

Personal Protective Equipment (PPE) Guide

Volume 1: General PPE

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INDUSTRIES**



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This guide is designed to be used by supervisors, lead workers, managers, employers, and anyone responsible for the safety and health of employees.

Employees are also encouraged to use information in this guide to analyze their own jobs, be aware of work place hazards, and take active responsibility for their own safety.

Photos and graphic illustrations contained within this document were provided courtesy of the Occupational Safety and Health Administration (OSHA), Oregon OSHA, United States Coast Guard, EnviroWin Safety, Microsoft Clip Gallery (Online), and the Washington State Department of Labor and Industries.

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How To Use This Guide

This guide will help you to comply with the WISHA (Washington Industrial Safety and Health Act) Personal Protective Equipment rules. Volume 1: General Personal Protective Equipment, covers PPE requirements used to protect the head, eyes and face, hand and arm, foot and leg, and body (torso) in most work environments. Future volumes will cover other PPE, such as Hearing Protection, Respiratory Protection, Fall Protection, etc., which have specific requirements, including separate written programs.

This guide features a Resource section containing

- ✓ Sample checklists and forms that you can use and modify (Microsoft Word format) to fit the needs of your particular work place.
- ✓ Optional PPE policies which you may choose to incorporate into your Accident Prevention Program. (If you need assistance with your Accident Prevention Program, you can consult the Accident Prevention Program Guide.)
- ✓ Information on particular types of PPE to help you select the appropriate equipment.

This guide is not a substitute for the WISHA standards. You need to refer to the Washington Administrative Code (WAC) chapters listed below to make sure you comply with the rules when using this guide.

- For this user guide on general PPE, refer to
PPE in the Core Rules [Chapter 296-800-160](#)
- The hazards in your work place may have special rules that apply to them. For information about PPE for specific work places or work tasks, see these WISHA rules:

Work place	WAC code reference
Construction Work	Chapter 296-155
Electrical Workers	Chapter 296-45
Fire Fighters	Chapter 296-305
General Occupational Health Standards	Chapter 296-62
such as Hearing Protection	Chapter 296-62 Part K
Respiratory Protection	Chapter 296-62 Part E
Bloodborne Pathogens	Chapter 296-62 Part J
General Safety and Health Standards	Chapter 296-24
such as Welding Protection	Chapter 296-24 Part I
Electrical Protection	Chapter 296-24 Part L
Logging Operations	Chapter 296-54
Pulp, Paper, & Paperboard Mills and Converters	Chapter 296-79
Ship Repairing, Ship Building and Ship Breaking	Chapter 296-304
Ski Area Facilities and Operations	Chapter 296-59
Telecommunication	Chapter 296-32
Textile Industry	Chapter 296-301

Note: If viewing this document on your computer, you can click on the [blue](#) hyperlinks to jump to other sections (locations within the document have page references). Place the cursor over the selected hyperlink until a hand appears and then click.

You must have Internet access when clicking on hyperlinks to web sites, WISHA rules, and other referenced sources not located within this document.

Additional information



This icon indicates a tool (such as a checklist) that you can use to help you meet a PPE rule requirement. You should customize and modify it as necessary to fit the needs of your particular work place.

If you need further assistance with the personal protective equipment rules and requirements, you can

- Contact the Consultation Services section at your local [Labor & Industries Office](#) for free help. See the Resources section, p.66 for an office in your area.
- Call 1-800-4BE SAFE (1-800-423-7233), L&I's central office line
- Seek information from other safety and health organizations. A listing is provided at the end of the Resources section on p. 69 "[Links to Additional Information.](#)"
- Contact your personal protective equipment supplier for information and assistance on selecting the appropriate type of PPE for the hazards at your work place.

A. Introduction

When an injury occurs in the workplace, not only does the worker suffer but the costs – medical and time loss payments, loss in productivity, costs for a replacement worker, and potential increase in insurance premium costs – can be great. According to the Department of Labor & Industries, there were 11,240 claims for eye injuries alone in the year 2000, totaling over five million dollars (total costs to date) and averaging \$452 per claim.

You *can* protect your workers and prevent work place injuries and resulting costs. For example, efforts to reduce eye injuries in the residential wood framing industry by the Department of Labor & Industries, working in conjunction with employers and the public, have resulted in a 30% drop in eye injuries so far during the period from July 1, 2001 through March 31, 2002.

As an employer, you are required by Washington State's occupational safety and health rules to provide a safe and healthful work place for your employees. You must identify and anticipate hazards your workers are or may be exposed to, and provide appropriate protective measures. One type of protective measure is personal protective equipment (PPE).

PPE is equipment or a device that protects a worker's body from hazards and any harmful conditions (existing and potential) that may result in injury, illness, or possibly death. PPE may be an item worn on the body, such as gloves, or a device, such as a protective shield or barrier. (See table of examples on next page.)

PPE is the least effective way to protect workers because it does not eliminate or reduce the hazard; it only places a barrier between the worker and the hazard. If the PPE fails or is not used, then the worker is not protected from the hazard. Therefore, try considering more effective methods to control the hazard before resorting to PPE. Use a system of strategies, called the "Hierarchy of Controls," which prioritizes control methods that try to remove or reduce the hazard:

Hierarchy of Controls

1. Engineering Controls
2. Work Practice Controls
Administrative Controls
3. Personal Protective Equipment

(See "[How do you control hazards](#)" on p. 38 for further discussion on these control methods.)

If engineering, work practice, and/or administrative controls do not adequately protect your employees and PPE is used, you must comply with the safety and health

requirements under WAC 296-800-160 Personal Protective Equipment (PPE). The next section tells you what you must do if your employees need PPE.

Examples of some PPE:

Body part	Example of PPE	Example of hazard/ hazardous condition
Head	hard hat	contact from falling object
Face	face shield	impact from flying wood chips
Eyes	safety glasses	liquid chemical splash
Body (torso)	leather apron	burn from molten metal work
Arms, hands	puncture-resistant metal-mesh gloves	cut from shellfish processing
Legs, feet	knee guards	awkward posture, pressure from carpet laying
Potentially life-threatening	life jacket (personal flotation device)	drowning from falling into water
	*body harness/personal fall protection system	*fall from roof
Ears	*ear plugs	*loud noise from machinery
Lungs	*face mask with cartridge	*vapors from cleaning with solvent

* PPE for these and other hazards are not included in this volume of the PPE Guide but will be covered in future volumes (see [WAC 296-62](#) for respiratory and hearing protection and [WAC 296-155](#) for fall protection for further assessment).

B. What you are required to do

The Personal Protective Equipment (PPE) Rule [WAC 296-800-160](#) says you must

- Do a Hazard Assessment for PPE and document it
- Select and provide appropriate PPE to your employees (p.10)
- Provide training to your employees and document it (p.11)
- Make sure your employees use their PPE properly (p.12)
- Make sure PPE is in safe and good condition (p.12)



You can use the "[Guidelines for complying with PPE requirements](#)" checklist on p.16 to help you with meeting the requirements of the PPE rules.

1. Do a Hazard Assessment for PPE and document it

Before you can know if your employees need PPE, you must assess your work place for hazards. It will help you select the appropriate PPE for any hazards present or likely to be present. WISHA also requires you to document that you have done a hazard assessment. As the person responsible for conducting the hazard assessment, you are accountable both for the quality and thoroughness of the hazard assessment.

The table below lists two suggested approaches/methods that you can take to fulfill this requirement:

Method	Tool	This tool helps you:	Advantage	Disadvantage
Hazard Assessment for PPE	Checklist (see p. 17) 	-Identify hazards by the body parts affected	-Good for retail and non-manufacturing businesses with few hazards	-Not very detailed -May not be adequate for a manufacturing site
Job Hazard Analysis (JHA) and Hazard Assessment for PPE	Chart (see p. 21) 	-Break down the job into tasks or steps -Identify hazard types and sources -Assign a <i>risk priority code</i> to determine what action to take	-Good for detailed analysis of hazards associated with a job or task -Provides a description of how to do the job*	-Requires more resources and time

* This can also be useful for

- Training new workers on the job procedures
- Accident investigations
- American Disabilities Act (ADA) determination of reasonable accommodation

Whichever method you use to do the hazard assessment – either one of the above or your own method – involve the employees throughout the process: review the job steps, discuss potential hazards, and recommend solutions together. They are the most familiar with their jobs and their work area, and can provide information about their job that you may not necessarily see when you observe them at work. They may have ideas or have already worked out some practical solutions, and will be more likely to accept and adhere to changes in policies and procedures if they are involved in the decision-making process.

Document (either on paper or electronically, as long as it is available to safety and health personnel from the Department of Labor and Industries) that the PPE hazard assessment has been done with the information required under WAC 296-800-16010 Document your hazard assessment for PPE. ***Using and signing either of the hazard assessment tools in the table above will fulfill this requirement.***

Reassess hazards

It is a good idea to reassess hazards periodically and on an as-needed basis. You may want to review your hazard assessment every year and update it whenever there are changes in your work place, such as

- job/task changes
- you get new equipment
- there has been an accident

Even if no changes have been made in a job, you might find hazards you missed in the previous analysis. Incorporate any new PPE requirements that you have developed into your written accident prevention program.

2. Select and provide appropriate PPE to your employees

If PPE is determined to be necessary (see [How do you control hazards?](#), p. 38), select PPE for your employees that is suitably matched to the hazard to provide the appropriate protection. The PPE must be of safe design and construction for the work. This includes PPE for

- [head protection](#) (p. 43)
 - [eye and face protection](#) (p. 46)
 - [hand and arm protection](#) (p. 54)
 - [foot and leg protection](#) (p. 58)
 - [torso \(body\) protection](#) (p. 61)
- and
- [protection from drowning hazards](#) (p. 63)

Discuss the selections with the employees required to use the PPE and provide them with the appropriate PPE that

- Is durable.
- Fits snugly to assure maximum protection.
- Doesn't interfere with the employee's movements.

PPE items/devices are not "one size fits all." PPE that fits poorly will not properly protect the wearer and may make it more difficult to work. For example, loose-fitting protective clothing can get caught in moving machine parts; poorly fitting gloves will increase the effort required to do a job. Also, an employee is less likely to use PPE that causes discomfort.

3. Provide training to your employees and document it

There are several ways in which you can provide your employees with the proper training on the PPE they are required to use. You can

- Provide your own training
 - Borrow safety and health videotapes from L&I's video library
 - Call your local L&I Office's Consultation Services for free assistance with your training program.
- and/or
- Seek the services of an outside consultant specializing in safety and health training

See **L&I Services** (p. 66) for a listing of the L&I Service Location Offices and the L&I Safety and Health Video Library.

The training must be customized to the particular processes and hazards at your work place and it must be documented (see WAC 296-800-16035 Document PPE Training).



You can use the sample **PPE training certification form** to document the training (see p. 31).



You can use the **OPTIONAL Sample PPE Training Quiz** to make sure that your employees understood the training and can use their PPE properly before you allow them to do any work requiring PPE (see p. 32).

Retraining:

You must retrain an employee

- whose work habits or demonstrated knowledge indicates a lack of the necessary understanding, motivation, and skills required to use the PPE (i.e., uses PPE improperly)
- when changes in the work place make previous training out-of-date (for example, when you get new equipment)
- when changes in the types of PPE to be used make previous training out-of-date

Don't forget to document any retraining that you do.

4. Make sure your employees use their PPE properly

Make sure that your employees are using required PPE properly and are following the policies and procedures regarding PPE established at your work place. Have supervisors or lead workers regularly monitor, supervise, reinforce, and enforce the correct use and care of PPE by employees. Provide follow-up training if necessary to ensure that each employee has the adequate skill, knowledge, and ability to use his/her personal protective equipment.

If necessary, you may have to take measures to enforce PPE use.



For suggestions on dealing with employees who do not follow PPE procedures (or other safety policies) established at your work place, see a [sample Safety Disciplinary Policy](#) (p. Sample Policies-8) in the Sample PPE Policies section beginning on p. 33.

If employees choose to provide their own PPE, make sure that it is adequate for the work place hazards, and that it is maintained in a clean and reliable condition.

5. Make sure PPE is in safe and good condition

Make sure that PPE is inspected before each use, and that it is cleaned and maintained according to manufacturers' recommendations and instructions. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision.

Recommended: Attach a copy of the manufacturers' cleaning and care instructions for all PPE provided to your employees in the PPE section of your Accident Prevention Program.

DISCARD DEFECTIVE PPE! Do not use any defective equipment, including any employee-supplied equipment.

NOTE: Defective equipment can be worse than no PPE at all.

