

Welcome!

Introduction to Personal Protective Equipment will give those who are new to safety and health a solid overview of the requirements placed on employers for the use of PPE. Those who have previous experience will also benefit from learning about the recent changes to OAR 437, Division 2/I. This presentation also discusses two model PPE worksite analysis worksheets, a sample PPE Plan and Respiratory Protection Plan.

Goals:

1. Assess hazards in the workplace to determine which may require the use of PPE,
2. Be familiar with assessment and training certification, and
3. Know PPE training requirements.

Inside:

1910.095 Occupational Noise Exposure - Hearing Protection
1910.132 General Requirements
1910.133 Eye and Face Protection
1910.134 Respiratory Protection
1910.135 Head Protection
1910.136 Foot Protection
1910.137 Electrical Protective Equipment
1910.138 Hand Protection
1910.139 Oregon Rules for Life Jackets and Buoyant Protective Equipment

Please Note: This material, or any other material used to inform employers of compliance requirements of Oregon OSHA standards through simplification of the regulations should not be considered a substitute for any provisions of the Oregon Safe Employment Act or for any standards issued by Oregon OSHA.

Equipment used in this training course has been selected to familiarize the participant with a wide variety of types now on the market. Use in this course does not constitute an endorsement by OR-OSHA of products of any specific supplier or manufacturer and should not be considered as substitute training for this equipment.

1910.132(a) **Application**

Personal protective equipment includes:

1. Protective equipment for:
 - * eyes
 - * face
 - * head
 - * extremities
2. Protective clothing
3. Respiratory devices
4. Protective shields and barriers

437-02-123

5. *Shields*
6. *Barriers*
7. *Restraints*
8. *Equipment to protect any part of the body*

Employers must protect employees from hazards in the following categories:

1. Processes
2. Environment
3. Chemicals
4. Radiological - radiation
5. Mechanical irritants
6. Causes of injury or impairment

1910.132(b) Employee-owned PPE

1. Adequate
2. Properly maintained
3. Sanitary

1910.132(c) Design

Must be of safe design and construction for the work being performed.

Assessing the workplace for PPE

1910.132(d) **Hazard assessment and equipment selection**

Employer must assess the workplace hazards for need for PPE.

If hazards are present the employer must:

1. Select PPE that protects against hazards;
2. Require employees to use PPE;
3. Inform affected employees of PPE selection; and
4. Select PPE that properly fits each employee.

Applies to face, eye, hand, foot and head protection.

Does not apply to electrical or respiratory protection.

Based on assessment of workplace hazards.

Selected by employers.

Must protect against specific hazards encountered.

Employees must comply with selection.

Employer must verify the assessment was performed.

Written certification must identify:

1. Person certifying the assessment;
2. Date(s) of the assessment; and
3. Identifies the document as the assessment certification.

Appendix B Steps in assessing the workplace for PPE

1. Conduct a workplace survey. Conduct a walk-through survey to identify sources of hazards to feet, head, eyes and face of workers. Reassess whenever a new hazard is introduced into the workplace.

Sources. During the walk-through survey, observe:

- a. Sources of **impact/motion**; i.e., machinery or processes where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects;
- b. Sources of **high temperatures** that could result in burns, eye injury, or ignition of protective equipment, etc.;
- c. Types of **chemical exposures**;
- d. Sources of **hazardous atmospheres**;
- e. Sources of **hazardous radiation**, i.e., welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.;
- f. Sources of **falling objects** or potential for dropping objects;
- g. Sources of **sharp objects** which might pierce the feet or cut hands;
- h. Sources of **rolling or pinching objects** which could crush the feet;
- i. **Layout of the workplace** and **location of co-workers**; and
- j. Any **electrical hazards**.

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. Organize and analyze data. From the data gathered during the survey, estimate the potential for foot, head, eye and face injuries.

3. Select Personal Protection Equipment. Select PPE which ensures a level of protection greater than the minimum required to protect employees from the hazards.

4. Fit the device. Ensure proper comfort and fit for each user.

5. Reassess hazards. When new equipment and/or processes introduce hazards that might require revised PPE strategies.

Sample PPE Assessment & Certification Worksheet

(Note: This worksheet, or any other worksheet used to assess the worksite for PPE is not mandatory. However, certification that a PPE assessment has been completed is required by the PPE standard.)

Assessment conducted by: _____ Date: _____
 Task _____ Department _____

Instructions

1. Conduct a Job Safety Analysis of the above task.
2. List below the hazards found in the JSA.
3. If engineering or management practices cannot eliminate the hazards or are not feasible, determine the appropriate PPE for each hazard. Note: If you are not sure about appropriate PPE, consult your OR-OSHA consultant or insurer for assistance.

Summary of Task Hazards and PPE Required

Impact by: ___ materials ___ equipment ___ objects ___ co-worker ___ other (describe) _____

PPE required: (head, eye, foot, etc.) _____

Contact with: ___ stationary object ___ moving object ___ sharp object ___ other (describe) _____

PPE required: (foot, head, etc.) _____

Fall: ___ from elevation ___ to surface ___ slipping ___ tripping ___ other (describe) _____

PPE required: (fall, restraint systems) _____

Caught in, under, between: ___ running or meshing objects ___ moving object ___ stationary object ___ rolling vehicle ___ collapsing materials/cave-in ___ other (describe) _____

PPE required: (hand, foot, etc.) _____

Overexposure: ___ noise ___ heat ___ cold ___ temperature variation ___ radiation. List dBA _____ Temp _____ F.

