



Designing a PPE Program

What is personal protective equipment (PPE)?

PPE is equipment worn by a worker to minimize exposure to specific occupational hazards. Examples of PPE include respirators, gloves, aprons, fall protection, and full body suits, as well as head, eye and foot protection. Using PPE is only one element in a complete safety program that would use a variety of strategies to maintain a safe and healthy occupational environment. PPE does not reduce the hazard itself nor does it guarantee permanent or total protection.

What is the role of personal protective equipment (PPE)?

Hazards exist in every workplace so strategies to protect workers are essential. The priority should be the elimination and control of hazards at their source or along the path between the source and the worker. Many methods are available, and those most appropriate to the specific situation should be used.

How do I design a PPE program?

A PPE program must be comprehensive. It requires commitment and active participation at the planning, development, and implementation stages from all levels: senior management, supervisors, and workers. A good PPE program consists of these essential elements:

- workplace survey
- selection of appropriate controls
- selection of appropriate PPE
- fitting
- training
- management support
- maintenance
- auditing of the program

The organization's occupational health and safety policy should be a statement of principles and general rules which serve as guides to action. Senior management must be committed to ensuring that the policy and procedures are carried out. PPE programs must be, and must be seen to have equal importance with all other organizational policies, procedures, and programs.

Why should I do a workplace survey first?

The first step in the development of a PPE program is to identify the particular hazards at the worksite. Some of these may be obvious, but an onsite inspection should still be performed. Work practices, job procedures, equipment, workplace layout, and individual factors may play a deciding role in the type of controls recommended for a certain job. Recognizing potential hazards should include reviewing the manufacturing or other processes, maintaining an inventory of physical and chemical agents encountered routinely or periodically, examining all the different job activities of a work area, and studying the existing control measures. Every effort should be made to control all hazards, where possible, at the source.

Particular attention should be paid to job requirements that may have important consequences for the PPE selected because some types of hazards require multiple PPE solutions. For example, working with chlorine requires respiratory and eye protection because chlorine irritates both the respiratory system and the mucous membranes of the eyes. It is important to continually review Material Safety Data Sheets (MSDSs) as part of the inspection, as they indicate the types of hazards associated with specific materials.

A workplace evaluation should involve the joint health and safety committee as an integral part of the survey team.

What steps are involved in the selection of PPE?

Once the need for PPE has been established, the next task is to select the proper type. Two criteria need to be determined:

- the degree of protection required, and
- the appropriateness of the equipment to the situation (including the practicality of the equipment being used and kept in good repair).

The degree of protection and the design of PPE must be integrated because both affect its overall efficiency, wearability, and acceptance.

The following are guidelines for selection:

a) Match PPE to the hazard

There are no shortcuts to PPE selection. Choose the right PPE to match the hazard. On some jobs, the same task is performed throughout the entire job cycle, so it is easy to select proper PPE.

b) Obtain advice

Make decisions based on thorough hazard evaluation, worker acceptance, and types of PPE available. Once you have determined your PPE needs, shop around. Discuss your needs with trained sales representatives then ask for their recommendations.

c) Involve workers in evaluations

It is extremely important to have the individual worker involved in the selection of specific models. This assistance in selection can be achieved by introducing approved models into the workplace for trials in which workers have the opportunity to evaluate various models. In this way, much information regarding fit, comfort, and worker acceptability will be gained.

d) Consider physical comfort of PPE (ergonomics)

If a PPE device is unnecessarily heavy or poorly fitted it is unlikely that it will be worn. Note also that if a PPE device is unattractive or uncomfortable, or there is no allowance for workers to choose among models, compliance is likely to be poor. When several forms of PPE are worn together, interactions must be kept in mind. Use every opportunity to provide flexibility in the choice of PPE as long as it meets required legislation and standards.

e) Evaluate cost considerations

The cost of PPE is often a concern. Some programs use disposable respirators because they appear to be inexpensive. However when the use is evaluated over time, it is possible that a dual cartridge respirator would be more economical. Engineering controls might prove an even more cost effective solution in the long term and should be considered before PPE.

f) Review standards

Performance requirements of all standards must be reviewed to ensure that exposure to injury will be minimized or eliminated by using PPE. If PPE is exposed to hazards greater than those for which it is designed, it will not deliver adequate protection.

In Canada, various standards exist and the most recent should be used for guidance in the selection process. Two of the more common standards include the Canadian Standards Association (CSA) and the Bureau de normalisation du Quebec (BNQ). For example, the CSA Standard Z94.3-07 "Eye and Face Protectors" outlines types of eye protectors recommended for particular work hazards. It classifies eye protection according to the hazard. It allows the wide variety of PPE on the market to be slotted into various categories. A review of the plant survey and these categories will help in the choice of the proper eye protection for each specific job hazard.

g) Check the fit

When the selection has been made, the "fitting" component should be put in place. The key is to fit each worker with PPE on an individual basis. At the time of fitting, show each worker how to wear and maintain PPE properly.