Employees would avoid a hazardous situation if they knew they were not protected; but they would get closer to the hazard if they wrongly believed they were protected (by defective equipment) and therefore would be at greater risk.

C. Resources

This section contains information and tools to help you with the WISHA PPE requirements.

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Tools/Forms:

Checklists and forms you can use to help you comply with PPE requirements

You can use the following tools (available in editable Microsoft Word format) to assist you with some of the PPE safety requirements. We encourage you to modify and customize them to fit the specific needs of your particular work place.

Guidelines for complying with PPE requirements	16
(click here for the editable version)	
Conducting a Hazard Assessment	
Option 1: Hazard Assessment for PPE	17
(click here for the editable version)	
Option 2: Job Hazard Analysis Assessment for PPE	21
(click here for the editable version)	
PPE Training Certification Form	31
(click here for the editable version)	
PPE Training Quiz for Employees	32
(click here for the editable version)	
Sample PPE Policies	33
(click here for the editable version)	

Guidelines for complying with PPE requirements

Use this checklist to help you comply with the PPE requirements at your work place. You can use the available tools in the far right column to help you accomplish the step. Check off the boxes in the far left column as you complete each step.

Done	STEP	Tools
☐	Do a work place walk-through and look for hazards (including potential hazards) in all employees' work spaces and work place operating procedures.	Checklist #1: PPE Hazard Assessment or Checklist #2: JHA PPE Hazard Assessment
☐	Consider engineering, administrative, and/or work practice methods to control the hazards first. Identify those existing/ potential hazards and tasks that require PPE.	
☐	Select the appropriate PPE to match the hazards and protect employees.	
☐	Communicate PPE selection to each at-risk employee. Provide properly fitting PPE to each employee required to use it.	
☐	Train employees on the use of PPE and document it.	PPE Training Certification Form
☐	Test employees to make sure they understand the elements of the PPE training.	Sample PPE Training Quiz (optional)
☐	Follow up to evaluate effectiveness of PPE use, training, policies, etc. against the hazards at your work place. ☐Yes ☐No All employees have been trained ☐Yes ☐No Employees are using their PPE properly and following PPE policies and procedures ☐Yes ☐No Supervisors are enforcing use of required PPE <i>(If you checked any No boxes, go back through the steps and correct the deficiencies.)</i> ☐Yes ☐No Have things changed at your work place? (e.g., fewer injuries/illnesses)	

Hazard Assessment For PPE

Use with WAC 296-800-160 Personal Protective Equipment (PPE)

This tool can help you do a hazard assessment to see if your employees need to use personal protective equipment (PPE) by identifying activities that may create hazards for your employees. The activities are grouped according to what part of the body might need PPE. You can make copies, modify and customize it to fit the specific needs of your particular work place, or develop your own form that is appropriate to your work environment.

This tool can also serve as written certification that you have done a hazard assessment as required by WAC 296-800-16010 Document your hazard assessment for PPE. Make sure that the blank fields at the beginning of the checklist (indicated by *) are filled out (see below, Instructions #4).

Instructions:

1. Do a walk through survey of each work area and job/task. Read through the list of work activities in the first column, putting a check next to the activities performed in that work area or job.
2. Read through the list of hazards in the second column, putting a check next to the hazards to which employees may be exposed while performing the work activities or while present in the work area. (for e.g., work activity: chopping wood; work-related exposure: flying particles).
3. Decide how you are going to control the hazards. Try considering engineering, work place, and/or administrative controls to eliminate or reduce the hazards before resorting to using PPE. If the hazard cannot be eliminated without using PPE, indicate which type(s) of PPE will be required to protect your employee from the hazard.
4. Make sure that you complete the following fields on the form (indicated by *) to certify that a hazard assessment was done:

*Name of your work place

*Address of the work place where you are doing the hazard assessment

*Name of person certifying that a workplace hazard assessment was done

*Date the hazard assessment was done

PPE Hazard Assessment Certification Form

*Name of work place: _____

*Assessment conducted by: _____

*Work place address: _____

*Date of assessment: _____

Work area(s): _____

Job/Task(s): _____

*Required for certifying the hazard assessment.

Use a separate sheet for each job/task or work area

EYES

Work activities, such as:

- | | |
|---|------------------------------------|
| ☐ abrasive blasting | ☐ sanding |
| ☐ chopping | ☐ sawing |
| ☐ cutting | ☐ grinding |
| ☐ drilling | ☐ hammering |
| ☐ welding | |
| ☐ punch press operations | |
| ☐ other: _____ | |

Work-related exposure to:

- ☐ airborne dust
☐ flying particles
☐ blood splashes
☐ hazardous liquid chemicals
☐ intense light
☐ other: _____

Can hazard be eliminated without the use of PPE?

Yes ☐ No ☐

If no, use:

- | | |
|--|---|
| ☐ Safety glasses | ☐ Side shields |
| ☐ Safety goggles | ☐ Dust-tight goggles |
| ☐ Shading/Filter (#_____) | |
| ☐ Welding shield | |
| ☐ Other: _____ | |

FACE

Work activities, such as:

- | | |
|--|---|
| ☐ cleaning | ☐ foundry work |
| ☐ cooking | ☐ welding |
| ☐ siphoning | ☐ mixing |
| ☐ painting | ☐ pouring molten metal |
| ☐ dip tank operations | |
| ☐ other: _____ | |

Work-related exposure to:

- ☐ hazardous liquid chemicals
☐ extreme heat/cold
☐ potential irritants: _____
☐ other: _____

Can hazard be eliminated without the use of PPE?

Yes ☐ No ☐

If no, use:

- ☐ Face shield
☐ Shading/Filter (#_____)
☐ Welding shield
☐ Other: _____

HEAD

Work activities, such as:

- ☐ building maintenance
☐ confined space operations
☐ construction
☐ electrical wiring
☐ walking/working under catwalks
☐ walking/working under conveyor belts
☐ walking/working under crane loads
☐ utility work
☐ other: _____

Work-related exposure to:

- ☐ beams
☐ pipes
☐ exposed electrical wiring or components
☐ falling objects
☐ machine parts
☐ other: _____

Can hazard be eliminated without the use of PPE?

Yes ☐ No ☐

If no, use:

- ☐ Protective Helmet
☐ Type A (low voltage)
☐ Type B (high voltage)
☐ Type C
☐ Bump cap (not ANSI-approved)
☐ Hair net or soft cap
☐ Other: _____

HANDS/ARMSWork activities, such as:

- | | |
|--|--|
| ☐ baking | ☐ material handling |
| ☐ cooking | ☐ sanding |
| ☐ grinding | ☐ sawing |
| ☐ welding | ☐ hammering |
| ☐ working with glass | |
| ☐ using computers | |
| ☐ using knives | |
| ☐ dental and health care services | |
| ☐ other: _____ | |

Work-related exposure to:

- ☐
- blood
-
- ☐
- irritating chemicals
-
- ☐
- tools or materials that could scrape, bruise, or cut
-
- ☐
- extreme heat/cold
-
- ☐
- other: _____

Can hazard be eliminated without the use of PPE?Yes ☐ No ☐If no, use:

- ☐
- Gloves
-
- ☐
- Chemical resistance
-
- ☐
- Liquid/leak resistance
-
- ☐
- Temperature resistance
-
- ☐
- Abrasion/cut resistance
-
- ☐
- Slip resistance
-
- ☐
- Protective sleeves
-
- ☐
- Other: _____

FEET/LEGSWork activities, such as:

- ☐
- building maintenance
-
- ☐
- construction
-
- ☐
- demolition
-
- ☐
- food processing
-
- ☐
- foundry work
-
- ☐
- logging
-
- ☐
- plumbing
-
- ☐
- trenching
-
- ☐
- use of highly flammable materials
-
- ☐
- welding
-
- ☐
- other: _____

Work-related exposure to:

- ☐
- explosive atmospheres
-
- ☐
- explosives
-
- ☐
- exposed electrical wiring or components
-
- ☐
- heavy equipment
-
- ☐
- slippery surfaces
-
- ☐
- tools
-
- ☐
- other: _____

Can hazard be eliminated without the use of PPE?Yes ☐ No ☐If no, use:

- | | |
|--|--|
| ☐ Safety shoes or boots | ☐ Metatarsal protection |
| ☐ Toe protection | ☐ Heat/cold protection |
| ☐ Electrical protection | ☐ Chemical resistance |
| ☐ Puncture resistance | |
| ☐ Anti-slip soles | |
| ☐ Leggings or chaps | |
| ☐ Foot-Leg guards | |
| ☐ Other: _____ | |

BODY/SKINWork activities such as:

- ☐
- baking or frying
-
- ☐
- battery charging
-
- ☐
- dip tank operations
-
- ☐
- fiberglass installation
-
- ☐
- irritating chemicals
-
- ☐
- sawing
-
- ☐
- other: _____

Work-related exposure to:

- ☐
- chemical splashes
-
- ☐
- extreme heat/cold
-
- ☐
- sharp or rough edges
-
- ☐
- other: _____

Can hazard be eliminated without the use of PPE?Yes ☐ No ☐If no, use:

- ☐
- Vest, Jacket
-
- ☐
- Coveralls, Body suit
-
- ☐
- Raingear
-
- ☐
- Apron
-
- ☐
- Welding leathers
-
- ☐
- Abrasion/cut resistance
-
- ☐
- Other: _____

BODY/WHOLE ¹		
<u>Work activities such as:</u> ☐ building maintenance ☐ construction ☐ logging ☐ utility work ☐ other: _____	<u>Work-related exposure to:</u> ☐ working from heights of 10 feet or more ☐ working near water ☐ other: _____	<u>Can hazard be eliminated without the use of PPE?</u> Yes ☐ No ☐ <u>If no, use:</u> ☐ Fall Arrest/Restraint: Type: _____ ☐ PFD: Type: _____ ☐ Other: _____ *(See Footnote 1)
LUNGS/RESPIRATORY ¹		
<u>Work activities such as:</u> ☐ cleaning ☐ mixing ☐ painting ☐ fiberglass installation ☐ compressed air or gas operations ☐ other: _____ ☐ pouring ☐ sawing	<u>Work-related exposure to:</u> ☐ irritating dust or particulate ☐ irritating or toxic gas/vapor ☐ other: _____	<u>Can hazard be eliminated without the use of PPE?</u> Yes ☐ No ☐ *(See Footnote 1)
EARS/HEARING ¹		
<u>Work activities such as:</u> ☐ generator ☐ ventilation fans ☐ motors ☐ sanding ☐ pneumatic equipment ☐ punch or brake presses ☐ use of conveyors ☐ other: _____ ☐ grinding ☐ machining ☐ routers ☐ sawing	<u>Work-related exposure to:</u> ☐ loud noises ☐ loud work environment ☐ noisy machines/tools ☐ punch or brake presses ☐ other: _____	<u>Can hazard be eliminated without the use of PPE?</u> Yes ☐ No ☐ *(See Footnote 1)

(1) NOTE: There are other hazards requiring PPE (such as respiratory, noise, fall, etc. hazards), that are not included in this volume of the PPE Guide but will be covered in future volumes (see WAC 296-62 for respiratory and hearing protection and WAC 296-155 for fall protection for further assessment). However, you should consider all hazards when you conduct your hazard assessment. See a list of other [WISHA rules](#) (in “How to use this guide” p. 4) for information regarding PPE for specific work places.

Job Hazard Analysis Assessment for PPE

Use with WAC 296-800-160 Personal Protective Equipment (PPE)

The Job Hazard Analysis (JHA) approach to doing a hazard assessment for PPE is a more comprehensive method and may be more useful in larger businesses with many hazards and/or complex safety issues. It also helps you assign a *Risk Priority Code* to the hazard to determine the course of actions you need to take to control the hazard.

Follow the instructions as you conduct your hazard assessment and fill in the hazard assessment form. You can make copies of the form or customize it to fit the needs of your work place. ***For more detailed explanations of the instructions and guidance on doing the hazard assessment, including completed sample forms, see the “Additional Guidelines on Conducting a JHA Hazard Assessment for PPE,” pages 25-30).***

This tool can also serve as written certification that you have done a hazard assessment as required by WAC 296-800-16010 Document your hazard assessment for PPE. Make sure that the blank fields at the bottom of the form (indicated by *) are filled out.