PPE required: (hearing, respiratory, clothing, eye, etc.) _____

Inhalation of: ___ hot ___ cold ___ dust ___ mists ___ vapors ___ smoke ___ gasses ___ fibers ___ biohazards ___ other (describe) _____

PPE required: (respiratory, face, etc.) _____

Ingestion of: ___ hot ___ cold ___ acids ___ bases ___ caustics ___ poisons ___ dust ___ mists ___ vapors ___ smoke ___ gasses ___ radiation ___ fibers ___ other (describe) _____

PPE required: (respiratory, face, etc.) _____

Absorption of: ___ acids ___ bases ___ caustics ___ poisons ___ hazardous chemicals ___ other (describe) _____

PPE required: (hand, face, eye, clothing, etc.) _____

Skin contact with: ___ hot liquid ___ molten metal ___ sparks ___ acids ___ bases ___ caustics ___ poison ___ other (describe) _____

PPE required: (hand, foot, face, eye, clothing, etc.) _____

4. Reference the associated MSDS for each hazardous chemical used and list the recommended PPE for that chemical.

Chemical:	_____	MSDS PPE:	_____
	_____		_____
	_____		_____

Certification _____
 Signature _____ Date _____

Sample PPE Walkthrough Survey and Certification

Department _____ Task _____ Date _____

Assess each task for hazards using following criteria: (1 **Type of injury or illness** possible; (2 **Probability** - unlikely, likely, highly likely; and (3 **Severity** - death, serious injury/illness, not serious injury/illness.

1. **Sources of motion** - machinery, processes, tools, materials, people etc. _____

Required PPE: _____

2. **Sources of high temperatures** - that could cause burns, ignition, injury to eyes, etc. _____

Required PPE: _____

3. **Sources of chemical exposure** - splash, vapor, spray, immersion, etc. _____

Required PPE: _____

4. **Sources of harmful atmospheres** - dust, fumes, gasses, mists, vapors, fibers, etc. _____

Required PPE: _____

5. **Sources of light radiation** - welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc. _____

Required PPE: _____

6. **Sources of falling objects** - materials, equipment, tools, etc. _____

Required PPE: _____

7. **Sources of sharp objects** - which could pierce the skin - feet, hands, face etc. _____

Required PPE: _____

8. **Sources of rolling or pinching that could crush** - hands, feet. _____

Required PPE: _____

9. **Layout of workplace and location of co-workers** - adequate space for task. _____

Required PPE: _____

10. **Sources of contact with electricity** - wires, grounding, _____

Required PPE: _____

I certify that I have conducted a workplace survey on the above task to assess the need for personal protective equipment. The personal protective equipment noted above will be required while performing this task.

Signature

Date

1910.132(e)

Defective and damaged equipment

Must not be used.

Training

Employees must be trained on:

1910.132(f)

1. When PPE is necessary;
2. What PPE is necessary;
3. How to properly don, doff, adjust, and wear PPE;
4. The limitations of PPE; and
5. Proper care, maintenance, useful life and disposal of PPE.

Employee must **demonstrate** understanding and ability to properly use PPE **before** being allowed to work in a task requiring the PPE.

Retraining

Whenever:

1. Employer believes employee lacks skill or understanding;
2. Changes that render previous training obsolete; or
3. Changes in types of PPE used that render previous training obsolete;

Certification

Verifies that employee has received and understands required training.

Must contain name, date(s) of training, and subjects.

437-02-123

High temperature protective clothing

Use by workers who are exposed to molten metals

Exposure to materials which are hazardous to the skin

Employer must provide:

- protective covering*
- ointments*
- gloves, or*
- other effective protection*

Employees must wear and use PPE in a manner that makes full use of its protective properties.

437-02-123

Inspection and maintenance of PPE

The employer must develop a system to inspect and maintain PPE furnished to workers.

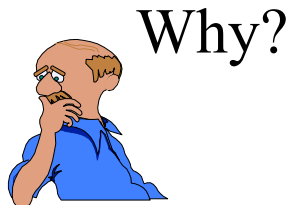
Personal inspection of PPE

Workers must inspect PPE at the beginning of each shift.

Personal items

The following items must not be worn if there is exposure to power driven machinery or electric circuitry:

- * rings*
- * wristwatches*
- * earrings*
- * bracelets*
- * jewelry*



437-02-125

Oregon Rules for Fall Protection

On unguarded surfaces

All employees must be protected from fall hazards when working on unguarded surfaces more than ten feet above a lower level

Above dangerous equipment

Must be protected at any level above dangerous equipment.

Note: The above does not apply when work is of limited duration and limited exposure and the hazards involved in rigging and installing the safety devices equal or exceed the hazards involved in the actual activity, such as the activities of grain weigher-samplers on railroad gondola-hopper cars, or railcar inspectors when testing or inspecting car tops.

437-02-125

Lifelines, body belt/harness and lanyards

** Must be used only for employee safeguarding*

** If subject to in-service loading, they must be removed from service. They must not be used again for employee safeguarding*

** Point of attachment must be able to support a minimum dead weight of **5000 lbs***

Personal fall arrest systems

*Must be rigged so that an employee can neither fall more than **six feet**, nor contact any lower level.*

Personal fall restraint systems

*Must be rigged so that an employee cannot free fall more than **two feet**.*

Body belts/harnesses and lanyard hardware

- * Surface must be smooth and free of sharp edges.*
- * Periodically inspected by **supervisor**.*
- * Daily inspected by **employees** who use equipment.*
- * Defective equipment must be discarded or repaired before use.*
- * Must withstand tensile loading of 4000 pounds without cracking, deforming or breaking.*
- * Rope must have a nominal breaking strength of 5000 pounds.*
- * Must provide for a fall of no greater than six feet.*

Note: Additional requirements for body belts/harness systems are contained in OAR 437, Division 3, *Construction* and the ANSI A10.14-1991, *Requirements for Safety Belts, Harnesses, Lanyards and Lifelines for Construction and Demolition Use*.

437-02-127

Oregon Rules for Work Clothing

- * Must be appropriate to work being performed and conditions encountered.*
- * Must not wear loose sleeves, ties, lapels, cuffs, or loose clothing near moving machinery.*
- * Must immediately remove clothing that becomes saturated or impregnated with flammable liquids, corrosive or toxic substances, irritants, or oxidizing agents.*

1910.133

Eye and Face Protection

General Requirements

(1) Employers must ensure employees use PPE to protect eyes and face against:

Who needs it?

Carpenters

Electricians

Loggers

Machinists

Mechanics

Millwrights

Plumbers

Pipe fitters

Sawyers

Sheet Metal
Workers

Tinsmiths

Assemblers

Sanders

Welders

Chemical Process
Operators

And many others!

