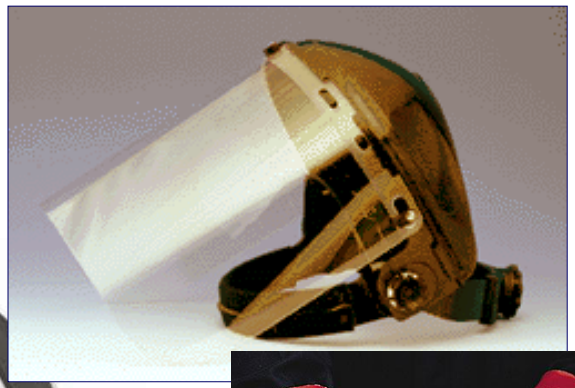
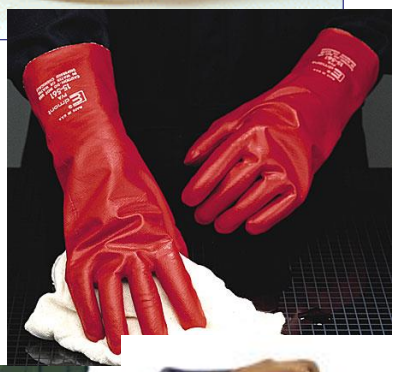
Best Practices Guide For Personal Protective Equipment (PPE)

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ATTACHMENTS:

What Does It Take to Have an Effective Personal Protective Equipment Program?

Providing employees with personal protective equipment, such as hardhats, safety glasses, and gloves, is what many people think of when you mention the term “workplace safety”. In fact, personal protective equipment (PPE) is the most basic of all workplace safety programs. The use of PPE is highly visible and the use of proper PPE while conducting public business gives a positive visual impression of your organization’s safety efforts.

Even though a PPE program is the most “basic” of all safety programs, it isn’t necessarily as simple as most people think. Just buying some protective equipment and relying on employees “common sense” to wear it when needed and use it properly does not meet even the current minimum regulatory requirements, let alone “best practices” in safety. A proper and legal PPE program requires some work and a methodical approach. Some of the components of an effective program, such as analyzing tasks for hazards requiring PPE, and assigning proper PPE for the hazards, require a significant time commitment. But, it is well worth the effort. Besides meeting Maine occupational safety regulations and avoiding citations/fines, good PPE practices reduce injuries and improve public relations. Good PPE use looks “professional”. Also, the framework and approach taken to develop a basic safety program, like PPE, develops skills and teamwork needed to address more advanced safety programs such as Job Safety Analysis (JSA), back injury prevention, ergonomics, and behavioral based safety.

PPE includes such obvious devices as hardhats, goggles, safety glasses, gloves, hearing protection and respirators. It also considers other equipment such as fall protection equipment (harnesses, lanyards, lifelines), seatbelts on mobile equipment and vehicles, floatation devices when working near water and equipment specific to chainsaw operation.

Some PPE, such as eye protection, gloves and safety toe footwear is highly effective for preventing minor injuries that can create worker’s comp losses and reduced productivity. Other PPE, like seatbelts, fall protection, chain saw chaps and hardhats are designed to prevent death or serious injury in the event of a serious accident.

The use of PPE in the workplace should be part of a well thought out and organized safety program. The **key elements** to a PPE program are:

- A written policy
- Documented analysis of tasks for hazards requiring PPE
- Selection of appropriate PPE for the hazards identified
- Written PPE requirements by task
- Purchase/inventory of PPE
- Care, inspection and storage of PPE
- Employee training
- Recordkeeping
- Enforcement, observation, and feedback to ensure proper use of PPE

Scope

This information was prepared to assist you in developing YOUR PPE plan. As is the case with all safety plans, to be effective, they be specific to YOUR operations, exposures and hazards. The sample program is just that, a sample. It is intended as a guide for use in developing your program. If you have questions or need assistance please contact the Loss Control Department at Maine Municipal Association (MMA).

Applicable Standards

The following federal OSHA safety standards have been adopted by the State of Maine for public sector employers, and set minimum legal requirements for a PPE program:

Subpart I- Personal Protective Equipment

29 CFR	1910.132-	General Requirements
	1910.133-	Eye and Face Protection
	1910.134-	Respiratory Protection
	1910.135-	Head Protection
	1910.136-	Occupational Foot Protection
	1910.137-	Electrical Protective Devices
	1910.138-	Hand Protection

Subpart G- Occupational Health and Environmental Control 29 CFR 1910.95 - Occupational Noise Exposure

There are numerous American National Standards Institute (ANSI) “consensus” standards that set performance and testing criteria for specific PPE and establish recommendations for its use. Most of their performance and testing criteria are referenced by OSHA/Maine BLS standards. Some of these are:

ANSI Z87.1-1989- Educational and Occupational Eye and Face Protection ANSI Z81.1-1986-

Protective Headwear for Industrial Workers

ANSI Z41- 1991- Protective Footwear

ANSI Z359.1-1992- Personal Fall Arrest Systems, Subsystems, and Components

The USDOT- Federal Highway Administration **“Manual on Uniform Traffic Control Devices for Streets and Highways” 2003**, Chapter 6 contains guidance on when high visibility apparel should be worn on/near roadways and which type, based on ANSI standards, are appropriate for the posted speed limit and type of work.