- *Name of your work place
- *Address of the work place where you are doing the hazard assessment
- *Name of person certifying that a workplace hazard assessment was done
- *Date the hazard assessment was done

Job Hazard Analysis Assessment for PPE: Instructions

- 1. Conduct a walk through survey of your business.** For each job/task step, note the presence of any of the following hazard types (see table below) their sources, and the body parts at risk. Fill out the left side of the hazard assessment form (for help, see samples on p.29-30). Gather all the information you can.
 - Look at all steps of a job and ask the employee if there are any variations in the job that are infrequently done and that you might have missed during your observation.
 - For purposes of the assessment, assume that no PPE is being worn by the affected employees even though they may actually be wearing what they need to do the job safely.
 - Note all observed hazards. *This list does not cover all possible hazards that employees may face or for which personal protective equipment may be required.* Noisy environments or those which may require respirators must be evaluated with appropriate test equipment to quantify the exposure level when overexposure is suspected.

Hazard Type	General Description of Hazard Type
Impact	Person can strike an object or be struck by a moving or flying or falling object.
Penetration	Person can strike, be struck by, or fall upon an object or tool that would break the skin.
Crush or pinch	An object(s) or machine may crush or pinch a body or body part.
Harmful Dust	Presence of dust that may cause irritation, or breathing or vision difficulty. May also have ignition potential.
Chemical	Exposure from spills, splashing, or other contact with chemical substances or harmful dusts that could cause illness, irritation, burns, asphyxiation, breathing or vision difficulty, or other toxic health effects. May also have ignition potential.
Heat	Exposure to radiant heat sources, splashes or spills of hot material, or work in hot environments.
Light (optical) Radiation	Exposure to strong light sources, glare, or intense light exposure which is a byproduct of a process.
Electrical Contact	Exposure to contact with or proximity to live or potentially live electrical objects.
Ergonomic hazards	Repetitive movements, awkward postures, vibration, heavy lifting, etc.
Environmental hazards	Conditions in the work place that could cause discomfort or negative health effects.

- 2. Analyze the hazard.** For each job task with a hazard source identified, use the Job Hazard Analysis Matrix table and discuss the hazard with the affected employee and supervisor. Fill out the right side of the hazard assessment form:
 - Rate the SEVERITY of injury that would *reasonably* be expected to result from exposure to the hazard.
 - Rate the PROBABILITY of an accident actually happening.
 - Assign a RISK CODE based upon the intersection of the SEVERITY and PROBABILITY ratings on the matrix.

Option 2

Job Hazard Analysis Matrix						
Severity of Injury		Probability of an Accident Occurring				
Level	Description	A Frequent	B Several Times	C Occasional	D Possible	E Extremely Improbable
I	Fatal or Permanent Disability	1	1	1	2	3
II	Severe Illness or Injury	1	1	2	2	3
III	Minor Injury or Illness	2	2	2-3	3	3
IV	No Injury or Illness	3	3	3	3	3

Risk Priority		
Code	Risk Level	Action Required
1	High	Work activities must be suspended immediately until hazard can be eliminated or controlled or reduced to a lower level.
2	Medium	Job hazards are unacceptable and must be controlled by engineering, administrative, or personal protective equipment methods as soon as possible.
3	Low	No real or significant hazard exists. Controls are not required but may increase the comfort level of employees.

3. Take action on the assessment. Depending on the assigned Risk Level/Code (or Risk priority), take the corresponding action according to the table above:

- If Risk priority is LOW (3) for a task step → requires no further action.

***Note:** If you assign a risk code of 3, be sure that there isn't a WISHA standard that requires specific protection be provided. For example: WAC 296-24-65003 requires personal protective equipment when using compressed air for cleaning.*

- If Risk priority is MEDIUM (2) → select and implement appropriate controls.
- If Risk priority is HIGH (1) → immediately stop the task step until appropriate controls can be implemented.

A high risk priority means that there is a reasonable to high probability that an employee will be killed or permanently disabled doing this task step and/or a high probability that the employee will suffer severe illness or injury!

4. Select PPE:

- Try to reduce employee exposure to the hazard by first implementing engineering, work practice, and/or administrative controls. If PPE is supplied, it must be appropriately matched to the hazard to provide effective protection, durability, and proper fit to the worker. Note the control method to be implemented in the far right column.

5. Certify the hazard assessment:

- Certify on the hazard assessment form that you have done the hazard assessment and implemented the needed controls.
- Incorporate any new PPE requirements that you have developed into your written accident prevention program.

Job Hazard Analysis for Personal Protective Equipment (PPE) Assessment

Job/Task: _____

Location: _____

[illegible]

(1) Note: Engineering, work practice, and/or administrative hazard controls such as guarding must be used, if feasible, before requiring employees to use personal protective equipment.

Certification of Assessment

***Name of work place:** _____ ***Address** _____

***Assessment Conducted By:** _____ **Title:** _____ ***Date(s) of Assessment** _____

Implementation of Controls Approved By: _____ Title: _____ Date: _____.

Additional Guidelines for Conducting a Job Hazard Analysis (JHA) Assessment for PPE

1. [Do a walk through survey – identify sources of hazards](#)
2. [Analyze the Hazards](#) (p. 25)
3. [Take Action on the Assessment](#) (p. 27)
4. [Select PPE](#) (p. 28)
5. [Certify the Hazard Assessment](#) (p. 28)

[Example completed forms](#) (p. 29)

1. **Do a walk through survey – identify sources of hazards:** Walk through each area of the work place and note the presence of any existing as well as potential hazards. Also note general conditions in the area for hazards such as inadequate lighting, noise, tripping hazards, forklift traffic, etc. Write down each hazard, where it occurs, what causes it (hazard source), and the body part at risk on the Job Hazard Analysis (JHA) form, which you can use to assess your PPE needs. At this step, you are trying to gather as much information as you can.

(Note all observed hazards. Noisy environments or those that may require respirators must be evaluated with appropriate test equipment to quantify the exposure level when overexposure is suspected.)

- a. Look at all steps of a job. Most jobs can be broken down into steps. List each step in the first column of the form in order as you watch the employee do the job. Be sure to record enough information to describe the step. However, only break the job down into the number of steps that are useful for identifying hazards and training employees. With practice you will get a sense of how far to break the job down. Go over the job steps with the employee. Ask the employee if there are any variations in the job that are infrequently done and that you might have missed during your observation.
 - b. After you list all the job steps, go back and look at each step for hazards or potential hazards, their sources, and the body parts at risk. List them in the next three columns opposite the step. For purposes of the assessment, assume that no personal protective equipment is being worn – even if the worker is wearing what he/she needs to do the job safely at the time you do the observation. Repeat this process until you are satisfied that all hazards have been identified.
2. **Analyze the Hazards:** Use the Job Hazard Analysis Matrix to help you assign a “Risk Priority Code” for each hazard to determine what actions you need to take for the hazard. A matrix lets you evaluate two criteria (Severity and Probability in this case) at the same time to get one rating for the combined relationship (the Risk Priority Code). For each job task with a hazard source identified, discuss the hazard

with the affected employee and supervisor and fill out the appropriate columns on the hazard assessment form.

- a. Rate the SEVERITY of injury (I-IV) that could result from the employee's exposure to the hazard during the task step. Estimate the most serious injury or illness that each hazard could reasonably cause and enter on the form. For example, contact with an unguarded table saw blade could be more serious than a cut; it could cause amputation of a finger or hand.

Factors increasing severity include

- working at elevation
 - speed
 - amount of energy
 - temperature
 - toxicity
 - weight
 - physical fitness, etc.
- b. Rate the PROBABILITY of an accident actually happening (A-E). Estimate the likelihood for employee exposure to the hazard, considering such factors as
 - How often does exposure occur? How often does the hazard exist?
 - How many employees are exposed?
 - How far away is the hazard? How close do they get to the hazard?
 - What other conditions make injury or illness more or less likely?

Factors increasing probability include

- frequency of exposure to the danger point
- duration of exposure
- number of employees involved
- factors causing stress
- lack of training
- physical and mental capability of the worker.

Job Hazard Analysis Matrix						
Severity of Injury		Probability of an Accident Occurring				
Level	Description	A Frequent	B Several Times	C Occasional	D Possible	E Extremely Improbable
I	Fatal or Permanent Disability	1	1	1	2	3
II	Severe Illness or Injury	1	1	2	2	3
III	Minor Injury or Illness	2	2	2-3	3	3
IV	No Injury or Illness	3	3	3	3	3

- c. Assign a RISK PRIORITY CODE (1, 2, or 3) to the task step based upon the severity and probability assessments on the matrix. For example, a Severity of “III” and a Probability of “B” gives a Risk Code of “2” (look at where they intersect).

3. Take Action on the Assessment:

Risk Priority		
Risk Code	Risk Level	Action Required
1	High	Stop work activities <u>immediately</u> until hazard can be eliminated, controlled, or reduced to a lower level.
2	Medium	Job hazards are unacceptable and must be controlled by engineering, work practice, administrative, and/or PPE methods as soon as possible.
3	Low	No real or significant hazard exists. Controls are not required but may increase employees' comfort level.

If the risk priority code is

- LOW (3) for a task step then it requires no further action. *Note: If you assign a risk code of 3, be sure that there isn't a WISHA standard that requires specific protection be provided. For example: WAC 296-24-65003 requires personal protective equipment when using compressed air for cleaning.*
- MEDIUM (2), then you must select and implement appropriate controls such as engineering, work practices, administrative, or personal protective equipment (PPE).
- HIGH (1) then you must discontinue the task step until appropriate controls can be implemented.

A high risk priority means that there is a reasonable to high probability that an employee will be killed or permanently disabled doing this task step and/or a high probability that the employee will suffer severe illness or injury!

4. **Select PPE:** Try to reduce employee exposure by first implementing effective controls that do not primarily rely on individual employee behavior (such as using PPE). Follow the "[Hierarchy of Controls](#)" (p. 38).
 - a. For each hazard you identified, ask the question: "Can we change the way this job is done to eliminate or reduce this hazard?" Ideas might include combining steps, changing the sequence, a different tool, a change in the workstation, ventilation etc. The employees who do this job may have some good practical ideas.
 - b. If none of these will work, what personal protective equipment (PPE) is needed? If PPE is needed, it must be appropriately matched to the hazard to provide effective protection against the hazard.
 - c. Write down your solution in the Control Method column opposite the hazard. If you still aren't satisfied that the hazard is under control, you may need to consider not doing this job or doing it less often.
5. **Certify the hazard assessment:** Make sure you sign and fill in the required information (indicated by *) at the bottom of the form for proper documentation of the hazard assessment.

The following pages show two examples of completed JHA hazard assessments for PPE.

SAMPLE 1 Job Hazard Analysis for Personal Protective Equipment (PPE) AssessmentJob/task: Mill Operator, Mill operator helperLocation: Milling room

Job/Task Step	Hazard Type	Hazard Source	Body Parts At Risk	Severity	Probability	Risk Code	Control Method*
<i>Bridgeport Mill Operator</i>							
-Insert stock to chuck	penetration	moving cutter	fingers	I	C	1	Turn off cutter when changing stock
-Processing material	impact	flying metal chips	eyes, face	II	B	1	install clear guard and require safety glasses
	penetration	moving cutter	fingers	I	C	1	install clear cutter guard
	noise (86 dBA)	motor/cutter	ears	II	C	2	require ear plugs or muffs
	chemical irritation	cutting fluid	hands	III	B	2	switch to non-allergenic cutting fluid
- remove stock	penetration	metal shavings attached to stock	hands	III	C	3	be attentive to work
<i>Mill Operator's Helper</i>							
- bring / take pallet of stock to from the milling machine	crush	rolling / falling stock	feet	II	C	2	require steel toe shoes
	crush	rolling / falling stock	hands	III	B	2	wear leather gloves when handling stock by hand

(1) Note: Engineering, work practice, and/ or administrative hazard controls such as guarding must be used, if feasible, before requiring employees to use personal protective equipment.

Certification of Assessment*Name of work place Brinner Bro. Inc. *Address 13765 Miranda, Farragut WA 674834*Assessment Conducted By Kevin Sharp Title Safety Officer *Date(s) of Assessment 3/5/96

Implementation of Controls Approved By _____ Title _____ Date _____.

SAMPLE 2 Job Hazard Analysis for Personal Protective Equipment (PPE) AssessmentJob/task: Lathe operatorLocation: Lathe room

Job/Task Step	Hazard Type	Hazard Source	Body Parts At Risk	Severity	Probability	Risk Code	Control Method*
Pick up stock	Cuts	Sharp metal	hands	III	C	2	Leather gloves while handling
	Sprain	Heavy metal	back	II	C	2	Hoist for heavy items
	Crush	Heavy metal	feet	II	C	2	Steel Toed Shoes
Run Lathe	Impact	Revolving chuck	hands	II	C	2	Chuck guard
	Impact	Metal Chips	face, eyes, hands	II	B	1	Safety Glasses, face shield, coveralls
	Chemical	Coolant/Lube	hands	III	C	2	Switch to non-irritating mixture
	Repetitive Motion	Frequent control adjust	hands	II	D	3	Periodic rest breaks, vary task duties.
Remove stock	(Same as	Pick up	stock)				

(1) Note: Engineering, work practice, and/or administrative hazard controls such as guarding must be used, if feasible, before requiring employees to use personal protective equipment.