* *flying particles* (front and side protection)

* *molten metal*

* *liquid chemicals*

* *acid and caustic liquids*

* *chemical gases or vapors*

* *potentially injurious light radiation*

(2) PPE must fit properly.

(3) Should not use tinted or variable tinted lenses if employees pass from brightly lighted area into dimly lighted area.

(4) Prescription lenses - two solutions:

* Incorporated into PPE

* PPE worn over prescription lenses must not disturb position of lenses

Selection Chart: Eye & Face Protection

Source	Assessment	Protection
Impact: Chipping, grinding, machining, masonry work, woodworking, sawing, drilling, chiseling, powered fastening, riveting, and sanding.	Flying fragments, objects, large chips, particles, sand, dirt, etc.	Spectacles with side protection, goggles, faceshields. See notes (1),(3),(5),(6),(10). For severe exposure, use faceshields.
Heat: Furnace operations, pouring, casting, hot dipping, and welding.	Hot sparks Splash from molten metals High temperature exposure	Faceshields, goggles, spectacles with side protection. See notes (1),(2),(3). For severe exposure use faceshield Faceshields worn over goggles. See notes (1),(2),(3). Screen faceshields, reflective faceshields. See notes (1),(2),(3).
Chemical: Acid and chemicals handling, degreasing plating	Splash Irritating mists	Goggles, eyecup and cover types. See notes (3),(11). For severe exposure, use faceshield. Special purpose goggles.
Dust: Woodworking, buffing, general dusty conditions	Nuisance dust	Goggles, eyecup and cover types. See note (8).
Light Radiation: Welding: Electric arc Gas Cutting Torch brazing Torch soldering Glare	Optical radiation Optical radiation Optical radiation Poor vision	Welding helmets or welding shields. Typical shades: 10-14. See notes (9),(12). Welding goggles or welding faceshield: Typical shades: gas welding 4-8, cutting 3-6, brazing 3-4. See note (9). Spectacles or welding faceshield. Typical shades 1.5-3. See notes (3), (9). Spectacles with shaded or special purpose lenses, as suitable. See notes (9), (10).

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) Faceshields should only be worn over primary eye protection (spectacles or goggles).
- (4) As required by the standard, filter lenses must meet the requirements for shade designations in CFR 29 1910.133(a)(5). Tinted and shaded lenses are not filter lenses unless they are marked or identified as such.
- (5) As required by the standard, 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.
- (6) 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.
- (7) Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.
- (8) Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleansing may be necessary.
- (9) Welding helmets or faceshields should be used only over primary eye protection (spectacles or goggles).
- (10) Non-sideshield spectacles are available for frontal protection only, but are not acceptable eye protection for the sources and operations listed for "impact."
- (11) 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.
- (12) Protection from light radiation is directly related to filter lens density. See note 4. Select the darkest shade that allows task performance.

1910.133

PPE with filter lenses to protect against potentially injurious light radiation must be in accordance with the following list:

Filter Lenses for Protection Against Radiant Energy			
Operations	Electric Size 1/32 inch	Arc Current	Minimum* Protective Shade
Shielded metal arc welding	Less than 3	Less than 60	7
	3-5	60-160	8
	5-8	160-250	10
	More than 8	250-550	11
Gas metal arc welding and flux cored arc welding		Less than 60	7
		60-160	10
		160-250	10
		250-500	10
Gas Tungsten arc welding		Less than 50	8
		50-150	8
		150-500	10
Air carbon Arc cutting	(Light)	Less than 500	10
	(Heavy)	500-1000	11
Plasma arc welding		Less than 20	6
		20-100	8
		100-400	10
		400-800	11
Plasma arc cutting	(Light)**	Less than 300	8
	(Medium)**	300-400	9
	(Heavy)**	400-800	10
Torch brazing			3
Torch soldering			2
Carbon arc welding			14
Operations	Plate thickness-inches	Plate thickness-mm	Minimum* Protective Shade
Gas Welding	Under 1/8	Under 3.2	4
	1/8 to 1/2	3.2 to 12.7	5
	Over 1/2	Over 12.7	6
Oxygen Cutting	Under 1	Under 25	3
	1 to 6	25 to 150	4
	Over 6	Over 150	5
<p>* As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.</p> <p>** These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the workpiece.</p>			

437-02-130

Lasers. Employees exposed to laser beams must be furnished laser safety goggles of proper optical density which protect against specific wavelengths.

1910.134

Respiratory Protection

The employer's **primary objective** is to **prevent atmospheric contamination** through the use of engineering controls:

- * enclosing or confining operation
- * ventilation
- * substitution with less toxic materials.

Respirators are the last line of defense.

Use respirators if any of these three conditions exist:

1. If ventilation is either infeasible or inadequate to reduce contaminant concentrations to within acceptable limits.

2. As an temporary measure until adequate ventilation system is installed.

3. Emergency escape from a hazardous atmosphere.

If engineering controls are not feasible or while they are being instituted, appropriate respirators must be used.

Respiratory protection controls occupational diseases caused by breathing air contaminated with harmful:

- * dusts
- * fogs
- * fumes
- * mists
- * gases
- * smokes
- * sprays
- * vapors
- * fibers
- * biological organisms

Measuring airborne contaminants:

OR-OSHA industrial hygiene consultants

Insurer

Private consultants

"Suitable" involves selecting the proper type of respirator **and** using only NIOSH approved respirators when any overexposure to an air contaminant is possible.

Employer must provide suitable respirators.

Employer must establish and maintain respiratory protection program.

- * Triggered by employer's decision to use respirators.

Employees must use respiratory protection according to instructions and training received.

Requirements for a minimal acceptable program

(1) There must be written procedures on selection and use. Must reflect current workplace conditions and respirator use. Include:

- * Fit testing procedures
- * Procedures and schedules for cleaning, disinfecting, storing, inspecting, and maintenance of respirators.
- * Procedures to ensure proper air quality, quantity, and flow for atmosphere supplying respirators.

(2) Respirators selected on the basis of the specific hazards.