Other standards that you should follow in your PPE program:

Material Safety Data Sheets (MSDS)- MSDS contain requirements for PPE when handling or using specific hazardous chemicals. These should be followed.

Owner's/Operators Manuals for equipment and machinery- Most hand tools, power tools and grounds keeping equipment will come with users instructions that contain recommended PPE when using them. This may also be present on warning labels on the tools/equipment. Manufacturer's recommendations should be strictly followed.

User's Instructions for Specific PPE- All personal protective equipment comes with a booklet or package insert containing use, fitting, and care instructions, as well as user warnings about the limitations of protection offered. This material MUST be provided to the employee to whom the PPE is issued. This information also includes specific details about what hazards the PPE is designed to protect employees from and under what conditions it can be safely worn. These instructions should be followed to the letter. For example, if you are going to issue a type of eye protection for windblown dust, you must be sure that the manufacturer lists "blown dust" as a hazard for which the protective device you have is approved/designed for. If not, you do not have "appropriate" PPE as required by regulatory standards.

REMEMBER- Regulatory PPE requirements are *PERFORMANCE BASED*. PPE issued and used must be appropriate for the hazards according to both the PPE manufacturer and chemical/equipment/tool manufacturer, to be considered "appropriate" and therefore "compliant".

PPE vs. Engineering Controls and Administrative Controls

The use of personal protective equipment should never be considered a replacement for isolating employees from the hazard through the use of **engineering controls.**

- **Engineering Controls** are changes made to equipment or the process to reduce or eliminate hazards. Examples are enclosure (guarding, shielding or isolation), substitution and modification (ventilation). An employer should always strive to use engineering controls where feasible. In some cases, such as airborne hazardous dusts/vapors and noise, there is a legal requirement to do so.

- **Administrative Controls** reduce employee exposure to hazards by removing them or providing separation between them and the hazard. An example is to limit access to hazardous areas. This approach is not as effective for employees performing a hazardous operation as it is for other employees working in the area.

The reality of municipal operations is such that PPE is required often for maintenance type activities, temporary exposure to hazards, and cases where the engineering controls do not control the hazard enough. For example, guards must be maintained on mowers, grinders, and saws, but the level of hazard to the eyes is still high enough to also require PPE.

Step 1- Write a PPE Policy

Like any good safety program, a personal protective equipment program should be rooted in a written statement of policy signed by upper management and reviewed/updated periodically. For most municipal entities, this needn't be longer than 1-2 pages. Some organizations with purchasing/stockroom departments, extensive use of special protective equipment, or complex training needs may need a more detailed and longer document.

The policy should be in a similar format to other personnel or safety related policies in your organization and should include:

- A statement that all employees will wear the PPE required for the tasks that they perform.
- A statement that the employer will provide required PPE.
  - As a general rule, employers must provide PPE at no cost to employees.
  - Very personal PPE, such as basic safety footwear, basic work clothing and prescription safety glasses are not required to be provided at employer cost.
  - The employer is still responsible to ensure that employee owned PPE meets applicable ANSI standards, is appropriate for the hazards, and is in serviceable condition.
  - Any PPE that is worn for chemical exposures or can become contaminated (i.e. rubber boots, chemical protective clothing) must be provided at no cost to employees who need it.
  - Your policy should clearly state what PPE the employer will provide and what PPE employees must provide.
- A statement that employees will care for PPE, store it properly, and turn defective/damaged/worn out PPE in for replacement. (Expendable items excepted).
- Duties of other personnel (i.e. supervisors, dept. heads, finance)
- An explanation of how/by whom hazard analysis and task specific PPE requirements have been/will be done, and where the original signed forms are filed.
- An explanation of where employees can find task specific PPE requirements.
- An explanation of how PPE will be purchased, kept in inventory, and made available to employees who need it.
- An explanation of how initial and periodic employee PPE training will be delivered and documentation of training filed.
- A description of measures that will be used to enforce this safety policy. What can be expected if it is violated?

Step 2- Conduct Hazard Analysis of Job Tasks

This is the most often missed step in developing a PPE program. Since 1994, ME 1910.132 has required that employers *"assess their workplaces to determine if hazards are present, or likely to be present, which necessitate the use of personal protective equipment".* This assessment **must be documented** to include a written certification that:

- Identifies the workplace/task evaluated
- Identifies the person certifying the analysis has been done, and is signed by them
- Includes the date of the hazard assessment
- Includes language that identifies the document as "certification of hazard assessment"

The documentation that this has been done must be retained on file for inspection.