Certification of Assessment*Name of work place Hansens Corp. *Address 224 46th St., Bristol WA 46183*Assessment Conducted By John Smith Title Machining Supervisor *Date(s) of Assessment 1/27/97Controls Approved By Doug Jones Title Safety Director Date 2/12/97

Personal Protective Equipment Training Certification Form

Employee's Name: _____ Employee ID No. _____

Job Title/Work area: _____

Employer: _____

Trainer's Name (person completing this form): _____

Date of Training: _____

Types of PPE employee is being trained to use:

_____	_____
_____	_____
_____	_____

The following information and training on the personal protective equipment (PPE) listed above were covered in the training session:

- _____ The limitations of personal protective equipment: PPE alone cannot protect the employee from on-the-job hazards.
- _____ What work place hazards the employee faces, the types of personal protective equipment that the employee must use to be protected from these hazards, and how the PPE will protect the employee while doing his/her tasks.
- _____ When the employee must wear or use the personal protective equipment.
- _____ How to use the personal protective equipment properly on-the-job, including putting it on, taking it off, and wearing and adjusting it (if applicable) for a comfortable and effective fit.
- _____ How to properly care for and maintain the personal protective equipment: look for signs of wear, clean and disinfect, and dispose of PPE.

Note to employee: *This form will be made a part of your personal file. Please read and understand its contents before signing.*

(Employee) I understand the training I have received, and I can use PPE properly.

Employee's signature

Date

(Trainer must check off)

- _____ Employee has shown an understanding of the training.
- _____ Employee has shown the ability to use the PPE properly.

Trainer's signature

Date

Personal Protective Equipment Training Quiz

(RECOMMENDED)

(This is a sample quiz that you can use to make sure an employee has understood the training and can demonstrate the proper use and care of personal protective equipment. Also quiz an employee who has been retrained due to improper use of the PPE in performing his/her job tasks. You can keep this form in the employee's file with the PPE Certification Form.)

1. What are the limitations of personal protective equipment?
2. List the types of personal protective equipment you must use when doing your work/tasks.
3. What are the hazards in your job for which you must use each type of PPE, and when must you use your personal protective equipment?
4. What are the procedures for the proper use, care, and maintenance of your PPE?
5. What should you look for to determine that your PPE is in good working condition?
6. What do you do when your PPE is no longer usable?
7. (Trainer/Supervisor:) Have the employee demonstrate putting on, wearing and adjusting, and taking off each PPE properly. Also have employee demonstrate how to clean and disinfect each PPE.

Has employee demonstrated proper use and care of each PPE?

PPE #1: _____	Yes _____	No _____
PPE #2: _____	Yes _____	No _____
PPE #3: _____	Yes _____	No _____
PPE #4: _____	Yes _____	No _____

The employee has answered all the questions adequately and has demonstrated the ability to properly use and care for the PPE needed to do his/her job.

Trainer's/Supervisor's signature

Date

Employee's signature

Date

Sample PPE Policies

INSTRUCTIONS

The following sample policies are OPTIONAL. They are not required by WISHA safety and health rules, but they may be useful in helping you develop, establish, and implement your company's PPE requirements and rules. We encourage employers to copy, expand, and modify the sample as necessary to accomplish this.

In addition, the Consultation Section of the Department of Labor and Industries may be called on for assistance at any time. A list of regional service location branches are listed in the resource pages at the end of the guide; contact your local branch for further information or help.

You can also call the toll-free number: 1-800-423-7233.

PLEASE CUSTOMIZE THE FOLLOWING PERSONAL PROTECTIVE EQUIPMENT (PPE) POLICIES ACCORDING TO YOUR WORK PLACE. ADD AND/OR DELETE INFORMATION AS NEEDED TO MAKE IT FIT THE SPECIFIC NEEDS OF YOUR WORK PLACE OPERATIONS AND PROCEDURES.

REMEMBER: YOUR SAFETY AND HEALTH PROGRAM CAN ONLY BE EFFECTIVE IF IT IS PUT INTO PRACTICE!

Personal Protective Equipment Policies

(Customize by adding the name of your business)

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Introduction

The purpose of the Personal Protective Equipment Policies is to protect the employees of (Name of your business) from exposure to work place hazards and the risk of injury through the use of personal protective equipment (PPE). PPE is not a substitute for more effective control methods and its use will be considered only when other means of protection against hazards are not adequate or feasible. It will be used in conjunction with other controls unless no other means of hazard control exist.

Personal protective equipment will be provided, used, and maintained when it has been determined that its use is required to ensure the safety and health of our employees and that such use will lessen the likelihood of occupational injury and/or illness.

This section addresses general PPE requirements, including eye and face, head, foot and leg, hand and arm, body (torso) protection, and protection from drowning. Separate programs exist for respiratory protection and hearing protection as the need for participation in these programs is established through industrial hygiene monitoring. (List other programs or policies requiring PPE, such as Hearing Protection, Respiratory Protection, Fall Protection, etc., that you may have at your work place) are also addressed in (State the section or location in your Accident Prevention Program where they are found)

The (Name of your business) Personal Protective Equipment Policies includes:

- Responsibilities of supervisors and employees
- Hazard assessment and PPE selection
- Employee training
- Cleaning and Maintenance of PPE

Responsibilities

(Customize this page by modifying or adding any additional responsibilities and deleting those that may not apply to your company.)

Safety Person (or designated person responsible for your work place safety and health program.)

Note: Depending on your business and the number of employees you have, you may simply have a “designated safety person” (who may be a supervisor/lead worker) or a larger organized safety and health unit. Customize this section to fit the needs of your p

(Safety Person or designated person) is responsible for the development, implementation, and administration of (Name of your business)'s PPE policies. This involves

1. Conducting workplace hazard assessments to determine the presence of hazards which necessitate the use of PPE.
2. Selecting and purchasing PPE.
3. Reviewing, updating, and conducting PPE hazard assessments whenever
 - a job changes
 - new equipment is used
 - there has been an accident
 - a supervisor or employee requests it
 - or at least every year
4. Maintaining records on hazard assessments.
5. Maintaining records on PPE assignments and training.
6. Providing training, guidance, and assistance to supervisors and employees on the proper use, care, and cleaning of approved PPE.
7. Periodically re-evaluating the suitability of previously selected PPE.
8. Reviewing, updating, and evaluating the overall effectiveness of PPE use, training, and policies.

SAMPLE PPE POLICIES

Supervisors (leads, etc., and/or designated persons)

Supervisors (leads, etc., and/or designated persons) have the primary responsibility for implementing and enforcing PPE use and policies in their work area. This involves

1. Providing appropriate PPE and making it available to employees.
2. Ensuring that employees are trained on the proper use, care, and cleaning of PPE.
3. Ensuring that PPE training certification and evaluation forms are signed and given to (Safety Person or designated person responsible for your work place safety and health program).
4. Ensuring that employees properly use and maintain their PPE, and follow (Name of your business) PPE policies and rules.
5. Notifying (Name of your business) management and the Safety Person when new hazards are introduced or when processes are added or changed.
6. Ensuring that defective or damaged PPE is immediately disposed of and replaced.

Employees

The PPE user is responsible for following the requirements of the PPE policies. This involves

1. Properly wearing PPE as required.
2. Attending required training sessions.
3. Properly caring for, cleaning, maintaining, and inspecting PPE as required.
4. Following (Name of your business) PPE policies and rules.
5. Informing the supervisor of the need to repair or replace PPE.

Employees who repeatedly disregard and do not follow PPE policies and rules will be (Write in the actions management will take concerning this matter.)

(Customize this page by modifying or adding any additional responsibilities and deleting those that may not apply to your company.)

Procedures

A. Hazard Assessment for PPE

(Safety Person or designated person), in conjunction with Supervisors, will conduct a walk-through survey of each work area to identify sources of work hazards. Each survey will be documented using the Hazard Assessment Certification Form, which identifies the work area surveyed, the person conducting the survey, findings of potential hazards, and date of the survey. (Safety Person or designated person) will keep the forms in the (Specify exact location, e.g., your company's business files).

(Safety Person or designated person) will conduct, review, and update the hazard assessment for PPE whenever

- a job changes
- new equipment or process is installed
- there has been an accident
- whenever a supervisor or employee requests it
- or at least every year

Any new PPE requirements that are developed will be added into (Name of your business)'s written accident prevention program.

B. Selection of PPE

Once the hazards of a workplace have been identified, (Safety Person or designated person) will determine if the hazards can first be eliminated or reduced by methods other than PPE, i.e., methods that do not rely on employee behavior, such as engineering controls (refer to Appendix B – Controlling Hazards).

If such methods are not adequate or feasible, then (Safety Person or designated person) will determine the suitability of the PPE presently available; and as necessary, will select new or additional equipment which ensures a level of protection greater than the minimum required to protect our employees from the hazards (refer to Appendix C – Selection of PPE). Care will be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards will be recommended for purchase.

All personal protective clothing and equipment will be of safe design and construction for the work to be performed and will be maintained in a sanitary and reliable condition. Only those items of protective clothing and equipment that meet NIOSH or ANSI (American National Standards Institute) standards will be procured or accepted for use.

SAMPLE PPE POLICIES

Newly purchased PPE must conform to the updated ANSI standards which have been incorporated into the PPE regulations, as follows:

- Eye and Face Protection ANSI Z87.1-1989
- Head Protection ANSI Z89.1-1986
- Foot Protection ANSI Z41.1-1991
- Hand Protection (There are no ANSI standards for gloves, however, selection must be based on the performance characteristics of the glove in relation to the tasks to be performed.)

Affected employees whose jobs require the use of PPE will be informed of the PPE selection and will be provided PPE by (Name of your business) at no charge. Careful consideration will be given to the comfort and proper fit of PPE in order to ensure that the right size is selected and that it will be used.

C. Training

Any worker required to wear PPE will receive training in the proper use and care of PPE before being allowed to perform work requiring the use of PPE. Periodic retraining will be offered to PPE users as needed. The training will 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 will demonstrate that they understand how to use PPE properly, or they will be retrained.

Training of each employee will be documented using the Personal Protective Equipment Training Documentation Form *(or whatever form your company uses)* and kept on file. The document certifies that the employee has received and understood the required training on the specific PPE he/she will be using.

The PPE Training Quiz will be used to evaluate employees' understanding and will be kept in the employee training records. *(Note: This document, on p. 32, is not a requirement of the Washington Safety and Health Rules. It is only a RECOMMENDED form that you can choose to use to make sure that your employees have understood the training and can demonstrate proper use of PPE.)*

SAMPLE PPE POLICIES

Retraining

The need for retraining will be indicated when

- an employee's work habits or knowledge indicates a lack of the necessary understanding, motivation, and skills required to use the PPE (i.e., uses PPE improperly)
- new equipment is installed
- changes in the work place make previous training out-of-date
- changes in the types of PPE to be used make previous training out-of-date

D. Cleaning and Maintenance of PPE

It is important that all PPE be kept clean and properly maintained. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision. Employees must inspect, clean, and maintain their PPE according to the manufacturers' instructions before and after each use (see attached). *(Attach a copy of the manufacturers' cleaning and care instructions for all PPE provided to your employees).* Supervisors are responsible for ensuring that users properly maintain their PPE in good condition.

Personal protective equipment must not be shared between employees until it has been properly cleaned and sanitized. PPE will be distributed for individual use whenever possible.

If employees provide their own PPE, make sure that it is adequate for the work place hazards, and that it is maintained in a clean and reliable condition.

Defective or damaged PPE will not be used and will be immediately discarded and replaced.

NOTE: *Defective equipment can be worse than no PPE at all. Employees would avoid a hazardous situation if they knew they were not protected; but they would get closer to the hazard if they erroneously believed they were protected, and therefore would be at greater risk.*

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

E. Safety Disciplinary Policy

(Customize by adding your company name here) believes that a safety and health Accident Prevention Program is unenforceable without some type of disciplinary policy. Our company believes that in order to maintain a safe and healthful workplace, the employees must be cognizant and aware of all company, State, and Federal safety and health regulations as they apply to the specific job duties required. The following disciplinary policy is in effect and will be applied to all safety and health violations.