When safety glasses sit halfway down the nose, protection from the hazard of flying particles is reduced, sometimes to the point where no protection is given. The calculated degree of protection will not be achieved in practice unless the PPE is worn properly at all times when the worker is at risk.

h) Perform regular maintenance and inspections

Without proper maintenance, the effectiveness of PPE cannot be assured. Maintenance should include inspection, care, cleaning, repair, and proper storage.

Probably the most important part of maintenance is the need for continuing inspection of the PPE. If carefully performed, inspections will identify damaged or malfunctioning PPE before it is used. PPE that is not performing up to manufacturers specifications, such as safety glasses with scratched lenses that have lost their ability to withstand impact should be discarded.

Procedures should be set up to enable workers to obtain replacement parts for damaged PPE, and to keep it clean. Respiratory protection devices require an elaborate program of repair, cleaning, storage and periodic testing.

Wearing poorly maintained or malfunctioning PPE could be more dangerous than not wearing any form of protection at all. The workers gain a false sense of security and think they are protected when, in reality, they are not.

i) Conduct training

No program can be complete without training to ensure the optimum use of PPE. Training should cover how to fit and wear PPE, how to adjust it for maximum protection, and how to care for it.

Training can be done on an individual basis or in group meetings. Training programs should emphasize the major goals of the program and reinforce the fact that engineering controls have been considered as the primary prevention strategy. It is not good enough to tell someone to wear a respirator just because management and/or legislation requires it. If the respirator is intended to prevent lung disorders, the workers should be informed of the hazards.

Workers and their supervisors will require training in when, where, why, and how to use the equipment to achieve the necessary level of protection. The workers to be trained include those who are exposed on a regular basis and others who might be exposed on an occasional basis, for example, in emergencies or when temporary work is performed in dangerous areas. The training needs and methods for all these workers are essentially the same.

j) Obtain support from all departments

Once the program is under way there will be a continuing need for involvement from management, safety and medical personnel, supervisory personnel, the health and safety committee, individual workers, and even the suppliers of the chosen PPE.

Education programs should continue on a regular basis. The most common reason for failure of a PPE program is the inability to overcome objections to wearing it. Each problem should be addressed on an individual basis.

k) Audit the program

As with any program or procedure implemented in an organization, the effectiveness of the PPE program should be monitored by inspection of the equipment and auditing of procedures.

Annual audits are common but it may be advisable to review critical areas more frequently.

It would be useful to compare the safety performance to those before the program began. This comparison would help determine the success or failure of a program. Without this detailed monitoring, recommendations concerning changes to a program or retention of the program could be unsupported.

Source: Canadian Centre for Occupational Health and Safety

Example of PPE program checklist:

The PPE program co-ordinator should consider the following:

Designing a PPE Program:

- Ensure the "hierarchy of controls" methods such as elimination, substitution, engineering controls, and administrative controls, are considered first. PPE is the last line of defence.
- Secure the active participation of all parties.
- Ensure that a program coordinator has been appointed.
- Observe the gradual phasing in of the PPE program on a pre-arranged time schedule.
- Re-evaluate program on an ongoing basis.

Promotional Strategy

- Publicize commitment to the program.
- Ensure a clear, concise company policy has been formulated.
- Examine the educational program.

Workplace Survey

- Review work practices, job procedures, equipment and plant layout.
- Use job hazard analysis techniques to integrate accepted safety and health principles and practice into specific operations.

Selection

- Choose PPE to match the hazard.
- Obtain advice on proper selection.
- Institute workplace trials.
- Consider the physical comfort of PPE.
- Evaluate cost considerations of PPE usage.
- Ensure PPE meets standards / certification (e.g., CSA, CGSB, NIOSH, ANSI).

Fitting and wearing

- Ensure program includes the individual fitting of PPE.
- Survey users to ensure PPE is worn properly.

Maintenance

- Ensure that workers know how to perform regular maintenance and inspection of their PPE.
- Ensure that workers can identify potential problems or defects with their PPE during the pre-use inspection or while wearing/using.

Training

- Verify that all users, supervisors, selectors, buyers, and storekeepers are trained.

Support

- Ensure that education programs are ongoing.

Auditing the Program

- Review the program at least annually.
- Review and compare production and safety performance records.

Worker responsibilities include:

Use of proper PPE

- Make sure you are wearing the right PPE for the job. Check with your safety representative if you are not sure.

Maintenance and inspection

- Inspect PPE before and after each use.
- Take care of PPE at all times.
- Clean all PPE after use.
- Repair or replace damaged or broken PPE.
- Store PPE in clean dry air - free from exposure to sunlight or contaminants.

Training

- Ensure you have been trained in how to fit, wear, and maintain PPE.
- Ensure training program includes information that explains when and what PPE should be worn, and why it should be worn.