If you are performing Job Safety Analysis (JSA), also known as Job Task Analysis (JTA), or Task Hazard Analysis (THA), you can simply include PPE related hazards and PPE requirements in the JSA document, as long as the above information is included and it is signed.

Attachment A is an example of a form that could be used for Hazard Analysis and Appropriate PPE Assignment.

When performing this analysis, it is critical that you avoid several common mistakes. Do not simply write down what PPE your employees currently wear when performing a task, or what they want to wear. Do not list PPE by department and require employees to use their own judgment about when it is needed. Do not "tabletop" the analysis based on memory or assumptions about the tasks- go out and look! Falling into any of these "traps" will result in a PPE program that fails to meet regulatory requirements, make the analysis difficult to enforce and will leave employees open to unnecessary injuries.

The general framework for conducting a hazard analysis is to:

- Identify the tasks performed by each department*
    - Start with major tools and equipment (i.e operating the pipe saw, bench grinder, chainsaw, power mower, tire machine)
    - Then break the broader tasks down into manageable ones (i.e. working where exposed to traffic, moving furniture and supplies, operating heavy equipment, work at elevations over 4' etc.)
    - Finally, look for specific chemicals that might create special hazards and require PPE when used (i.e. using drain cleaners, floor strippers, gasket removers, changing LPG cylinders)

- Go out and evaluate each of these identified tasks
  - Watch it being performed- look over, under, around
  - Review operator's manuals, MSDS, etc.
  - "Process the scene" look for evidence of hazards (i.e. metal chips on floor, chemical droplet marks on wall)
  - Review injury logs- Have employees been injured doing this?
  - Ask "what if" to find hazards associated with unusual conditions or equipment failure (i.e. wrench breaks, mower blade shatters, hose leaks, battery explodes)
- List the hazards in simple phrases:
  - Flying debris
  - Blown dust
  - Falling object
  - Rolling object
  - Penetration/puncture
  - Fire/explosion
  - Splash/spray
  - Cut
  - Abrasion
  - Splinter/sliver
  - Contact with (irritant, toxin, etc.)
  - Burn
  - Vibration
  - Excessive noise
  - Fall (>4' potential requires PPE)
  - Extreme heat/cold
  - Light radiation
  - Electrical contact
- Identify the *body parts* that are affected by each hazard or potential hazard:
  - Head
  - Ears
  - Face
  - Eyes
  - Whole body
  - Arms
  - Hands
  - Legs
  - Feet
  - Respiratory system

REMEMBER- The need for PPE is based on the *potential* for a hazard and the employee's exposure to the *potential* hazard. It is not based on your injury experience. On the flip side, a previous injury is clear evidence of a hazard.

***Note-** Most PPE program guidance documents are written for industry and are set up to evaluate departments or areas for hazards and PPE requirements. This approach does not suit the diverse operations of municipal entities very well, so we advocate a task based approach. There may be specific areas in your workplaces where you find that the hazards dictate that you require certain PPE, such as hard hats, safety glasses, or hearing protection. If so, these should be posted with an ANSI/OSHA *DANGER, WARNING*, or *CAUTION* sign identifying the required PPE in the area.

Step 3- Select Appropriate PPE for the Hazards Identified

As you identify the hazards of each task, or shortly after this is done, it is time to select the *appropriate* PPE to protect each affected body part. This is the most "technical" part of the process, but with a methodical approach and a little background information, proper PPE can be assigned and employees properly protected.

Attachment A is an example of a form that could be used for Hazard Analysis and Appropriate PPE Assignment. Attachment B can be used to identify specific PPE issued by job title.

Remember, if an owner's manual, manufacturer's instructions, or MSDS state that certain PPE should be worn, you should start there. *THEN* look at the way that you are using the tool, equipment, or chemical to determine if your specific situation requires more protection.

The final arbitrator of whether or not PPE is appropriate for a given hazard is the PPE manufacturer's literature for that piece of equipment. So if the hazard is liquid splash, then the literature for the PPE should list "splash" or "spray" from the type of liquid in question as something that the device is designed to protect employees from. If you have a helium laser, then the "laser glasses" you require and provide should list helium laser beam exposure at the appropriate power level as a designed protection criteria.

General PPE Guidelines by Body Part

Head Protection (Hardhats)

Hardhats are required by regulatory standards when there is potential injury to the head by falling objects or where there is potential head contact with energized electrical equipment. The latter hazard is usually limited to linemen and electricians. An employer using "best practices" for employee safety would also require and provide hardhats in areas where there is a likelihood of banging or bumping the head into a fixed object, a common cause of head injuries in municipal operations.

Examples of tasks where hardhats might be necessary are: firefighters working in hose towers, tree trimming/felling, working with others above who could drop or kick objects down, working with heavy tools, pipe, or other material over ones own head, any task where material is being lifted by a chain fall, hoist or crane, and work in tight/congested mechanical spaces where head impacts can be expected.