The following steps will be followed unless the seriousness of the violation would dictate going directly to Step 2 or Step 3.

1. A first time violation will be discussed orally between company supervision and the employee. This will be done as soon as possible.
2. A second time offense will be followed up in written form and a copy of this written documentation will be entered into the employee's personnel folder.
3. A third time violation will result in time off or possible termination, depending on the seriousness of the violation.

(Customize this page by adding any additional disciplinary actions and deleting those that may not apply to your company.)

Recognizing and Controlling Hazards

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What is a hazard?

A hazard is an existing (or potential) hazardous or unsafe condition or work practice that, by itself or in combination with other conditions, could cause injury, illness, or death to workers, as well as cause property damage.

Hazards may exist from

- Processes, procedures — Any series of actions or operations (manufacturing, equipment, product flow, etc., and handling) that convert raw material into a product
- Unsafe equipment, machinery, or tools — For example damaged tools, unguarded blades or unguarded moving parts, etc.
- Unsafe work practices — Allowing untrained workers to perform hazardous tasks, taking unsafe shortcuts, being distracted, working long shifts, etc.

The table below describes some common types of hazards. It does not cover all the possible hazards that employees may face or for which personal protective equipment may be required. Some hazards, such as noisy environments or those that may require respirators, must be evaluated with appropriate test equipment to quantify the exposure level when overexposure is suspected. *(Hearing and respiratory protection will be covered in future volumes.)*

Hazard Type	General Description	Examples
Impact	Person can strike an object or be struck by a moving or flying or falling object.	• movement of machine parts • chips thrown from machines • falls from elevation or on the same level
Penetration	Person can strike, be struck by, or fall upon an object or tool that would break the skin.	• sharp edges or protrusions on tools, machines, or in aisles
Crush or pinch	An object(s) or machine may crush or pinch a body or body part.	• a falling, rolling, or dropped object that causes crushing injury to hands or feet • press
Harmful Dust	Presence of dust that may cause irritation, or breathing or vision difficulty. May also have ignition potential.	• wood • sand • grain

Hazard Type	General Description	Examples
Chemical - Inhalation - Contact or - Absorption	Exposure from spills, splashing, or other contact with chemical substances or harmful dusts that could cause illness, irritation, burns, asphyxiation, breathing or vision difficulty, or other toxic health effects. May also have ignition potential.	• solids • liquids • chemical dusts • abrasives • fiberglass • slivers • lubricants • coolants (not elsewhere classified) • gases • vapors • fumes • mists
Heat	Exposure to radiant heat sources, splashes or spills of hot material, or work in hot environments that could cause burns to the skin, injury to the eyes, or ignition of clothing.	• molten metal • stoves/ovens
Light (optical) Radiation	Exposure to strong light sources, glare, or to intense light that is a by-product of a process that could cause burns to the eyes or skin.	• welding • torch cutting • furnaces • high intensity or ultraviolet light
Electrical Contact	Exposure to contact with or working close to live or potentially live electrical objects.	• power lines
Ergonomic hazards	Repetitive movements, awkward postures, vibration, heavy lifting, etc.	• stocking overhead shelves • loading heavy objects
Environmental hazards	Conditions in the work place that could cause discomfort or negative health effects.	• cold • heat • noise • vibration • lighting • energy • pressure
Radiological hazards, radiation	Any type of radiological process or threat (lifetime doses, mutational impacts, personal reproductive issues, quality of life)	• radioisotopes • X-rays
Biological hazards	Microorganisms	• viruses • bacteria • fungi • parasites

It takes both a hazardous condition of some kind and exposure to that condition to cause an injury/illness. Therefore, the hazardous condition and/or the exposure can be eliminated or reduced and an accident can be prevented.

Hazardous condition + Exposure = Injury, illness, or death

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~~Hazardous condition + Exposure = Injury, illness, or death~~

A hazard is usually described by stating the condition and the injury or illness a person can suffer from contact with the hazard. For example,

<u>Condition</u>		<u>Injury/illness resulting from contact with hazard</u>
• operating a table saw without a guard on the blade	→	exposed to a cut or amputation hazard
• working near a noisy machine	→	exposed to a hearing loss hazard
• walking on a second floor balcony without a guardrail at the edge	→	exposed to a fall hazard

Several conditions taken together may create a hazard:

- | | | |
|---|---|-------------------------------------|
| • (1) operating a table saw that has a guard on the blade, (2) but is talking with a co-worker while cutting wood | → | exposed to cut or amputation hazard |
|---|---|-------------------------------------|

A potential hazard usually involves a condition that can reasonably be predicted to occur. For example,

- If one or more bolts holding a table saw blade guard in place are loose or missing, then the guard may fall off, exposing an employee to injury.

A potential exposure exists when it is reasonably predictable that an employee could be exposed to the hazard. For example,

- Does an employee's expected work pattern, travel, or simple presence in an area pose a danger?
- Has anything been done to prevent access to hazardous equipment that someone may use?

How do you control hazards?

To control hazardous and unsafe conditions and work practices, use the most effective control methods feasible at your work place. Try to reduce employee exposure by implementing effective controls that do not primarily rely on individual employee behavior. Follow a system of strategies, called the "Hierarchy of Controls," which prioritizes control methods that try to remove or reduce the hazard:

Hierarchy of Controls (most to least effective)

- | | |
|--|---------------------------------------|
| 1. Eliminate/reduce the hazard | • Engineering Controls |
| 2. Reduce the hazard | • Work Practice Controls |
| | • Administrative Controls |
| 3. Put barrier between worker and hazard if needed | • Personal Protective Equipment (PPE) |

Controls that depend on successful employee behavior (for example, depending on an employee's work technique to minimize exposure) are a last resort since they are less reliable than controls that don't allow the employee to be exposed to the hazard. Controls that are designed and implemented to prevent or reduce employee exposure (such as engineering controls) require less reliance on behavior to be effective.

Engineering Controls

Engineering controls are the best and the "first line of defense" against injury/illness, because they focus on the hazard itself and have the potential to completely *eliminate* the hazard or to reduce the probability of harmful exposure. This may be done by removing the employee from the hazard or providing distance between the worker and the hazard. If you can physically change the machine or work environment to prevent employee exposure to the potential hazard, then you have eliminated the hazard with an engineering control.

Engineering controls also do not rely on human behavior to be effective. For example, instead of requiring employees to wear respiratory protection which must be monitored, inspected, trained, and managed, it is much more effective to install a ventilation system that does not require any of those management activities.

In general, when considering engineering controls, follow these principles:

1. If feasible, design the facility, equipment, or process to remove the hazard and/or substitute something that is not hazardous or is less hazardous.
2. If removal is not feasible, enclose the hazard to prevent exposure in normal operations.

3. If complete enclosure is not feasible, establish barriers or local ventilation to reduce exposure to the hazard in normal operations.

Example of enclosing hazard from power transmission machinery



Engineering control	Example
Removal and/or substitution	• Redesigning, changing, or substituting equipment to remove the source of excessive temperatures, noise, or pressure • Redesigning a process to use less toxic chemicals • Redesigning a work station to relieve physical stress and remove ergonomic hazards • Designing general ventilation with sufficient fresh outdoor air to improve indoor air quality and generally to provide a safe, healthful atmosphere
Enclosure	• Complete enclosure of moving parts of machinery • Complete containment of toxic liquids or gases from the beginning to the end of a process • Glove box operations to enclose work with dangerous microorganisms, radioisotopes, or toxic substances • Complete containment of noise, heat, or pressure producing processes with materials especially designed for those purposes
Barriers or local ventilation	• Ventilation hoods in laboratory work • Machine guarding, including electronic barriers • Isolation of a process in an area away from workers, except for maintenance work • Baffles used as noise-absorbing barriers • Nuclear radiation or heat shields

Work Practice Controls

Work practice controls reduce employee exposure to hazards by changing or redesigning safe work practices into job procedures. They also include changing work procedures to reduce overexertion, lifting, and exposure to extremes in temperature. If

you can reduce your employees' exposure to the potential hazard by changing the way they do their jobs, then you have reduced the hazard with work practice controls.

Using work practice controls is not as effective as engineering controls because in most cases, they only reduce exposure – they don't eliminate the hazard. Work practice controls rely on human behavior which must be managed, and they must also be accompanied by good worker training, reinforcement, and consistent and reasonable enforcement.

Examples of work practice controls may include

- wetting down surfaces to reduce dust or contaminants in the air
- housekeeping and maintenance
 - removal of tripping, blocking, and slipping hazards
 - removal of accumulated toxic dust on surfaces
- using safe lifting techniques
- maintaining equipment and tools in good repair

Administrative Controls

Administrative controls limit employees' exposures to hazards through scheduling breaks, changing the number of workers doing a job, and other changes in the frequency and duration of exposure. If you can limit your employees' exposure to the potential hazard by manipulating their schedules, then you have reduced the hazard with an administrative control.

As with work practice controls, using administrative controls is not as effective as engineering controls because in most cases, they only reduce exposure - they don't eliminate the hazard. Also, administrative controls do rely on human behavior which must be managed.

Administrative controls may include

- reducing shift length
- increasing the number of breaks
- increasing break time/recovery time
- rotating workers through different jobs
- varying the duties of a worker to limit exposure and allow variety of work
- using additional relief workers

Personal Protective Equipment (PPE)

When hazards cannot be engineered completely out of normal operations or maintenance work, and when safe work practices and other forms of administrative control cannot provide sufficient additional protection, use PPE as a supplementary method of control. PPE is the least effective way to protect workers because it does not eliminate or control the hazard itself, but rather places a barrier between the worker and the hazard. PPE devices alone should not be relied on to provide protection against hazards; if the equipment fails, the worker is immediately exposed to the hazard.

Ask these questions:

- What PPE is available to deal with this kind of hazard?
- How intense is the hazard?
 - For example,
 - Will the PPE prevent penetration of the projectile?
 - Will the gloves be harmed by this chemical through absorption or disintegration?
 - How long will the PPE last before it wears out?
- What type of hazard is it, how severe is it, and what capabilities must the PPE have? Select the appropriate PPE based on the answers to these questions.
- What is the minimum protection required? Then provide a greater protection than the minimum so that it will be adequate under less than optimum conditions and will have a reasonably long life.

Types of Personal Protective Equipment

The following pages contain information about different types of PPE to help you in selecting appropriate and effective protection:

- [Head protection](#) (p. 43)
 - [Eye and face protection](#) (p. 46)
 - [Hand and arm protection](#) (p. 54)
 - [Foot and leg protection](#) (p. 58)
 - [Torso \(body\) protection](#) (p. 61)
- and
- [Protection from drowning hazards](#) (p. 63)

Many suppliers and manufacturers have not only information about their own products but good general information about personal protective equipment as well. Contact your supplier or the manufacturer; often they will be able to help you with deciding on the appropriate PPE for your work place conditions and hazards. Many manufacturers also have web sites with detailed information and pictures.

Head Protection

A head injury can occur by

- an object impacting with a person
- a person making contact with an object
- contacting an electrical source
- getting hair caught and pulled into machinery with revolving or moving parts.



Long hair that was caught in moving machine part.



Keeping the hair back by using a cap or other device would have prevented such an incident.

Provide your employees with the appropriate head protection if they are exposed – or likely to be exposed – to any of the following hazards or hazardous situations that may result in potential head injury:

If exposed to this kind of hazard	Examples of work place situations	Use this type of PPE
falling objects or materials	❖ working below other workers who are using tools and materials which could fall	Protective helmet (ANSI-approved Class A, B, or C) 
	❖ working around or under conveyor belts which are carrying parts or materials	
	❖ working below machinery or processes which might cause material or objects to fall	
	❖ working around or under scaffolds or other overhead structures	
	❖ working around objects suspended by overhead cranes	
flying or propelled objects	❖ working around or with machinery, tools, or processes which throw/shoot out particles	
	❖ working in roadways while directing traffic	
contact with overhead objects	❖ working in areas where overhead heights change, or where one must walk/maneuver under low beams or other structures, or under vehicles, equipment	Protective helmet or Bump cap*
	❖ working in tight spaces	
hair-catching hazard	❖ working around machinery or in locations where hair can get caught into nip points, revolving shafts, or other moving parts	^{1,3} Hair net, hat, or cap that completely covers hair or controls all loose ends
hair fire hazard	❖ working around machinery or in locations where an employee is exposed to an ignition source and may run into an area containing a combustible/flammable atmosphere if their hair is on fire	^{2,3} Hair covering of solid material
electrical hazards	❖ working near exposed electrical conductors that could contact the head	Protective helmet designed to reduce electrical shock hazard (ANSI-approved Class A or B) <i>Make sure headwear has no metal buttons or metal visors.</i>

* Note: “Bump caps” are not ANSI-approved hard hats. They do not provide the required penetration protection from impact forces or falling objects. However, they may be used in tight spaces where minor bumps and abrasions are the problem.