(3) Users must be trained on use, maintenance, and limitations of respirators.

(4) Respirators must be clean and disinfected regularly.

(5) Respirators must be stored in convenient, clean and sanitary location.

(6) Respirators must be inspected during cleaning.

(7) Emergency equipment must be inspected monthly and after each use.

(8) Must survey work area for conditions and degree of exposure.

(9) Program must be evaluated for effectiveness by a designated qualified person.

(10) Medical evaluation of employees required to wear respirators: Include:

Assessment of worker ability to perform task while using the equipment.

A local physician must determine pertinent health and physical conditions.

Worker's medical status reviewed periodically (annually).

437-02-133

Oregon Rule for Air Quality in Respirators

Note: 1910.134(d)(1)
Air quality was not
adopted by OR-OSHA.
Instead, this rule
applies.

** Compressed air, compressed oxygen, liquid air, and liquid oxygen must be of high purity.*

** Compressed oxygen must not be used in supplied-air respirators or in open circuit self-contained breathing apparatus that have previously used compressed air.*

** Oxygen must never be used with air line respirators.*

1910.134

Cylinders and compressors

Cylinders must be tested and maintained according to the Shipping Container Specification Regulations, DOT (49 CFR Part 178).

Must use breathing air-type compressors.

Must not allow entry of contaminated air.

Must have suitable alarms.

Air line couplings

Must be incompatible with outlets for other gas systems.

Breathing gas containers

Must be properly marked.

Using respirators, the employer must:

** Develop standard procedures for proper selection, use and care of respirators in routine and emergency situations.*

** Specify correct respirator for each job. Usually done by person supervising respirator program.*

** Write procedures for respirator use in dangerous atmospheres.*

** Qualified person must conduct frequent random inspections.*

1910.134

Respirator training includes:

- * Practice
- * Proper fitting instructions
- * Maintaining proper face seal
 - * how to ensure proper seal
 - * what prevents proper seal
 - growth of beard
 - sideburns
 - skull cap
 - temple pieces on glasses
 - missing dentures
- * Use of corrective glasses
- * Use of contact lenses
- * Protective spectacle/goggle procedures

Maintenance and care program must include:

- * Inspection for defects including leaks
- * Cleaning and disinfecting
- * Repair
- * Storage
- * Equipment must retain its original effectiveness.

Inspections:

- * Respirators:
 - Inspected before and after each use
 - Emergency equipment inspected after each use and monthly
 - Keep a record of inspection dates and findings
- * Self-contained breathing apparatus:
 - Inspect monthly. Document (Emergency equipment)
 - Air & oxygen cylinders must be fully charged
 - Regulators and warning devices must function properly

1910.134

Storing respirators

- * Store to protect against dust, sunlight, heat, extreme cold, excessive moisture, damaging chemicals.
- * Respirator compartments should be properly marked.
- * Do not store respirators in lockers or tool boxes unless they are in carrying cases or cartons.
- * Store respirators so that facepiece and exhalation valve rest in normal position.

Identifying gas mask canisters

- * Primary means is by using worded labels.
- * Secondary means is by using a color code.
- * All issuers or users must ensure canisters are properly labeled and color coded before using.

Labels

<p>Canister for _____</p> <p>(Name for atmospheric contaminant)</p> <p>or</p> <p>Type N Gas Mask Canister</p> <p>For respiratory protection in atmospheres containing not more than _____ percent by volume of</p> <p>_____.</p> <p>(Name of atmospheric contaminant)</p>
--

Canisters must have a label warning that gas masks should be used only in atmospheres containing sufficient oxygen to support life (at least 16% by volume).

Canisters must be painted a distinctive color or combination of colors to indicate atmospheric contaminants to which canisters offer protection.

1910.134

Table 1-1	
Atmospheric contaminants to be protected against	Colors assigned
Acid gases.....	White.
Hydrocyanic acid gas	White with 1/2-inch green stripe completely around the canister near the bottom.
Chlorine gas	White with 1/2-inch yellow stripe completely around the canister near the bottom.
Organic vapors	Black.
Ammonia gas	Green.
Acid gases and ammonia vapors	Green with 1/2-inch white stripe completely around the canister near the bottom
Carbon monoxide	Blue.
Acid gases and organic vapors	Yellow.
Hydrocyanic acid gas & chloropicrin vapor ..	Yellow with 1/2-inch blue stripe completely around the canister near the bottom.
Acid gases, organic vapors & ammonia gases	Brown.
Radioactive materials, excepting tritium and noble gases	Purple (Magenta).
Particulates (dusts, fumes, mists, fogs, or smokes) in combination with any of the above gases or vapors.....	Canister color for contaminant, as designated above, with 1/2-inch gray stripe completely around the canister near the top.
All of the above atmospheric contaminants...	Red with 1/2-inch gray stripe around the canister near the top.

Gray must not be assigned as the main color for a canister designed to remove acids and vapors.

Orange must no be used as a complete body, or stripe color to represent gases not included in this table. The user will need to refer to the canister label to determine the degree of protection the canister will afford.

Respirator chemical cartridges and filters

- * Assigned TC - #. Approved for use on specified respirator.
- * Some chemical cartridges are dependent upon break-through to determine service life.
- * Filters are dependent upon resistant to determine service life.
- * Chemical cartridges used only for vapors and some acid gases
- * Filters used for dusts, mists, fumes.

1910.135

Head Protection

Wear protective helmets when working in areas where there is a potential for injury to the head from falling or moving objects.

Who needs it?

Carpenters

Electricians

Linemen

Mechanics

Plumbers

Pip Fitters

Assemblers

Packers

Wrappers

Sawyers

Welders

laborers

Freight Handlers

Loggers

Stock Handlers

Warehouse laborers

Examples:

* Working below other workers who are using tools and materials which could fall;

* Working around or under conveyor belts which are carrying parts or materials;

Wear protective helmets designed to reduce electrical shock where they are near exposed electrical conductors which could be contacted by the protective helmets.

Class A Helmets - In addition to impact and penetration resistance, provide electrical protection from low-voltage conductors. They are proof tested to 2,200 volts.