There are 2 basic “Types” of hardhats:

- Type I- The traditional “American” style hardhat designed to protect against top impacts and suitable for most municipal operations.
- Type II- The “Canadian” style hardhat with an impact liner and designed to provide some side impact protection.

Hardhats are also classified for electrical protection:

- Class G- For “general” use and suitable for most municipal applications.
  These hardhats protect against impact and electrical contact up to 2200 volts.
- Class C- For “conductive” offer no electrical protection.
- Class E- For “electrical” protection up to 20,000 volts for electric utility personnel.

Eye and Face Protection

Eye and face protection is required by regulatory standards anytime there is a potential exposure to flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially hazardous light radiation (welding flash, burning flame, UV lights, lasers).

The selection of proper eye and face PPE is a little more complicated than for other equipment. Care must be taken to determine if the hazard is to the eyes only or eyes and face. For example, a drill or sawsall create flying particle hazards that could injure the eyes, but a handheld grinder or abrasive wheel could cause serious face injuries as well, requiring more protection. A mild corrosive might present an eye hazard, but a concentrated one could cause massive facial burns, requiring eye and face protection.

Some basic guidelines for selecting eye/face protection are:

- **Safety Glasses**
  - Must have approved side shields when worn for potential flying object hazards
  - Are generally appropriate for large low energy flying particles and objects that could be expected from hand tool use and low energy power tools such as handheld drills, and for certain fixed power equipment such as saws, drill presses and bench grinders when all required guards are properly in place.
  - Are NOT appropriate for:
    - Blown or flying dust hazards
    - Liquid chemical splash

- The old safety professional's adage is that *"Safety glasses are what you wear when you don't expect something to come flying at your eyes."* If you expect things flying at your eyes, then better protection, such as goggles are more appropriate. With this in mind, safety glasses, with side shields, should be worn for:
  - General hand tool use and maintenance work (check out what causes most serious eye injuries seen in eye surgery centers- pieces of screwdriver, wrench, hammer and nails/pieces of fastener)
  - Bench top or desk top repairs where spring loaded parts are present
  - Operation of power mowers
  - Operation of mobile equipment without windscreens
  - Electrical service work
- If employees must wear corrective lenses, there are two choices- 1) Obtain corrective eyewear meeting the ANSI standard. 2) Wear ANSI protective eyewear over prescription lenses. Special oversized safety glasses are made to wear over regular glasses. Contacts work in some situations, but should not be worn in dusty environments or around chemicals.
  - Removable side shields are acceptable as long as they are labeled as meeting the ANSI standard and are worn anytime that glasses are worn as protective eyewear.
- **Goggles**
- Direct Vent Goggles- have small holes around the sides for ventilation. They are often called "woodworking goggles" and as this implies, they are appropriate eye protection for:
  - Woodworking, compressed air use, and other tasks where airborne or blown dust is the hazard.
  - Weed whackers (string trimmers) and other grounds keeping equipment use that can cause eye injury by throwing material up and under safety glasses.
  - Indirect Vent Goggles- have vents that prevent liquid from entering. They are often called "chemical goggles".
    - They are the only acceptable eye protection for chemical hazards to the eyes.
    - They are also suitable for liquid pressure washing.
    - Modern anti-fog technology has gotten so good that many employers use them for tasks once protected by direct vent goggles.

- **Face Shields**
  - Are NEVER used alone. They are secondary eye and face protection.
  - Are worn over safety glasses or direct vent goggles for high energy impact hazards, associated with high energy power tools such as: abrasive wheel saws, pipe saws, chain saws, needle guns, and ram sets.
  - Are worn over indirect vent goggles for hot or corrosive liquid splash hazards to the eyes and face.
- **Welding/Burning Protective Equipment**
  - Must provide protection against the expected levels and types of light radiation AND flying object hazards associated with the work being performed.
  - Safety glasses should be worn under welding shields. Eye injuries often occur when a welder is using a slag hammer or needle gun to remove slag with the face shield up.
  - A dark enough shade for the work being done must be worn. There is a tendency among welders to wear a shade dark enough to avoid the acute effects ("welder's eye") of light radiation exposure, but not adequate to prevent the long term effects such as cataracts. A shade of 3-6 is appropriate for gas cutting/brazing, 7-8 for most "stick" welding done in the average public works facility. TIG or MIG welding may require a 10-14 shade for adequate protection. OSHA 29 CFR 1910.133 contains a table with *minimum* acceptable shades. ANSI Z87.1 contains a table of more conservative recommended shades to prevent long term effects on the eyes.
- **Lasers and UV Lights**
  - Alternate light sources, "black" lights, laser pipe aligners, and laser levels all present hazards to the eyes under certain conditions.
  - The operator's manuals should be consulted for the proper color and shade of eye protection needed.

Hand Protection

Many types of gloves are available to protect worker's hands from various hazards. Since hand injuries are very common in municipal workplaces, a good hand hazard analysis and glove selection/assignment should be a high priority in your PPE program.