(1) Wear hair net, hat, or cap if

- length of hair is twice as long as the circumference of the exposed revolving shafts or tools in fixed machines
- length of hair is as long as the radius of the pressure rolls with exposed in-running nip points

(2) Wear hair covering of solid material if exposed to an ignition source, e.g.

- welding
- cutting with a torch
- working with a flame or hot surface that could ignite the hair

and if the potential exists to run into a combustible/flammable atmosphere, such as

- class-1 flammable liquid (e.g., ether, benzene)
- combustible atmosphere

(3) Construction standard WAC 296-155-205-6 allows hair nets for hair-catching or for fire hazards.

Note: Also, hair would need to be secured, covered, or removed when it would interfere with other PPE and make them less effective.

Protective helmets are designed to prevent penetration of the object and also to absorb the shock of impact. It is important to know the potential for exposure to falling or flying objects, contact with overhead objects, and electrical hazards (must know the voltage) in order to select the most appropriate type of helmet:

Type	Impact & Penetration Resistance	Electrical Protection
Class A	Yes	low-voltage conductors (up to 2,200 volts) General Service
Class B	Yes	high-voltage conductors (up to 20,000 volts) Utility Service High voltage
Class C (aluminum)	Yes	NONE (not designed for electrical exposure) Special Service such as Metal Loggers Helmets

Make sure that the protective helmets worn by your employees meet the requirements in WAC 296-800-16055.

Note: whenever you are not sure about a particular PPE or which one to use, contact the manufacturer and talk with the technical services department. Often they will be able to provide information and may help you with deciding on the appropriate PPE for your work place conditions and hazards.

Eye and Face Protection

Provide your employees with appropriate protection if they are exposed to hazards that could injure their eyes and/or faces, such as

- Flying particles
- Molten metal splashes
- Liquid chemicals
- Acids or caustic liquids
- Chemical gases or vapors
- Harmful light radiation or any light that could injure the eyes such as lasers, ultraviolet, or infrared light
- Blood and other potentially infectious body fluids that might splash, spray, or splatter



Wear your safety glasses to keep objects - like this staple - out of your eye!



Prescription safety glasses with side shields.

Generally,

- Safety glasses/goggles are the primary protection for eyes
 - Side shields (such as clip-on or slide-on side shields) are required for flying objects



A face shield is not sufficient protection for both the face and eyes. If eye protection is required, appropriate eye PPE must also be worn.

- Masks and face shields are the primary protection for the face; secondary protection for the eyes

Be aware that you may need to protect against more than one hazard at the same time. E.g., welding rays and flying particles.

Whenever possible, consider using engineering controls before resorting to PPE.
For example,

- The barrier is an engineering control that will prevent splashes back toward the worker.
 - A face shield may be needed if there is a potential for material to still strike the worker despite the barrier.
- In a machine shop, the clear barrier over the wheel of a grinder would be the engineering control designed to control small metal particles.
 - However, since its effectiveness is dependent upon how well it is adjusted, safety glasses would still be needed.
 - Sometimes face shields would also need to be worn.

Types of Eye/Face Protectors

Type	Hazard Protection	Description	
Safety Glasses	• protect eyes from moderate impact from particles - e.g. • Carpentry • Woodworking • Grinding • Scaling • protect against particles that might enter the eyes from the side	• safety frames • tempered glass or plastic impact-resistant lenses • temples and side shields • corrective (prescription) lenses available • made of wire mesh or plastic • eye-cup type side shields provide the best protection	 Safety glasses with side shields
Safety Goggles	protect eye, eye sockets and surrounding facial area from impact, dust, splashes, and other hazards	• vinyl framed goggles of soft pliable body design • clear or tinted lenses • perforated, port vented, or non-vented frames • single lens goggles similar protection to spectacles, may be worn in combination with spectacles or corrective lenses to ensure protection along with proper vision	 Chemical safety goggles
❖ side shields	• protect eyes from liquid chemicals	• have ventilation covers to allow air circulation but prevent easy entry of liquids through the vents. • if the atmosphere is gaseous, will not protect the person's eyes since gas will travel through the vents. If eye hazard from the gas is an issue, then a full face respirator would be necessary.	

Type	Hazard Protection	Description	
❖ Welder's goggles	protect eyes from sparking, scaling, or splashing metals; harmful light rays	Impact resistant lenses, available in graduated shades of filtration	 Laser safety goggles
❖ Chippers/ Grinders goggles	protect eyes from flying particles	- dual protective eye cups - impact resistant clear lenses with individual cover plates	
❖ Laser safety goggles	protect eyes from intense concentrations of light from lasers	protect for the specific wavelength of the laser and be of optical density adequate for the energy involved	
Face shield <i>(*should only be worn over primary eye protection - spectacles or goggles)</i>	protect eyes and entire face against flying particles, metal sparks, and chemical/ biological splash or spray	- adjustable headgear - face shield of tinted/transparent acetate or polycarbonate materials, or wire screen - may be polarized for glare protection - various sizes, tensile strength, impact/heat resistance, and light ray filtering capacity - does <u>not</u> protect from impact hazards – must be used with primary eye protection (spectacles or goggles)	 Face shield
Welding shields	protection from infra-red or radiant light burns, flying sparks, metal spatter, and slag chips - - welding - brazing - soldering - resistance welding - bare or shielded electric arc welding - oxyacetylene welding and cutting operations	- vulcanized fiber or glass fiber body - ratchet/button type adjustable headgear or cap attachment - filter and cover plate holder - does <u>not</u> protect from impact hazards – must be used with primary eye protection (spectacles or goggles)	 Welding shield

The following chart provides general guidance for the proper selection of eye and face protection to protect against hazards associated with the listed hazard "source" operations.

Eye and Face Protection Selection Chart		
Hazard Source	Assessment of Hazard	Type of Eye/Face 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.
HEAT		
Furnace operations, pouring, casting, hot dipping, and welding.	Hot sparks	Face shields, goggles, spectacles with side protection. For severe exposure use face shield.
	Splash from molten metals	Face shields, reflective face shields.
	High temperature exposure	Screen face shields, reflective face shields.
CHEMICALS		
Acid and chemicals handling	Splash	Goggles, eyecup and cover types. For severe exposure, use face shield over primary eye protection
	Irritating mists	Special-purpose goggles
DUST		
Woodworking, buffing, general dusty conditions	Nuisance dust	Goggles, eyecup and cover types.
LIGHT and/or RADIATION		
Welding - electric arc	Optical radiation	Welding helmets or welding shields. Typical shades: 10-14
Welding - gas	Optical radiation	Welding goggles or welding face shield. Typical shades: gas welding 4-8, cutting 3-6, brazing 3-4
Cutting, torch brazing, torch soldering	Optical radiation	Spectacles or welding face shield. Typical shades: 1.5-3
Glare	Poor vision	Spectacles with shaded or special-purpose lenses, as suitable.

Notes to Eye and Face Protection Selection Chart:

1. Care should be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards should be provided. Protective devices do not provide unlimited protection.
2. Operations involving heat may also involve light radiation. As required by the standard, protection from both hazards must be provided.
3. As required by the standard, filter lenses must meet the requirements for shade designations in WAC 296-24 Part I (Welding). Tinted and shaded lenses are not filter lenses unless they are marked or identified as such.
4. Persons whose vision requires the use of prescription (Rx) lenses must wear either protective devices fitted with prescription (Rx) lenses or protective devices designed to be worn over regular prescription (Rx) eyewear without disturbing them.

5. Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment. It should be recognized that dusty and/or chemical environments may represent an additional hazard to contact lens wearers.
6. Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.
7. Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleansing may be necessary.
8. Welding helmets or face shields should be used only over primary eye protection (spectacles or goggles).
9. Non-side shield spectacles are available for frontal protection only, but are not acceptable eye protection for the sources and operations listed for "impact."
10. Ventilation should be adequate, but well protected from splash entry. Eye and face protection should be designed and used so that it provides both adequate ventilation and protects the wearer from splash entry.
11. Protection from light radiation is directly related to filter lens density. See note (3). Select the darkest shade that allows task performance.
12. A nail gun operator and anyone in close proximity must wear eye protection. For others, a Suggested rule of thumb: anyone within 12' of a nail gun in operation should be wearing eye protection. WAC 296-155-360(2)(c) exception to requirement for muzzle safety device for certain fine wire nailers

Additional information:

- Welding operations emit ultra-violet light, and bright light flashes that can damage the eyes. The operator needs to wear a protective hood or goggles for oxy-acetylene welding or cutting with the proper filter installed.
 - (see Table "Filter Lenses for Protection Against Radiant Energy" table below for assistance in choosing the appropriate filter for your employees' tasks.

- Employee still needs to wear safety glasses because when the hood is up, the employee or adjacent employee is often doing chipping work.

Some hoods are auto-darkening and will react to the light flash in less than 2 milliseconds.

- Eliminates need to jerk head to lower helmet before striking arc -- a source of neck injuries.

Welding screens are a good engineering control for other people working around the welding operation. Otherwise they also may need to wear protective eye wear.

- Make sure PPE used to protect the eyes and face meet the requirements in WAC 296-800-16050.
- Remember to provide emergency eyewash facilities as required in 296-800-150. All such emergency facilities will be located where they are easily accessible in an emergency.

Filter Lenses for Protection Against Radiant Energy

Operations	Electrode size in 1/32" (0.8 mm)	Arc current	Minimum* protective shade
Shielded metal arc welding	<3	<60	7
	3-5	60-160	8
	5-8	160-250	10
	>8	250-550	11
Gas metal arc welding and flux- cored arc welding		<60	7
		60-160	10
		160-250	10
		250-500	10

Selecting Laser Safety Glass

Intensity, CW maximum power density (watts/cm ²)	Optical density (O.D.)	Attenuation factor
10 ⁻²	5	10 ⁻⁵
10 ⁻¹	6	10 ⁶
1	7	10 ⁷
10	8	10 ⁸

Facts About Eye Protection in the Workplace

Every day an estimated 1,000 eye injuries occur in American work places. The financial cost of these injuries is enormous – more than \$300 million per year in lost production time, medical expense and workers' compensation.

And no dollar amount can adequately reflect the personal suffering and pain that these accidents inflict on injured workers.

The Department of Labor and Industries and the Occupational Safety and Health Administration (OSHA) are working together to reduce the number of eye injuries in America's workforce.

Take a moment to think about possible eye hazards at your workplace. A survey of 1,000 minor eye injuries by the U.S. Labor Department's Bureau of Labor Statistics (BLS) revealed how and why many on-the-job eye accidents occur.

What contributes to eye injuries at work?

- **Not wearing eye protection**

The BLS reported that nearly three out of every five workers injured were not wearing eye protection at the time of their accident

- **Wearing the wrong kind of protection for the job**

About 40 percent of the injured workers were wearing eyeglasses without side shields, although some injuries still can occur when full-cup and flat-fold side shields are worn. Tight-fitting goggles offer the most complete protection and should be worn for liquid chemical hazards.

- **Flying particles**

The BLS found that almost 70 percent of the accidents studied resulted from flying or falling objects striking the eye. Injured workers estimated that nearly 60 percent of the objects were smaller than a pin head.

Contact with chemicals caused about 20 percent of the injuries. Other accidents were caused by objects swinging from a fixed or attached position – such as tree limbs, ropes, and chains or tools that contacted the eye while the worker was using them.

Where do accidents occur most often?

- **Craft work/industrial equipment operation**

Potential eye hazards can be found in nearly every industry, but the BLS reported that more than 40 percent of the injuries studied involved craft workers such as mechanics, repairers, carpenters and plumbers.

More than a third of the injured workers were operatives such as assemblers, sanders and grinding machine operators. Laborers suffered about 20 percent of the eye injuries.

How can eye injuries be prevented?

- **Always wear effective eye protection**

WISHA standards require that employers provide, and workers wear, suitable eye protection. To be effective, the eyewear must be the appropriate type and properly fitted. For example, the BLS survey revealed that 94 percent of injuries to workers wearing eye protection resulted from objects or caustics going around or under the protector. Only 13 workers injured while wearing eye protection reported breakage of the protective device. Nearly 20 percent of the injured workers with eye protection wore face shields or welding helmets. But less than six percent of the injuries happened to workers wearing goggles, which generally offer a tighter fit around the eyes.