Class B Helmets - In addition to impact and penetration resistance, provide electrical protection from high-voltage conductors. They are proof tested to 20,000 volts.

Class C Helmets - Provide impact and penetration resistance, and should not be used around electrical hazards. Usually made of aluminum.

437-02-135

Employees who are exposed to power-driven machinery or sources of ignition must wear caps or other head covering which completely covers the hair.

1910.095

Hearing Protection

Protection against the effects of noise must be provided when the employee is exposed to noise levels that exceed:

Duration per day, hours	Sound level dBA slow response
8	90
6	92
4	95
3	97
2	100
1-1/2	102
1	105
1/2	110
1/4 or less	115

Engineering and administrative controls should be used.

If noise exposure can't be reduced below above levels, PPE must be used.

*Action
Level*

Hearing Conservation Program

Must be implemented when 8-hr time-weighted average (TWA) equals or exceeds 85 dBA, or equivalently, a dose of fifty percent.

Hearing protectors

Must be made available at no cost to all employees exposed to action level or higher.

Employers must ensure hearing protectors are worn by all employees who are::

1. Subjected to noise levels at or greater than paragraph (b)(1).
(See previous chart)
2. Exposed at or above action level and have experienced a threshold shift.

Employees must be given opportunity to select hearing protectors.

Employer must train in the use and care of hearing protectors.

Employer must ensure hearing protectors fit properly.

1910.136

Foot Protection

Required to protect feet from falling and rolling objects, piercing objects, and electrical hazards.

Where necessary, metatarsal protection should be provided.

Electrical conductive or insulating safety shoes may be required in special situations.

Who needs it?

Clerks
Carpenters
Electricians
Machinists
Mechanics
Plumbers
Assemblers
Drywall Installers
Packers
Wrappers
Craters
Punch/Stamp
Press Operators
Sawyers
Freight Handlers
Grounds-keepers

Examples:

Impact. Carrying or handling packages, tools, objects, parts, etc., which could be dropped. Working in areas where objects not being carried or handled could fall onto the feet.

Compression. Work activities involving skid trucks (manual material handling carts) around bulk rolls (such as paper rolls) and heavy pipes.

Puncture. Required where sharp objects such as nails, wire, tacks, screws, large staples, scrap metal, etc., could be stepped on.

437-02-137

Special types of shoes or foot guards may be required.

Leggings or high boots of leather, rubber, or other suitable material must be worn by workers exposed to hot substances or dangerous chemical spills.

1910.137

Electrical Protective Equipment

Blankets, gloves, sleeves must be seamless and properly marked by class (0-4).

Equipment must be ac or dc proof tested to show they can withstand voltages.

1910.137 **Electrical Protective Equipment** (continued)

Must be free of defects or irregularities.

Must be properly cared for, used, stored, and inspected

Insulating equipment must not have:

- * Holes, tears, punctures, cuts:
- * Ozone cutting or checking;
- * Embedded objects;
- * Texture changes - swelling, softening, hardening, becoming sticky or inelastic;
- * Any other defects that damages insulating properties.

Must be periodically tested and certified (date and pass/fail status).

437-02-138

Rubber gloves and sleeves must be electrically tested at least every three months. Complete records must be kept.

1910.138

Hand Protection

Employers must:

- * Select and require employees to wear appropriate hand protection when exposed to hazards from:

- absorption of harmful chemicals
- severe cuts or lacerations
- severe abrasions
- punctures
- chemical burns
- thermal burns
- harmful temperature extremes

1910.138

Selecting hand protection.

Based on task performed, conditions present, duration of use and potential hazards.

No glove can protect against all hazards.

Assess performance characteristics against hazards of:

- Hazardous chemicals
- Sharp objects
- Hazardous materials
- Fire and heat

Request documentation from manufacturer that gloves meet test standards for the hazards you anticipate. Other factors:

1. It may be more cost effective to regularly change less expensive gloves than to reuse more expensive types; and
2. Determine the degree of dexterity required, frequency and degree of exposure to a hazards, and physical stresses applied to gloves.

Assessing for chemical hazards

1. Determine toxic properties of chemicals. Is chemical able to pass through skin, etc.
2. Generally, any “chemical resistant” glove can be used for dry powders.
3. If using mixtures and formulated products, select glove based on shortest breakthrough time. Solvents may carry active ingredients through polymeric materials.
4. Employees must be able to remove gloves without contaminating skin.

437-02-136

Gloves must not be worn when a worker is exposed to moving parts in which they might be caught.

Oregon Rules for Life Jackets and Buoyant Protective Equipment

Working over or near water

Employers must provide U.S. Coast Guard or equivalent approved buoyant protective equipment.

Employees must wear PPE at all times while working on or over water which is over 5 feet deep in following situations:

- 1. On floating pontoons, rafts, and floating stages;*
- 2. On open decks of floating plants which are not equipped with bulwarks, guardrails or lifelines;*
- 3. Working alone at night where there are potential drowning hazards;*
- 4. On floating logs, boom sticks or unguarded walkways; and*
- 5. On boom boats and other work boats.*

PPE must be designed to keep wearer's face above water.

Must float 16 pound weight for 3 hours in fresh water.

Must not be dependent on manual or mechanical manipulation or chemical action.

Buoys and boats

Ring buoys with at least 90 feet of line must be provided and made readily available for emergency operations.

Distance between ring buoys and shoreline must not exceed 200 feet along exposed sides of work areas adjacent to water over 5 feet in depth.

Sample Programs



Sample Personal Protective Equipment (PPE) Plan

I. Purpose. The Personal Protective Equipment Plan provides direction to managers, supervisors, and employees about their responsibilities in the selection, use, care and disposal of personal protective equipment as detailed in OAR 437, Division 2/I, *Personal Protective Equipment*.

II. General. Personal protective equipment and devices should be used only when it is impossible or impractical to eliminate a hazard or control it at its source through engineering design. Wearing personal protective equipment does not eliminate the hazardous condition. Every effort will be made to first eliminate the hazardous condition through engineering and/or administrative control strategies. If it is not possible or feasible to eliminate hazardous conditions, personal protective equipment will be used to establish a barrier between the exposed employee and the hazard to reduce the probability and severity of an injury.