OSHA/ME 1910.138 requires that *"Employers shall select and require employees to use appropriate hand protection when employees' 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".*

Examples of gloves, and the types of hazards that they are appropriate for are:

- **Cotton work gloves-** Minor abrasion hazards.
- **Leather or "coated" work gloves-** Abrasion and minor puncture hazards
- **Cut resistant gloves-** Metal mesh or Kevlar cut resistant gloves should be required for:
  - Operating slicers, manual kitchen cutting
  - Changing saw blades, chipper knives
  - The "off" hand when utility knives are used in close quarters
- **Puncture resistant gloves** (i.e. "frisker") gloves are available for police officers and other employees exposed to accidental needle sticks and similar hazards.
- **Welder's gloves** and other temperature protective gloves for handling hot material.
- **Chemical protective gloves-** There is an old industrial hygienist's saying that *"a rubber glove ain't a rubber glove"*. The point is that there is no one universal rubber or plastic glove that provides protection against all chemicals. Some important points to consider when selecting chemical protective gloves:
  - The common latex cleaning/dishwashing glove and latex surgical gloves offer little or no protection against most hazardous chemicals.
  - Common glove materials include neoprene, PVC, viton, butyl, nitrile and composite materials such as "Barrier" and "Silver Shield".
  - To select the proper glove *material*, review the MSDS for the substance, which will usually list one or more glove materials that are recommended. Chemical glove manufacturers also publish "permeation tables" or "compatibility charts" for common chemicals, with projected breakthrough times.
  - To select the proper glove *type*, look at the task and possible splash, immersion and contact hazards. For example, short gauntlet type gloves may work fine in a parts washer where only small parts are cleaned, but a full arm length glove (to the shoulder) may be needed if large parts are immersed in the tank and manually cleaned.
  - *REMEMBER*- Chemical protective gloves are an expendable item and should be discarded and replaced within the safe permeation times listed on the tables. They should never be left lying around and used day after day.

Foot Protection

Minimum regulatory standards require that safety footwear be used any time that:

- *There is a danger of foot injuries due to falling or rolling objects*.
- *There is a danger of foot injuries due to objects piercing the sole.*
- *Employee's feet are exposed to electrical hazards*.
- *Employee's feet are exposed to chemical hazards.*
- *Employee's feet are exposed to cutting hazards.*

The most basic foot protection is the "safety toe" shoe, sometimes still referred to as "steel toe", even though most now use composite materials in the toecap. Most maintenance and "public works" type jobs involve handling heavy tools or materials that could cause a foot injury if dropped, and/or expose employees feet to rolling tires, pipe, etc. that meets the minimum regulatory requirements for wearing protective footwear. Some items to keep in mind when selecting safety footwear:

- Safety toe caps are rated for "compression" and "impact". There is a C- 50/I-50 rated toe cap (compression- 50#, impact- 50#) that is suitable for parcel delivery drivers and others where the hazard is fairly light objects. These are not suitable for most maintenance, public works, or construction type tasks. C-75/I-75 should be the minimum standard for most municipal tasks.
- "Tarsal guard" footwear has an additional shield that protects the instep of the foot and is used by pipers and loggers and other employees exposed to the hazard of heavy objects rolling over the foot.
- If the hazard of objects puncturing the sole is present on a job, then safety footwear should also have the "PR" or *puncture resistant* rating.
- Electricians and any other employees who work exposed to energized electrical equipment over 50 volts also need an "EH" or *electrical hazard* rated shoe.
- "SD" or *static dissipative* safety footwear is available for employees who work with static sensitive electronics or flammable liquids. Two ratings SD- 1 and SD-2 are available.
- "EC" or *electrically conductive* footwear is designed for employees who work with explosives, powdered metals, or extremely flammable gases/liquids. They should generally not be worn in municipal environments because they increase electrocution hazards.
- Chemical protective boots are available in many materials, like gloves and chemical protective clothing. Follow the same guidelines (MSDS and manufacturer tables) to select proper boots for the hazards present.
- Chainsaw boots" are needed for chainsaw operation and certain other high-risk tasks. Several types are available, including a fabric over boot (mukluk), armored rubber boot, and a Kevlar "sock" worn inside conventional boots.

- "Blasters' boots" are available for employees who operate high-pressure crack sealers, water lasers etc., to protect against the high pressure and temperature hazards.

Safety footwear is now readily available in most shoe styles ranging from logging and work boots, to dress shoes, sneakers, and pumps. Sole types are rated by most manufacturers for slip resistance in different environments, such as outdoors, concrete floors, wet surfaces etc. With a little research, anyone can find the appropriate footwear for the hazards of their job that is comfortable and of the "style" that they prefer.

Hearing Protection

Hearing conservation programs are covered in a separate "Best Practices" guide. Although most municipal employees are not exposed to noise above the daily "Action Limit" dose set by regulatory standards, hearing protection should always be worn at noise levels above 85 dBA. A good rule of thumb is that hearing protectors should be worn when performing any task that would require raising your voice to talk to someone 5 feet away. This includes areas such as pump and compressor rooms. Examples of tasks likely to create noise levels greater than 85 dBA include, chainsaw operation, jack hammering, heavy equipment operation, and pneumatic tools.