- **Better training and education**

BLS reported that most workers were injured while doing their regular jobs. Workers injured while not using protective eyewear most often said they believed that protection was not required in that situation. Even though the vast majority of the employers furnished eye protection at no cost to employees, about 40 percent of the workers received no information on where and what types of eye protection should be used. If you are afraid that an eye injury could occur at your job, don't be hesitant about asking your employer for eye protection and training.

Where can I get more information?

Your nearest L&I office: Safety and health experts are available to explain mandatory requirements for effective eye protection, and to answer you questions. They also can coordinate an on-site consultation service that will provide you with no-cost, penalty-free advice on eliminating possible eye hazards, designing a training program and other safety and health issues.

If I have questions, who do I call?

Call the [Department of Labor and Industries office nearest you](#).

Hand And Arm Protection

Hazards requiring hand protection



Provide your employees with the appropriate hand protection if they are exposed – or likely to be exposed – to any of the following hazards that may result in potential hand injury:

- Severe cuts, lacerations, or abrasions
- Punctures
- Thermal burns
- Harmful temperature extremes
- Chemical hazards
 - Absorption of harmful substances
 - Chemical burns
 - Rashes, irritation

You should also examine the work activities of the employee to select the PPE that will fit the task and needs of the employee best:

- the degree of dexterity required
- the glove length based upon the hazard
- the physical stresses that will be applied (the strength of the glove)
- the chemical use based on shortest breakthrough time of chemical combination used
- how easy it is to remove the PPE without contaminating the user



Make sure that the hand and arm protection worn by your employees meet the requirements in WAC 296-800-16065.

Chemical Hazards



In particular, more than any other part of the body, our hands are most likely to come in contact with hazardous chemicals.

No glove currently available will provide protection against all potential hand hazards, and commonly available glove materials provide only limited protection against many chemicals. (Generally, any "chemical resistant" glove can be used for dry powders.) Therefore, it is important to select the most appropriate glove for a particular application.

When selecting gloves for protection against chemical hazards, consider the following:

- Choose the most appropriate type for a particular application.
- Determine the toxic properties of the chemical(s), in particular the ability of the chemical to cause local effects on the skin and/or to pass through the skin and cause systemic effects.
- Determine how long it can be worn.
- Make sure employees are able to remove the gloves in such a manner as to prevent skin contamination.
- Determine whether the glove can be reused.

Read instructions and warnings on chemical container labels and MSDSs before working with any chemical. Recommended glove types are often listed in the section for personal protective equipment. Check with your PPE supplier to make sure the list is current and accurate.

How long can a glove be used?

Chemicals will eventually soak through or "permeate" most glove materials, making them unsafe. The permeation rate measures the length of time it takes a given material (glove) to become saturated by the chemical through absorption. Another term used with chemical hazards is the Breakthrough or Penetration rate, which measures the speed it takes for a given chemical to break through the layer(s) of the glove to contact the skin.



Gloves can be used safely for limited time periods if the specific use, thickness, permeation rate, and time are known. Your **PPE supplier or the manufacturer** can be a good source to assist in determining the specific type of glove material that should be worn for a particular chemical. Work closely with them to select the appropriate hand protection based on an evaluation of the performance characteristics* of the hand protection.

*(*These performance characteristics should be assessed by using standard test procedures. Before purchasing gloves, request documentation from the manufacturer or supplier that the gloves meet the appropriate test standard(s) for the hazard(s) anticipated. Match the glove's protective characteristics to the hazard of interest.*

One more consideration is that as long as the performance characteristics are acceptable, in certain circumstances, it may be more cost effective to regularly replace less expensive gloves than to reuse more expensive types.

Working with tools and machinery

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, make sure that you do the following:

- 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.
- Do not wear gloves around moving machinery or parts, such as drill presses, mills, lathes, and grinders.
- Never wear gloves around power saws or tools with serrated edges or any power tool that has the ability to grab or snag the glove material.
- When needed, Arm protectors (Arm Guards) made of the same material are available to cover the sleeve or the whole arm.
- When needed, Torso protectors of the same material are available to cover the chest and abdomen



Common types of protective gloves

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

Types	Protection	Use/Properties
Leather gloves	- sparks - moderate heat - blows - chips - scraping against rough objects	- welding - can be also used in combination with an insulated liner when working with electricity
Aluminized gloves	insulation against intense heat	- most commonly when working with molten materials - welding, furnace, and foundry work - requires an insert made of synthetic materials that protect against heat and cold
Aramid fiber	- heat and cold - cut- and abrasive-resistant	synthetic material; wears well
Metal Mesh	cuts and scratches	most commonly when working with cutting tools or other sharp instruments
Other synthetic materials	- heat and cold - cut- and abrasive-resistant - may withstand some diluted acids (but not alkalis and solvents)	
Fabric and coated fabric gloves	Varying degrees	Generally used to improve grip when handling slippery objects. They also help insulate hands from mild heat or cold
-Fabric	Dirt, slivers, chafing, and abrasion	Does not provide sufficient protection against rough, sharp, or heavy materials
-Coated fabric	General-purpose slip-resistant hand protection	Handling bricks, wire rope, chemical containers, etc. Cotton flannel with napping on one side, plastic coating on unnapped side
Chemical and liquid resistant gloves *	Burns, irritation, and dermatitis caused by contact with oils, greases, solvents, and other chemicals; also reduces the risk of exposure to blood and other potentially infectious substances	
-Butyl rubber	Nitric acid, sulfuric acid, hydrofluoric acid, red fuming nitric acid, rocket fuels, and peroxide; highly impermeable to gases, chemicals, and water vapor; resist oxidation and ozone corrosion; resist abrasion	Remain flexible at low temperatures
-Natural latex or rubber	Resist abrasions caused by sandblasting, grinding, and polishing; protection against most water solutions of acids, alkalis, salts, and ketones	Comfortable wear and pliability. Cause of allergic reactions in some people (hypoallergenic gloves, glove liners, and powderless gloves are possible alternatives)
-Neoprene	Hydraulic fluids, gasoline, alcohols, organic acids, and alkalis	Good pliability, finger dexterity, high density, and tear resistance
-Nitrile rubber	Chlorinated solvents; resist abrasions, punctures, snags, and tears	For jobs requiring dexterity and sensitivity; sturdy

* 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. When selecting chemical resistance gloves, be sure to consult the manufacturers' recommendations, especially if the gloved hand will be immersed in the chemical.

Foot and Leg Protection

Provide your employees with appropriate protection if they are exposed to hazards that could injure their feet, such as

- Objects which could
 - Fall (impact hazard)
 - Roll (compression hazard)
 - Pierce or cut the sole or uppers (puncture hazard)
- Electrical hazards
- Chemical hazards

The foot protection must meet the requirements listed in WAC 296-800-16060. Look at the ANSI label, which is typically located on the underside of the tongue.



Make sure that appropriate protection is provided for the legs against splashes or impacts from

- heat hazards
 - molten metal
 - welding sparks
- chemical hazards
- sharp objects
- woodworking or grinding (ballistic nylon chaps or pads are required when using a chain saw)

Select the appropriate protection:

If work activities involve	Then use
- carrying or handling materials which could be dropped - packages - objects - parts - heavy tools - other activities where objects might fall onto the feet	safety shoes/boots with impact protection - steel-toed safety shoes
- skid trucks (manual material handling carts) - working around bulk rolls (such as paper rolls) - working around heavy pipes (could potentially roll over employees' feet)	safety shoes/boots with compression protection - steel-toed safety shoes
- working in areas where sharp objects could be stepped on - nails, tacks, screws - wire - large staples - scrap metal parts	safety shoes/boots with puncture protection - puncture-resistant soles
working on tops of logs	caulk or other non-slip footwear
(in construction) working around materials which could - burn, scald - cut - penetrate/puncture	safety shoes/boots with leather or equivalent firm material (Note: leather provides poor absorption protection.)
exposure to hot substances or dangerous chemical spills	leggings or high boots of leather, rubber, or other suitable material

Some Types of protective foot/leg equipment:

Type	Hazard Protection	Description
Steel-reinforced Safety Shoes	- protect feet from common machinery hazards: - falling objects - rolling objects - cuts - punctures	- entire toe box and insole reinforced with steel - instep protected by steel, aluminum, or plastic - may be designed to insulate against temperature extremes - may be equipped with special soles to guard against slip, chemicals, heat, and/or electrical hazards.
Safety Boots	- more protection from splash or spark hazards or electrical hazards than shoes: - chemicals – corrosives, caustics, cutting oils, petroleum products	neoprene or nitrile boots to prevent penetration (the ability of a given chemical to break through the layer(s) of the boots to contact the skin)

Type	Hazard Protection	Description
Safety Boots	• molten materials • electricity – non-conductive • electrically conductive • prevent the buildup of static electricity and ground the employee	• foundry or gaiter style boots – have quick-release fasteners or elasticized insets to allow speedy removal if hazardous substances get into the boot • electrical boots – designed with no conductive materials other than the steel toe (which is properly insulated) • insulated sole to prevent shock and static discharge • should be used in conjunction with other insulating equipment and precautions to reduce or eliminate the potential for bodies or parts of bodies to provide a path for hazardous electrical energy • used in explosives manufacturing facilities, grain elevators, and areas with the potential for explosive atmospheres
Leggings	protect from heat hazards, like molten metal or welding sparks	• protect lower legs and feet • safety snaps allow for quick removal
Toe guards	Impact, compression hazards	• made of steel, aluminum, or plastic • fit over the toes of regular shoes; protect only the toes
Combination foot and shin guards	Impact, compression hazards	May be used in combination with toe guards when greater protection is needed
Metatarsal guards, leg guards	• protect from impact, compression hazards, sharp objects • protect from splashes • additional leg and ankle protection	• made of aluminum, steel, fiber, or plastic • may be strapped to the outside of shoes to protect the instep area
Anti-slip overshoes	• icy or slippery surfaces	• <u>Note</u>: Some overshoe protection is not intended to be a substitute for steel-toed shoes
Ballistic nylon chaps or pads	• required when using a chain saw	• will stall saw by clogging and blocking chain teeth on contact • flexible pads may be sewn or fastened into the trousers

Torso/Body Protection

Provide your employees with appropriate protection if they are exposed to hazards that could injure their torso, such as

- Intense heat
- Splashes of hot metals and other hot liquids
- Impacts from tools, machinery, and materials
- Cuts
- Hazardous chemicals
- Contact with potentially infectious materials, like blood
- Radiation



Cooling vest

Some types of PPE for the body include

- Vests
- Aprons
- Coveralls
- Jackets
- Body Suits
- Welding Leathers
- Protective clothing for temperature extremes:

Heat

- Cooling vests
- Long-sleeved shirt and pants

Cold

- Parkas
- Heavy gloves
- Hoods
- Insulated protective outer wear

Specialized protective wear may be necessary for certain jobs or work conditions:

- Fire-resistant clothing (Nomex) for working in refineries
- Heat-resistant (aluminized) suits for extreme situations, such as working around smelters or forges
- Body armor for police officers
- High-visibility or reflective clothing, such as when directing traffic or doing night work



Other Protective Clothing Materials

Material	Protection	Comments
Paper-like fiber	Dust and splashes	Disposable
Treated wool and cotton	Dust, abrasions, rough and irritating surfaces	Adapts well to changing work place temperatures; comfortable; fire resistant
Duck	Cuts and bruises when handling heavy, sharp, or rough materials	Closely woven cotton fabric
Leather	Dry heat and flame	
Rubber, rubberized fabrics, neoprene, and plastics	Certain acids and other chemicals	

Be aware that different materials will protect against different chemical and physical hazards. **When chemical or physical hazards are present, check with the clothing manufacturer** to make sure that the material selected will provide protection from the specific chemical or physical hazards in your work place.

For more information on chemical protection, see “Recommendations for Chemical Protective Clothing (NIOSH)” at <http://www.cdc.gov/niosh/ncpc/ncpc2.html>

Protection from Drowning

If your employees work in areas where the danger of drowning exists, you must provide personal flotation devices (PFDs) and make sure they wear them. A PFD can give a person an extra seven to twelve pounds of buoyancy or “extra lift” to keep his/her head above water and keep him floating until help comes.



Worker wearing PFD, eye protection, hand protection, and head protection while welding.