III. Responsibility and accountability.

A. Managers are responsible to ensure supervisors conduct worksite/task analyses to identify hazardous conditions that may or may not be eliminated through engineering or administrative controls. In those tasks that expose employees to hazardous conditions which cannot be eliminated through engineering or administrative controls, managers will implement and monitor this Plan to ensure area supervisors are properly training, supervising and enforcing PPE safety rules.

B. Supervisors are responsible, if directed, to carry out the provisions of this plan. They will:

1. Conduct worksite/task analysis initially and as needed to assess the need for personal protective equipment. Sources of hazards include:

a. Hazards from impact/motion, high/low temperatures, chemicals, materials, radiation, fall objects, sharp objects, rolling or pinching objects, electrical hazards, and workplace layout.

2. Certify in writing the tasks evaluated, hazards found, and actions recommended: Engineering controls, administrative controls, PPE.

3. Select appropriate PPE. If a task exposes an employee to hazards which can not be eliminated through engineering or administrative controls, the supervisor will identify and select PPE suitable for the specific task performed, conditions present, and frequency and duration of exposure.
 - a. Supervisors are encouraged to take advantage of the services provided by Oregon OSHA consultants, our workers' compensation insurer consultants, private consultants and PPE suppliers for expert assistance in selecting PPE.
 - b. Supervisors should invite exposed employees to participate in PPE selection. Employees need to give feedback to the supervisor about the fit, comfort, and suitability of the PPE being selected.
4. Train exposed employees before they are assigned to the hazardous task.
 - a. Training should include:
 - (1) When PPE is necessary;
 - (2) What PPE is necessary;
 - (3) How to properly don, doff, adjust, and wear PPE;
 - (4) The limitations of the PPE; and
 - (5) The proper care, maintenance, useful life, and disposal of the PPE.
 - b. After the employee(s) demonstrate correct use, care, and disposal procedures of the PPE, the supervisor and employee will certify completion of training.
5. Supervise employees on safe use and care of PPE. Supervisors will regularly monitor employees for correct use and care of PPE, and provide follow-up training if required to ensure each employee has adequate skill, knowledge, and ability to use PPE.
6. Enforce PPE safety rules. Supervisors will enforce PPE safety rules following provisions of the company progressive disciplinary procedures.

C. Employees. Employees are accountable to comply with PPE safety rules including:

1. The correct use and care of PPE.
2. Reporting changes in exposure to hazardous conditions that might require a follow-up analysis of the task for PPE.
3. Reporting and replacing defective PPE.

IV. Selection Guidelines.

A. Eye and Face Protection. Employees must use appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation. Requirements for side protection, prescription lenses, filter lenses, and identification of the manufacturer are detailed in OAR 437, Division 2/I. Eye and Face PPE must comply with ANSI Z87.1-1989 or be demonstrated to be equally effective.

B. Head Protection. Employees must wear protective helmets when working in areas where there is a potential for injury to the head from employee initiated impact or impact from falling or other moving objects. Protective helmets designed to reduce electrical shock hazards will be worn by each employee when near exposed electrical conductors which could contact the head. Helmets will comply with ANSI Z89.1-1986 or be equally effective.

C. Foot Protection. Employees must wear protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or from object piercing the sole, and where employees' feet are exposed to electrical hazards. PPE for foot protection must comply with ANSI Z41.1991 or be equally effective.

D. Hand Protection. Employees must use appropriate hand protection when their hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns and harmful temperature extremes. Supervisors must base the selection of hand protection on evaluation of the performance characteristics of the hand protection relative to the specific tasks to be performed, conditions present, duration of use and the hazards and potential hazards identified.

E. Respiratory Protection. Employees will wear appropriate respiratory protection when adequate ventilation or substitution with non-toxic chemicals, etc., is not possible or feasible. Respirator protection must comply with ANSI Z288.2-1969 and provisions detailed in OAR 437, Division 2/I 1910.134.

F. Fall Protection. Fall protection must be provided when employees are exposed to (1) a vertical fall of ten feet or more over a lower level or (2) any height over dangerous equipment. Fall protection will consist of either passive or active fall protection. Fall protection must comply with ANSI A10.14-1991 and provisions detailed in OAR 437, Division 3, Construction and OAR 437-02-125.

G. Electrical Protection. Electrical protective equipment such as insulating blankets, mating, covers, line hoses, gloves, gloves and sleeves must be provided to employees who are exposed to electrical hazards. Electrical protective equipment will comply with the requirements in OAR 437, Division 2/I, 1910.137.

V. Monitoring.

A. Supervisors will monitor worksite tasks for changes in, or the introduction of new hazards. If new hazards are discovered, they will conduct a task analysis for appropriate PPE. A worksite analysis will be conducted at least annually for each task that requires employees to use PPE.

B. The safety committee will monitor the effectiveness of this Plan and make recommendations to management to improve the plan.

VI. Review.

Reviewed by _____ Date _____

Approved by _____ Date _____

Sample Personal Protective Equipment (PPE) Test

(Supervisors should give this test after training the employee on the proper use and care of PPE. The supervisor should review the test and discuss any areas requiring additional training. When the supervisor is confident that the employee has an adequate knowledge and ability to properly use PPE associated with the job, the supervisor should certify training.)

1. List the type(s) of PPE required for your task.

2. What are the hazards you are being protected against for each type of PPE used in your job?

3. Describe procedures for the use and care of the PPE you are using.

4. What should you look for to determine the PPE you are using is in good working order?

5. What actions do you take when your PPE becomes defective?

Certification

I have personally trained _____ and answered all questions pertaining to the proper use and care of PPE. I certify that he/she has adequate knowledge and ability to proper use and care for the PPE associated with his/her job.

Supervisor's Signature

Date

I have been adequately trained on the use and care of PPE to be used by me. My supervisor has answered all questions to my satisfaction and I understand he/she will be available for follow-up training if needed.