Hearing protectors come in many different types:

- **Disposable earplugs**. These are effective but subject to improper placement in the ear, reducing their protection.
- **Reusable earplugs**. These are actually "semi-disposable" because they need to be periodically replaced. The key issue with these devices is that they should be washed daily.
- **Canal caps**. These are a "stethoscope" type yokes with pads that close off the external ear canal. They are good for employees who must wear hearing protectors frequently, but also must put them on and take them off often. They are semi-disposable and require frequent cleaning.
- **Custom molded earplugs**. Are made specifically for each employee by an ear doctor. They must be replaced every few years and must be kept clean.
- **Earmuffs**. Are generally the *least* effective hearing protectors. They are useful however, especially for periodic or infrequent use. Hair under the seals can greatly degrade the protection that they offer. They should not be used by persons wearing eyeglasses.

All hearing protectors have a "Noise Reduction Rating" or NRR. The higher the better. Generally, hearing protectors used in municipal tasks should offer an NRR of at least 29 dBA.
Working in areas over 100 dBA require "double" hearing protection - Earmuffs and plugs. Some wastewater plant blower rooms fall into this category.

The hearing protection offered should be comfortable so the worker will wear it.
It is suggested that workers have a variety of hearing protection devices available to them, including at least one type of earmuff and two different forms of earplugs, to fit the individual needs and wants of the worker.

Respiratory Protection

Respiratory protection is the subject of a separate "Best Practices" guide. If you use respirators, you must have a written respiratory protection program. This must cover such things as respirator selection, use, duration limits, medical clearance, fit testing, training, cleaning/storage and emergency procedures.

NEVER just give an employee a respirator, even a disposable one, without a proper industrial hygiene assessment of the hazards/exposures and a comprehensive respiratory protection program. The use of improper respirators, or poorly fit respirators can result in serious injury or illness!

Body Protection

Protection for the trunk, legs, arms and whole body can take many different forms, depending on the hazard, as well as the *degree*. For example, a vinyl lab apron may be appropriate for handling a corrosive liquid in small quantities on a bench top, but if the same corrosive liquid is being transferred from a tank or drums, and a whole body splash/spray is possible, a full slicker suit or chemical protective coverall may be needed.

Some common examples of body protection, and the hazards that they are usually appropriate for are:

- **Chemical Protective Clothing-** This can take many forms, from a lab apron, impervious lab coat, "slicker suit", or full body coverall with or without hood and booties.
  - The material may range from a disposable Tyvek or "Healthguard" for dusts and grease residue to PVC, neoprene, Viton, butyl, or one of many modern composite chemical resistant materials.
  - It is important that the material offer adequate protection against penetration of the chemicals that the employee is potentially exposed to. The MSDS for the chemical's and the garment manufacturer's *"Permeation Table"* for resistance to specific chemicals should be consulted.
  - The *type* of garment should be based on the potential exposure and the level of hazard to the employee if the substance contacts their skin.
- **High Visibility/Reflective Apparel-** Should be required for all employees working in or near roadways, and in parking lots etc. exposed to traffic.
  - ANSI 107 Class 2 garments (designed for traffic speeds over 25 mph) should be the minimum standard for municipal service. Class 3 garments, for high-speed zones are even more visible, especially at night.
  - Garments are available in many types, with vests being the most common and practical for most municipal operations. Tee shirts, jackets, and rain gear are also common.

- **Flame-Resistant Clothing-** is necessary for certain jobs where electrical arcing/flash accidents are possible, flame-producing equipment is used, or for welding/burning operations.
  - Welding bibs and jackets are available in leather and synthetic fire resistant fabrics such as Nomex or PBI.
  - For other exposures, or employees who weld frequently, fire resistive clothing is available in just about every cut and style imaginable to suit a particular need. Work jackets, coveralls, jeans, polo shirts, rain jackets, and traffic vests are examples. Fabrics such as Nomex and PBI offer better protection than treated fire resistant cotton.
  - If electricians or linemen are employed, then clothing for protection against arc flash burns is needed. Consult NFPA 70E- *"Standard for Electrical Safety Requirements for Employee Workplaces"* for guidance.
- **Cut Resistant Clothing**
  - Chainsaw chaps or pants are required, as part of the PPE ensemble, when chainsaws are operated. Protective gear for chainsaw use is found in a separate standard.
  - Cut resistant protective sleeves should be required when operating power hedge trimmers and other tasks where the arms are exposed to severe laceration hazards.

Requirements for Personal Floatation Devices, Fall Protection and Seat Belt use are covered in other standards and are not included in the PPE standard.
However, when conducting the job hazard assessment consideration should be given to these exposures and safeguards.