Areas where the danger of drowning may exist include

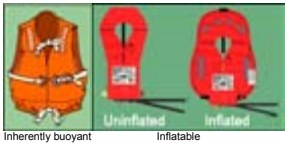
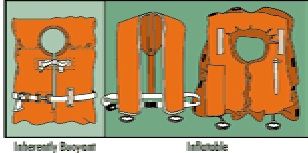
- On the water E.g., working in a boat
- Over the water E.g., working on a bridge over a river
- Alongside the water E.g., near a fish stock pen

Your employees are not exposed to the danger of drowning when they are protected from falling into the water:

- Employees are working behind standard height and strength guardrails.
- Employees are working inside operating cabs or stations that eliminate the possibility of accidentally falling into the water.
- Employees are wearing an approved safety belt with a lifeline attached that prevents the possibility of accidentally falling into the water.

The PFDs you provide your employees with must be approved by the United States Coast Guard for use on commercial or merchant vessels (the PFD should be labeled or marked with this information and the type of PFD it is).

The following are appropriate or allowable United States Coast Guard-approved types of PFDs. Select the type of PFD that will provide the level of protection (or better) needed for the conditions under which the work is being performed.

Type of PFD*	Examples**	Conditions where used	General description
Type I Off-shore life jacket	 Inherently buoyant Uninflated Inflatable	Effective for all waters, especially open, rough, or remote waters where rescue may be delayed.	Provides the most buoyancy available (22 lbs.). It is designed to turn most unconscious wearers in the water to a face-up position. It is reversible.
Type II Near-Shore Buoyant Vest	 Inherently Buoyant Inflatable	Intended for calm, inland water or where there is a good chance of quick rescue.	Inherent buoyant Type II PFDs will turn <i>some</i> unconscious wearers to a face-up position in the water. The turning is not as pronounced as that of a Type I, and it will not turn as many persons to a face-up position under the same conditions as a Type I.
Type III Flotation Aid	 Inherently Buoyant Inflatable	Good for conscious users in calm, inland water, or where there is a good chance of quick rescue.	Designed so wearers can place themselves in a face-up position in the water. The wearer may have to tilt his head back to avoid turning face-down in the water. The Type III foam vest has the same minimum buoyancy as a Type II PFD. It comes in many styles, colors, and sizes and is generally the most comfortable type for continuous wear. Some examples include fishing vests, vests designed with features suitable for various sports activities, and float coats, which also provide some protection against hypothermia, as well as against impact injury.
Type IV Life ring		Throwable device intended for calm, inland water with heavy boat traffic, where help is always present	It is not designed to be worn but to be thrown to a person in the water and grasped and held by the user until rescued. A life ring is of no use to an unconscious or exhausted person and is not recommended for rough or cold water survival. It provides enough buoyancy for the user to keep his/her head above water.
Type V Special use device		Intended for specific activities or conditions	May be carried instead of another PFD only if used according to the approval condition(s) on its label. A Type V PFD provides performance of either a Type I, II, or III PFD (as marked on its label). If the label says the PFD is "approved only when worn" the PFD must be worn, except for persons in enclosed spaces and used in accordance with the approval label, to meet carriage requirements. Some Type V devices provide significant hypothermia protection. Varieties include deck suits, work vests, board sailing vests, law enforcement flotation devices, and inflatable PFDs marked for commercial use.

*Types I, II, III, and V are worn; Type IV is not intended to be worn.

Make sure that defective PFDs are not used.

- Make sure to inspect PFDs before and after each use for defects. (Training should include How to inspect PFDs). PFDs that are defective or in poor condition should be cut up and discarded.

Check the PFD

- for rips, tears, and holes
- to see that seams, fabric straps, and hardware are okay
- any signs of water-logging, mildew odor, or shrinkage of the buoyant materials (there should not be any)

If your PFD uses bags of kapok, gently squeeze the bag to check for air leaks. If it leaks, it should be thrown away. When kapok gets wet, it can get stiff or waterlogged and can lose some of its buoyancy.

Life Rings

Where there are docks, walkways, and fixed installations on, or adjacent to, water more than 5 feet deep, you must provide approved life rings with an attached line on all. They must be provided in the immediate vicinity when employees are assigned work at other casual locations where the risk of drowning exists.

A life ring is a Type IV throwable device intended for calm, inland water with heavy boat traffic, where help is always present. It is not designed to be worn but to be thrown to a person in the water and grasped and held by the user until rescued. A life ring is of no use to an unconscious or exhausted person and is not recommended for non-swimmers. It is not suitable for rough or cold water survival. It provides enough buoyancy for the user to keep his/her head above water.

- Life rings must
 - Be United States Coast Guard approved 30 inch size.
 - Have attached lines that are at least 90 feet in length.
 - Have attached lines at least 1/4 inch in diameter.
 - Have attached lines with a minimum breaking strength of 500 pounds.
 - Be spaced no more than 200 feet apart.
 - Be kept in easily visible and readily accessible locations.
- Life rings and attached lines must be maintained to retain at least 75 percent of their designed buoyancy and strength.

Include having your employees practice throwing life rings as part of the training on using life rings.

L&I Service Locations and Services

L&I Safety and Health Video Library

<http://www.lni.wa.gov/wisha/videocat/>

Note: if you are connected to the Internet, click the city name for a map and driving directions to that service location.

Aberdeen (360) 533-8200 FAX: (360) 533-8206 TDD: (360) 533-9336 Attention: Safety and Health 415 West Wishkah, Suite 1B Aberdeen, WA 98520-0013	Bellevue (425) 990-1400 FAX: (425) 990-1446 TDD: (425) 637-5450 Attention: Safety and Health 616 120th Avenue NE, Suite C201 Bellevue, WA 98005-3037
Bellingham (360) 647-7300 FAX: 647-7310 TDD: (360) 647-7299 Attention: Safety and Health 1720 Ellis Street, Suite 200 Bellingham, WA 98225-4600	Bremerton (360) 415-4000 FAX: (360) 415-4047 TDD: (360) 415-4014 Attention: Safety and Health 500 Pacific Avenue, Suite 400 Bremerton, WA 98337-1904
Colville (509) 684-7417 Toll-free 1-800-509-9174 FAX (509) 684-7416 Attention: Safety and Health 298 South Main, Suite 203 Colville, WA 99114-2416	East Wenatchee (509) 886-6500 or 1-800-292-5920 FAX: (509) 886-6510 TDD: (509) 886-6512 Attention: Safety and Health 519 Grant Road East Wenatchee, WA 98802-5459
Everett (425) 290-1300 FAX: (425) 290-1399 TDD: (425) 290-1407 Attention: Safety and Health 729 100th St. S.E. Everett WA 98208-3727	Kennewick (509) 735-0100 FAX: (509) 735-0120 TDD: (509) 735-0146 Attention: Safety and Health 500 N Morain, Suite 1110 Kennewick, WA 99336-2683 1-800-547-9411

Longview (360) 575-6900 FAX: (360) 575-6918 TDD: (360) 575-6921 Attention: Safety and Health 900 Ocean Beach Hwy Longview, WA 98632-4013	Moses Lake (509) 764-6900 Claims/industrial insurance - (509) 764-6912 Electrical - (509) 764-6900 FAX: (509) 764-6923 TDD: (509) 754-6030 Attention: Safety and Health 3001 W. Broadway Ave. Moses Lake, WA 98837-2907
Mount Vernon (360) 416-3000 FAX: (360) 416-3030 TDD: (360) 416-3072 Attention: Safety and Health 525 E College Way, Suite H Mount Vernon, WA 98273-5500	Okanogan (509) 826-7345 FAX: (509) 826-7349 TDD: (509) 826-7370 Attention: Safety and Health 1234 2nd Avenue S Okanogan, WA 98840-9723
Port Angeles (360) 417-2700 FAX: (360) 417-2733 TDD: (360) 417-2752 Attention: Safety and Health 1605 East Front Street, Suite C Port Angeles, WA 98362-4628	Pullman (509)334-5296 Toll-free 1-800-509-0025 FAX: (509) 334-3417 Attention: Safety and Health 1250 Bishop Blvd SE, Suite G PO Box 847 Pullman, WA 99163-0847
Seattle (206) 515-2800 FAX: (206) 515-2779 TDD: (206) 515-2803 Attention: Safety and Health 315 5th Ave. S. Suite 200 Seattle, WA 98104-2607	Spokane (509) 324-2600 Toll-free: 1-800-509-8847 FAX: (509) 324-2601 TDD: (509) 324-2653 Attention: Safety and Health 901 N Monroe Street, Suite 100 Spokane, WA 99201-2149
Tacoma 253) 596-3800 FAX: (253) 596-3956 TDD: (253) 596-3887 Attention: Safety and Health 950 Broadway, Suite 200 Tacoma, WA 98402-4453	Tukwila (206) 835-1000 FAX: (206) 835-1099 TDD: (206) 835-1102 Attention: Safety and Health PO Box 69050 12806 Gateway Drive Seattle, WA 98168-1050

Tumwater (360) 902-5799 FAX: (360) 902-5792 TDD: (360) 902-4637 Attention: Safety and Health 1st Floor, Lobby <i>Mailing address:</i> PO Box 44851 Olympia, WA 98504-4851 <i>Physical address:</i> 7273 Linderson Way SW Tumwater, WA 98501-5414 <i>Please note: The physical address for our Tumwater building is not for U.S. Postal Service mail (unless specifically requested by USPS). Using this address may significantly delay delivery.</i>	Vancouver (360) 896-2300 FAX: (360) 896-2345 TDD: (360) 896-2304 Attention: Safety and Health 312 SE Stonemill Dr, Suite 120 Vancouver, WA 98684-3508
Walla Walla (509) 527-4437 FAX: (509) 527-4486 TDD: (509) 527-4172 Attention: Safety and Health 1815 Portland Avenue, Suite 2 Walla Walla, WA 99362-2246	Yakima (509) 454-3700 Toll-free 1-800-354-5423 FAX: (509) 454-3710 TDD: (509) 454-3741 Attention: Safety and Health 15 W. Yakima Avenue, Suite 100 Yakima, WA 98902-3480

Links to Additional Information

Here are links to additional information, addresses, telephone numbers, and web sites for Labor and Industries and other organizations, such as NIOSH, OSHA, etc.

ACGIH (American Conference of Governmental Industrial Hygienists) http://www.acgih.org	1330 Kemper Meadow Dr. Ste 600 Cincinnati OH 45240 Phone: (513) 742-6163 Fax: (513) 742-3355
AIHA (American Industrial Hygiene Association) http://www.aiha.org	2700 Prosperity Ave Ste. 250 Fairfax, VA 22031 Phone: (703) 849-8888 Fax: (703) 207-3561
ANSI (American National Standards Institute) http://www.ansi.org	1819 L Street, NW Washington, DC 20036 Phone: (202) 293-8020 Fax: (202) 293-9287
ASSE (American Society of Safety Engineers) http://www.asse.org	1800 E. Oakton St. Des Plaines, IL 60018 Phone: (847) 699-2929 Fax: (847) 768-3434
Australia's National Occupational Health and Safety Commission http://www.nohsc.gov.au/	GPO Box 1577 Canberra ACT 2601 Australia Phone: +61 2 6279 1000 Toll Free: 1-800-252-226 Fax: +61 2 6279 1199
Department of Environmental Health http://depts.washington.edu/envhlth/index.htm	University of Washington Box 357234 Seattle, WA 98195-7234 Phone: (206) 543-3199
Evergreen Safety Council http://www.esc.org	401 Pontius Ave. Seattle WA 98109 Phone: (206) 382-4090 Toll Free: (800) 521-0778 Fax: (206) 382-0878
L&I (State of Washington Department of Labor and Industries) (See also WISHA) Homepage: http://www.lni.wa.gov	To find the L&I office nearest you: http://www.wa.gov/lni/pa/direct.htm 1-800-4BE SAFE (1-800-423-7233) L&I training opportunities: http://www.wa.gov/lni/home/training.htm
NIOSH (National Institute for Occupational Safety & Health) http://www.cdc.gov/niosh/homepage.html	4676 Columbia Parkway Cincinnati, OH 45226-1998 Phone: (800) 356-4674

Northwest Center for Occupational Safety and Health Training http://depts.washington.edu/envhlth/conted/ce/index.html	4225 Roosevelt Way NE, Ste. 100 Seattle, WA 98105 Phone: (206) 543-1069 Fax: (206) 685-3872
OSHA (Occupational Safety and Health Administration) http://www.osha.gov	200 Constitution Ave. NW Washington, DC 20210 Phone: (800) 321-6742 Region 10 Office 111 Third Ave. Suite 715 Seattle, WA 98101-3212