Employee's Signature

Date

Model Respiratory Protection Program

General

The intent of this written program is to define the company rules now in effect regarding the use of respirator masks for personal protection against the following airborne contaminants:

1. _____ -
2. _____
3. _____

The regulations contained herein are not optional for the employee. To comply with OSHA regulations, the company considers this policy mandatory and a condition of employment for each employee.

Availability of Respirators:

Each employee that requires a respirator will be issued one at the company's expense with replacement parts, cartridges and filters upon request. The following types of respirators are available:

1. _____ -
2. _____
3. _____

Use of Respirators

Each employee that requires a respirator must wear an approved respirator, properly fitted at all times while performing an operation defined as hazardous; or within 10 feet of hazardous operations if a work period of over five minutes is anticipated. The following operations are considered hazardous:

1. _____ -
2. _____
3. _____

Selection of Respirators

Only NIOSH/MSHA approved respirators will be selected for use in this program. The choice of respirator is dependent upon the airborne contaminant present, the hazardous operation performed, and on the basis of comfort and ease of obtaining a proper personal fit. The company will provide all respirators which will be maintained in the general office area. The useful life of each respirator will depend mainly on the employee's job duties and the actual time the unit is in use. Generally, useful life would be expected to vary from _____ to _____.

These respirators are also noted to have the following limitations:

1. _____
2. _____
3. _____

Training

Each respirator user will be trained by their immediate supervisor or other qualified person on the proper use and care of each respirator they use. Training will include fit testing, practice, and verification of the employee's ability to use the respirator for related task.

Employee's proof of the training and instructions received will consist of the following: In addition to the training and instruction received, the respirator user must have read, understood and be able to apply the contents of this respirator program in the daily use, care and safekeeping of each respirator.

To make sure the availability of this respirator program at all times, copies will be distributed as follows:

- a. 1 copy - posted on shop bulletin board.
- b. 1 copy - kept in the office file.
- c. 1 copy - given to respirator user.

Fitting Respirators

Properly fitting respirator is essential if employees are to receive maximum protection against airborne contaminants. Air which passes around the edges of the respirator, rather than through it, is not filtered air. In order to make sure a good face seal is obtained, the following rules must be observed:

1. The respirator and straps must be in place and worn in the appropriate position. To adjust head bands, pull the free ends tight until a comfortable fit is obtained. All straps must be secure.

2. To adjust face piece properly, simply position the chin firmly in the chin cup and manually shift rubber mask until the most comfortable position is located. Make final adjustments in the head band and do not break the nasal seal. Modification to the respirator or straps shall not be made.

3. Proper fit must be checked each time the respirator is worn according to the manufacturer's instructions. Respirators must not be worn when projections under the face piece prevents a good face seal. Note: Such conditions may be a growth of beard, sideburns, temple pieces on glasses or skull cap that projects under the face piece.

4. The fitted respirator must be tested using the appropriate qualitative fit tests. For example, Isoamyl acetate should be used to check respirator fit when using organic vapor respirators by determining if the wearer can detect the "banana oil" odor. Irritant fume tests can be used with particulates respirators to ensure proper fit.

In the event that an employee is unable to obtain satisfactory fit with the type of respirator furnished, the employer must make efforts to correct the problem.

Maintaining Respirators

Respirators should be cleaned after each day's use and placed in a plastic bag and stored in the container provided for this purpose.

At the end of each week (or more often, if needed) respirators should be completely cleaned and disinfected by carrying out the following procedures:

- a. Remove the air-purifying elements from the respirator. Air purifying elements must never be washed and disinfected.
- b. Immerse the respirator in a warm (140-160 degrees F) aqueous solution of a germicidal detergent. The respirator face piece and parts may be scrubbed gently with a cloth or soft brush. Make sure that all foreign matter is removed from all surfaces of the rubber exhalation valve flap and plastic exhalation valve seats.
- c. After washing and disinfecting the respirator, rinse the same with clean, warm water and then allow the respirator to dry.
- d. After the respirator is dry, attach the air-purifying elements.
- e. Store the respirator in the container provided for the purpose.

Any malfunction on the respirator must be reported to the user's immediate supervisor. Replacement parts will be available in the general office.

After normal use or inspection, respirators must not be hung on nails on the wall, but must be stored in its plastic bag and in the provided container. In storing the respirator, the face piece and exhalation valve must be in a normal position so as to prevent the abnormal set of elastomer parts during storage.

Each worker assigned to use a respirator must maintain and routinely inspect it before and after each use. Respirators will be inspected and certified in good condition monthly by area supervisors to assure they are kept clean and in satisfactory working condition. Respirator inspection must include:

- a. Tightness of connections
- b. Condition of face piece
- c. Condition of head bands
- d. Condition of cartridges
- e. Condition of valves
- f. Rubber or elastomer for pliability
- g. Rubber or elastomer for deterioration

Note: Stretching and manipulating rubber or elastomer parts with a massaging action will keep them pliable and flexible and prevent them from taking a set during storage.

Worn out parts will be replaced with approved parts immediately.

Evaluating the Program

The company will monitor the effectiveness of this program by:

1. Frequent unscheduled observation and feedback of employee activities throughout the plant to confirm proper respirator use.
2. Training and observation of new employees including respirator use responsibility and accountability.
3. Periodic supervisor and manager training on respirator care and use.

Reviewed by

Date

Approved by

Date

Summary of Revisions

Original. Steve Geigle 6-94

Rev 1. 12-94. Moved Assessment module to front of workbook for a more logical presentation sequence.

Rev 2. 12/94. Incorporated changes suggested by Mike Fajer - Technical Services.

Rev 3 9/95 Incorporated new format and new numbering to workbook.
sjg

Sample PPE Assessment & Certification Worksheet

(Note: This worksheet, or any other worksheet used to assess the worksite for PPE is not mandatory. However, certification that a PPE assessment has been completed is required by the PPE standard.)

Assessment conducted by: _____ Date: _____

Task _____ Department _____

Instructions

1. Conduct a Job Safety Analysis of the above task.
2. List below the hazards found in the JSA.
3. If engineering or management practices cannot eliminate the hazards, or are not feasible, determine the appropriate PPE for each hazard. Note: If you are not sure about appropriate PPE, consult your OR-OSHA consultant or insurer for assistance.