- **Personal Floatation Devices-** Are available in many types and styles. At a minimum, *work vests* should be required to be worn whenever employees work over water, from boats, floats, or piers and/or are otherwise exposed to falling into or being pulled/pushed into the water.
- **Fall Protection-** Is a complex subject that is not covered in detail in this "Best Practices" guide. Some basics to consider, as part of your PPE hazard assessment and PPE selection are:
  - Fall protection should be provided and required anytime that employees are exposed to a fall of 4' or more, and are not protected by standard safety railings.
  - Fall protection is required in any powered aerial lift at any elevation. Employees must tie of to the equipment. Tie off to objects outside of the equipment is dangerous and illegal.
  - Simply buying harnesses and lanyards is not "providing fall protection". Anchorages and tie off methods require planning. All employees who use fall protection and their supervisors must be thoroughly trained.

- There are 3 types of fall protection:
  - **Positioning-** Like a pole climbing belt or window cleaner's rig. This holds an employee in a position where they cannot fall.
  - **Restraint-** Employees are tied off to a fixed point, like on a flat roof or platform, so that they cannot step off or approach the edge.
  - **Fall Arrest-** Employees wear a full body arrest harness, a shock absorbing lanyard, and are tied off with compatible hardware to an overhead anchorage point capable of withstanding a 5000# static load. If they fall, the lanyard stops them and absorbs some of the energy. Employees who have fallen in this manner must be rescued quickly.

- **Seat Belts-** (or "passive restraints") These are found in nearly all vehicles and on mobile equipment that is equipped with roll over protective cabs or roll over protective structures (ROPS- e.g. a "roll bar").
  - Seatbelts are highly effective in preventing death and reducing injury in collisions and roll-overs. For example, in a forklift roll-over, a very common workplace fatal accident in the U.S., seatbelts have been shown to be nearly 100% effective at preventing fatal injury.
  - Seatbelts are the single most effective PPE *ever* developed. No other PPE even comes close to their ability to prevent/reduce injury.
  - Failure to use seatbelts may result in a Maine Department of Labor citation under Section 5(a)(1) the "general duty clause". 29-A MRSA requires that seatbelts be worn in all vehicles operated in the State of Maine. DOT regulations make seatbelt use mandatory in commercial vehicles.
  - Employers are obligated to reinstall seatbelts, per the manufacturer specifications, if they have been removed or damaged. Also, employers are obligated to retrofit older equipment with seatbelts if the manufacturer has issued a recall or made a retrofit kit available.
  - A good PPE hazard assessment should include a close look at all vehicles and equipment for seatbelts, the need for seatbelts and whether or not they are being worn.

Step 4- Provide Written PPE Requirements by Task

Once you've assessed the hazards, and selected appropriate PPE for them, it's time to communicate *in writing* to employees what PPE is required for each task. The method that you choose to do this will vary with the size and complexity of your organization. Some organizations simply take the forms used for hazard assessment/PPE selection and provide them in binders in each department. Others type just the required PPE for each job task, by department, and provide this in the same binder used for MSDS at each facility. Including this information in an employee safety manual or on a computer database are other options. The basic requirement, and goal is to have the information readily available to "look up" if an employee or supervisor isn't sure of the PPE for a task. The best practice is to use the hazard assessment that outlines the PPE as a training tool during new hire orientation.

Step 5- Set up a Purchase/Inventory of PPE

How you decide to do this will also vary depending on the size and complexity of your entity. If you have a purchasing and/or stockroom system already, this should be incorporated into it. The goal is to ensure that the proper PPE is available to the employees who need it. Remember, many PPE items, such as earplugs and gloves, are expendable and it is unacceptable to have employees without PPE because you "ran out". Other items of PPE, such as safety glasses, goggles, and earmuffs, are "semi- expendable" and wear out or get damaged easily. Employees must be able to get replacements easily, so spares should be on hand. Even durable items like hardhats and fall protection harnesses will fail inspection and require replacement at some point. A method of doing this in a timely manner should be thought out ahead of time.
Attachment "D" is a sample PPE Inventory List.

PPE comes in many different styles. It is worth the effort to try different brands and models to find PPE that your employees feel works best and is most comfortable. Such PPE is more likely to be used and used properly.

Step 6- Require Proper Care, Inspection and Storage

Like any other equipment, PPE requires a certain amount of care to last and protect properly. Some considerations are:

- Cleaning and care instructions are provided with each piece of PPE and should be carefully followed. For example, modern fog resistant eye protection will be scratched and quickly rendered useless if cleaned by wiping with paper towels.
- As an employer, you are obligated by regulatory standards to ensure that PPE is maintained in clean and sanitary condition.
- Modifications should not be made to PPE without the procedure being approved by the manufacturer.
- Each employee should be required to perform a visual "quick check" on PPE before each use. This is especially true for chemical protective clothing, hardhats, fall protection, respirators and visibility garments.
- Some PPE, such as respirators, fall protection, and hardhats should be inspected by someone other than the user at least once per year.
- All PPE should be stored properly. Eye protection, respirators, and hearing protection require clean dust tight containers. These could be zip lock bags, pouches or cabinets. Goggles, face shields etc. should never be left hanging unprotected and dirty!

