pipes ___Gas Cylinders ___Hydraulic Presses ___Drums ___Other_____	**SOURCE OF HAZARD** ___Energized Switch Gear/Equipment ___Energized Lines ___Other_____
Body Part Affected ___Head ___Face/Eyes ___Hands ___Foot ___Body	**Body Part Affected** ___Head ___Face/Eyes ___Hands ___Foot ___Body	**Body Part Affected** ___Head ___Face/Eyes ___Hands ___Foot ___Body

7. <u>THERMAL HAZARD</u> ___DOES NOT EXIST ___DOES EXIST	**8. <u>LIGHT/NON-IONIZING RADIATION HAZARD</u>** ___DOES NOT EXIST ___DOES EXIST	
<u>SOURCE OF HAZARD</u> ___Welding ___Brazing ___Furnance Operation ___Flame ___Steam ___ Chemical ___Extreme Weather	**<u>SOURCE OF HAZARD</u>** ___Heat Treating ___Brazing ___Welding ___Oxygen Cutting ___Laser ___ High Intensity Lighting	
<u>Body Part Affected</u> ___Head ___Face/Eyes ___Hands ___Foot ___Body	**<u>Body Part Affected</u>** ___Head ___Face/Eyes ___Hands ___Foot ___Body	

PERSONAL PROTECTIVE EQUIPMENT GUIDELINE
CERTIFICATION OF HAZARD ASSESSMENT FORM

Job Title:_____ Date:_____

Department:_____ Supervisor:_____

Location:_____ Analysis by:_____

Employee Name(s):_____ Signature:_____

Tasks	Potential Hazard	PPE Recommended

NOTES:

PERSONAL PROTECTIVE EQUIPMENT GUIDELINE
CERTIFICATION OF HAZARD ASSESSMENT
EXAMPLE

Job Title: Maintenance Employee Date: March 5th/2003

Department: Building Services Supervisor: Jim Doe

Location: C- 123 Analysis by:

Employee Name(s): John Doe Signature:

Tasks	Potential Hazard	PPE Recommended
Automobile/Heavy Equipment Mechanic Work	Flying particles, petroleum solvents and wastes	Safety glasses, chemical resistant gloves
Locksmith Work	Flying particles	Safety glasses, face shield when using high speed tools
Wood Working Work (Shop)	Noise, flying particles, lifting/carrying, rough surfaced materials	Hearing protection, safety glasses, face shield for high speed tools, puncture/cut resistant gloves, safety shoes
Metal Working Work (Shop)	Noise, flying particles, lifting/carrying, rough surfaced materials, metal working chemicals	Hearing protection, safety glasses, face shield for high speed tools, puncture/cut resistant gloves, safety shoes
Painting (Shop)	Vapors, mists, solvents and chemicals, flammable	Organic vapor respirator w/paint pre-filter, chemical resistant gloves
Carpentry Work (Shop)	Solvents, glues, punctures	Chemical resistant gloves