Summary of Task Hazards and PPE Required

Impact by: ___ materials ___ equipment ___ objects ___ co-worker ___ other (describe) _____

PPE required: (head, eye, foot, etc.) _____

Contact with: ___ stationary object ___ moving object ___ sharp object ___ other (describe) _____

PPE required: (foot, head, etc.) _____

Fall: ___ from elevation ___ to surface ___ slipping ___ tripping ___ other (describe) _____

PPE required: (fall, restraint systems) _____

Caught in, under, between: ___ running or meshing objects ___ moving object ___ stationary object ___ rolling vehicle ___ collapsing materials/cave-in ___ other (describe) _____

PPE required: (hand, foot, etc.) _____

Overexposure: ___ noise ___ heat ___ cold ___ temperature variation ___ radiation. List dBA _____ Temp _____ F.

PPE required: (hearing, respiratory, clothing, eye, etc.) _____

Inhalation of: ___ hot ___ cold ___ dust ___ mists ___ vapors ___ smoke ___ gasses ___ fibers ___ biohazards ___

other (describe) _____

PPE required: (respiratory, face, etc.) _____

Ingestion of: ___ hot ___ cold ___ acids ___ bases ___ caustics ___ poisons ___ dust ___ mists ___ vapors ___ smoke ___ gasses ___ radiation ___ fibers ___ other (describe) _____

PPE required: (respiratory, face, etc.) _____

Absorption of: ___ acids ___ bases ___ caustics ___ poisons ___ hazardous chemicals ___ other (describe) _____

PPE required: (hand, face, eye, clothing, etc.) _____

Skin contact with: ___ hot liquid ___ molten metal ___ sparks ___ acids ___ bases ___ caustics ___ poison ___ other (describe) _____

PPE required: (hand, foot, face, eye, clothing, etc.) _____

4. Reference the associated MSDS for each hazardous chemical used and list the recommended PPE for that chemical.

Chemical:	_____	MSDS PPE:	_____
	_____		_____
	_____		_____

Certification _____

Signature

Date

Sample PPE Walkthrough Survey and Certification

Department _____ Task _____ Date _____

Assess each task for hazards using following criteria: (1 **Type of injury or illness** possible; (2 **Probability** - unlikely, likely, highly likely; and (3 **Severity** - death, serious injury/illness, not serious injury/illness.

1. **Sources of motion** - machinery, processes, tools, materials, people etc. _____

Required PPE: _____

2. **Sources of high temperatures** - that could cause burns, ignition, injury to eyes, etc. _____

Required PPE: _____

3. **Sources of chemical exposure** - splash, vapor, spray, immersion, etc. _____

Required PPE: _____

4. **Sources of harmful atmospheres** - dust, fumes, gasses, mists, vapors, fibers, etc. _____

Required PPE: _____

5. **Sources of light radiation** - welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc. _____

Required PPE: _____

6. **Sources of falling objects** - materials, equipment, tools, etc. _____

Required PPE: _____

7. **Sources of sharp objects** - which could pierce the skin - feet, hands, face etc. _____

Required PPE: _____

8. **Sources of rolling or pinching that could crush** - hands, feet. _____

Required PPE: _____

9. **Layout of workplace and location of co-workers** - adequate space for task. _____

Required PPE: _____

10. **Sources of contact with electricity** - wires, grounding, _____

Required PPE: _____

I certify that I have conducted a workplace survey on the above task to assess the need for personal protective equipment. The personal protective equipment noted above will be required while performing this task.

Signature

Date

**Department of Consumer and Business Services
Oregon Occupational Safety and Health Division (OR-OSHA)
Workshop Evaluation**

Workshop Title: _____ Date: _____ Instructor: _____

WE VALUE YOUR COMMENTS

Management Worker

Agree Disagree

1. I found the course information easy to understand and useable.
2. The information I learned today will help me reduce hazards and prevent work-related injuries and illnesses at my workplace.
3. The course materials (workbooks, overheads, slides, etc.) were helpful.
4. Please rate the overall effectiveness of this workshop in helping you to reduce your safety and health problems:



Comments: _____

Agree Disagree

1. The instructor provided quality training (relevant, interesting, applicable, etc.) and was knowledgeable about occupational safety and health.
2. The instructor was able to answer questions adequately or make an appropriate referral.
3. The instructor encouraged participation.
4. Please rate the overall effectiveness of the instructor in helping you to reduce your safety and health problems:



Comments: _____

Personal Protective Equipment



OR-OSHA 203

9905



Presented by
The Training Section
**Oregon Occupational
Safety and Health
Division (OR-OSHA)**

OR-OSHA Services

Oregon OSHA offers a wide variety of safety and health services to employers and employees:

Consultative Services (At all field offices)

- * Offers no-cost on-site safety and health assistance to Oregon employers for help in recognizing and correcting safety and health problems in their workplaces; and
- * Provides consultations in safety, industrial hygiene, ergonomics, programs and business assistance.

Training (Portland, Salem Central, Eugene)

- * Conducts statewide training classes and workshops in a wide variety of safety and health subjects; and
- * Conducts conferences, seminars and satellite (Oregon ED-Net), online training,[†] and on-site training; and
- * Provides assistance to companies in developing safety and health training programs.

Standards and Technical Resources (Salem Central)

- * Provides technical advice on and interpretations of codes; and
- * Provides copies of all OR-OSHA codes; and
- * Publishes booklets, pamphlets, and other materials to assist in the implementation of safety and health codes and programs; and
- * Operates a resource center containing books, topical files, technical periodicals, video and film lending library, and more than 200 technical data bases.

Enforcement (At all field offices)

- * Offers pre-job conferences for construction employers; and
- * Provides abatement assistance to employers who have received citation, and compliance and technical assistance by phone; and
- * Inspects places of employment for occupational safety and health rule violations, and investigates workplace safety and health complaints and accidents.

[†] visit our website at:
www.cbs.state.or.us/external/osha



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