Step 7- Provide and Document Employee Training

Employees must be trained in the proper selection, use, care and limitations of the PPE that they will be required to use. This must be done initially and again if:

- New hazards are added to the workplace
- New PPE is introduced to the workplace
- Observations, inspections, or accidents reveal inadequate PPE use In any case,

periodic "refresher" training is a good idea.

Numerous videos, packaged programs and on-line training resources for employee PPE training are available. However, "generic" training alone will not meet even minimum employee training requirements. You must communicate certain "employer specific" information also:

- The specific PPE requirements for tasks that employees will perform
- Proper fitting, use, inspection and care of the specific PPE that employees will use
- Limitations of the protection provided by the specific PPE that employees will use
- Where to locate the hazard analysis and PPE requirements for specific job tasks
- When to replace worn-out PPE and how to discard contaminated PPE.

Regulatory standards are very clear that you must train employees and they must *demonstrate understanding* by properly wearing the PPE specified for each task. If PPE is not properly being used, your training program is inadequate and retraining must be done. Attachment "C" may be used for documenting training.

Step 8- Provide Ongoing Enforcement, Observation, and Feedback to Ensure Proper Use of PPE

- Just **DO IT!**
  - **D**efine what PPE must be used for each task by providing written requirements and training to each employee
  - **O**bserve- Get out and look! Hold employees and supervisors accountable for proper PPE use.
  - **I**ntervene- Provide reminders and feedback for both proper and improper PPE use.
  - **T**est- Are we getting any better? If not, start over with "D"

Sources of Additional Help

MMA , Risk Management Services - Please call Loss Control Services at (800) 590-5583 or visit our website at www.memun.org/RMS/LC/default.htm.

MMA Safety Shorts

OSHA Standards online at @ www.OSHA.gov.

- General Requirements 29 CFR 1910.132
- Eye & Face Protection 29 CFR 1910.133
- Head Protection 29 CFR 1910.135
- Foot Protection 29 CFR 1910.136
- Hand Protection 29 CFR 1910.138

OSHA Fact Sheet

The USDOT, Federal Highway Administration, Manual on Uniform Traffic Control Devices (MUTCD) @ http://mutcd.fhwa.dot.gov.

Attachment A - Personal Protective Equipment Hazard Assessment

PAGE_____OF _____

	HAZARD KEY	BODY PART KEY	PPE REQUIRED KEY
EMPLOYER/DEPT: JOB TITLE: LOCATION(S) OF JOB DUTIES: ANALYSIS DONE BY: SIGNATURE: DATE:	1. CHEMICAL EXPOSURE A. SKIN/EYES B. INHALATION 2. LIGHT/RADIATION 3. TEMP. EXTREMES 4. IMPACT/FALLING OBJECTS 5. PENETRATION HAZARD 6. CUTS/ABRASIONS 7. COMPRESSION/CRUSH 8. PARTICLES/DUST 9. THERMAL BURNS 10. SLIP/FALL/SURFACES 11. FALL ELEVATION 12. VEHICULAR TRAFFIC 13. NOISE 14. ELECTRICAL SHOCK 15. OTHER (NOTE)	a. HEAD b. FACE c. EYE(S) d. EAR(S) e. RESPIRATORY SYSTEM f. TRUNK/TORSO g. ARM(S) h. HAND(S)/FINGER(S) i. LEG(S) j. FEET/TOE(S) k. ENTIRE BODY l. OTHER	A. HARD HAT B. CHEMICAL GOGGLES C. SAFETY GLASSES D. FACE SHIELD E. EAR PLUGS F. EAR MUFFS G. BODY HARNESS H. GLOVES (LIST TYPE) I. SHOES/BOOTS (LIST TYPE) J. RESPIRATOR (LIST TYPE) K. HIGH VISIBILITY VEST L. FALL PROTECTION M. REFER TO: N. OTHER (1) O. OTHER (2)

ACTIVITIES / TASKS	POTENTIAL HAZARDS	BODY PART(S)	PPE REQUIRED

Attachment B - Job Title PPE Requirements

This form is used to list the specific personal protective equipment required for each job title in the_____department.

Job Title	PPE Requirements

Attachment C - Record of Training

Page____ of _____
Total # Towns: Total # People:_____

Date: _____

Location:_____

Training Subject:_____

Instructor(s) Name(s):_____

Instructor(s) Signature(s): _____

_____

Handout/Materials Distributed: _____

_____

_____

NAME(Please Print)	**EMPLOYER** (City/Town)	**JOB TITLE OR DEPARTMENT**

Attachment D - PPE Inventory List

This form is used to list the various types, brands, model numbers, and vendors. In addition, this form may be used to let employees know where this equipment can be obtained.

PPE Type	Brand and Model #	Vendor	Stored Location