

# Personal Protective Equipment

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## General

Methods of controlling potentially harmful exposures to hazardous substances or physical hazards found in workplace environments typically are classified into three broad categories:

- Engineering controls,
- Administrative controls, and
- Personal protective equipment (PPE).

The Occupational Safety & Health Administration (OSHA) considers the use of PPE the last option for controlling hazards in the workplace. However, many of the workplace environments visited by DAQ employees during the regular course of their duties can not be controlled through engineering or administrative measures. Thus, the use of PPE is a valuable resource to preventing injuries and illnesses to DAQ employees.

**Workplace Hazard Assessment** - (OSHA 1910.132, General requirements) - OSHA requires hazard assessments for typical work activities. The division safety consultant accomplishes this on an annual basis. Evaluation and selection of PPE has been made and appropriate PPE has been made standard. A source to purchase for each item has been arranged. OSHA requires PPE be provided, used and maintained in a sanitary and reliable condition. The State will furnish at no cost to the employee, personal protective equipment required by the job. The following paragraphs provide guidance for the use and purchase of PPE.

## **Employee Training** - (OSHA 1910.132 Training)

Employees required to wear PPE shall receive training in the proper use and care of the PPE. Periodic retraining shall be offered as needed. The training shall include the following subjects:

- When PPE is required to be worn.
- Which PPE applies to various work tasks.
- How to properly don, adjust and wear PPE.
- Proper care, maintenance, use of PPE.

No employee shall be issued PPE until they have successfully completed the training. It is the responsibility of supervisors to provide training to their employees on identifying when the selected PPE is necessary, on how to use the equipment, and on proper care and maintenance of it. The DAQ Safety Officer can assist supervisors with employee training.

## Standard Personal Protective Equipment

**Protective Clothing** - The purpose of personal protective clothing is to provide protection for the body from temperature extremes, inclement weather and injury from sharp or abrasive objects. At DAQ, raingear, and work coveralls are examples of protective clothing provided to employees who conduct field inspections.

**Raingear** - A complete light-industrial rain suit which includes bib overalls, with elastic suspenders and a coat with vented cape back and underarms with draw string hood; and constructed from waterproof polyester laminate.

**Work Coveralls** - Made to wear over your clothes to prevent regular work clothing from becoming dirty or soiled and to provide heat resistance protection.

**Eye and Face Protection** - (OHS 1910.133, Eye and face protection.) - All affected employees shall use appropriate eye or face protection when exposed to hazards from flying particles, molten metal, liquid chemicals, acids or caustics liquids, chemical gases or vapors or potentially injurious light radiation. All eye and face protection devices shall comply with ANSI Z87.1-1989, American National Standard Practice for Occupational and Educational Eye and Face Protection.

**Safety Spectacles** - Appropriate for general eye protection. Basic safety spectacles (or visitors glasses) are available to DAQ employees. Two types of lenses are available: clear lens and gray lenses. The clear lens version is for normal use. Safety spectacles with the gray lenses are appropriate when working in bright sunlight.

**Safety Goggles** - Appropriate for eye protection where exposures involve nuisance dust, chemical substances, and impact hazards. Safety goggles may be worn over normal corrective lenses and provide additional protection. DAQ standard safety goggles provide indirect ventilation and fog resistance lens making them highly suited for exposures involving chemical hazards.

**Prescription Safety Glasses** - For employees who wear glasses with corrective lenses, the State will provide prescription safety glasses at no cost to the employee. To obtain prescription safety glasses refer to the guide for [Prescription Safety Glasses](#).

**Head Protection** - (OHS 1910.135, Head protection.) - Employees working in areas where there is possible danger of head injury from impact, falling or flying objects, or electrical shock and burns must wear safety caps or hard hats. Safety caps or hard hats must comply with ANSI Z89.1-2003, American National Standard for Personal Protection - Protective Headwear for Industrial Workers - Requirements. Examples of falling hazards include, but are not limited to:

- 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;
- working below machinery or processes which might cause material or objects to fall; and
- working on exposed energized conductors.

**Hand Protection** - (OHS 1910.138, Hand protection.) - Suitable gloves shall be worn when hazards from chemicals, cuts, lacerations, abrasions, punctures, burns, and harmful temperature extremes are present. There is no national design criteria for hand protection devices, therefore hand protection must be selected based on the hazards of the task being performed. Two types of protective gloves are DAQ standard:

**Drivers Gloves** - Drivers gloves are thin leather gloves for general purpose use. They allow good dexterity while providing protection at the same time. The full leather gloves provide protection to the entire hand from abrasion and punctures. Slip-on driver's style gloves provide dependable, comfortable hand protection for a wide variety of jobs.

**Leather Palm Gloves** - Leather palm gloves provide maximum protection against abrasive and puncture hazards. They are durable cotton gloves with leather palms and fingers. The gloves have a 2 1/2 inch cuff.

**Foot Protection** - (OSHA 1910.136, Occupational foot protection.) - Safety shoes or boots with impact and compression protection are required for operations where employees who make field inspections are exposed to conditions which may cause foot injuries or where objects, tools or materials could be dropped or heavy materials or equipment could roll over an employee's foot. Shoes or boots with slip-resistant or oil-resistant soles shall be worn in areas subject to wet or oily surfaces. All protective footwear shall comply with ANSI Z41-1991, American National Standard for Personal Protection - Protective Footwear.

Employees who's job requires safety shoes may purchase them approved vendors. The State will pay an amount up to \$80 per year per employee for safety shoes that meet ANSI Z41.1-1991. A 2-year optional purchase plan is available for purchasing shoes up to \$160 for a 2 year period. See the [DAQ Safety Shoes](#) web page for more information.

**Hearing Protection** - (OSHA 1910.95 Occupational noise exposure) - Hearing protectors come in two forms: earplugs and earmuffs. Each has specific advantages based on wearer comfort, work environment, and cost. Both are designed to reduce the noise to an acceptable level, although this ability is based on the level and type of noise and on the type of hearing protector. For maximum noise reduction earplugs and earmuffs may be worn together.

**Ear Plugs** - Compression foam rolls up small for easy insertion into the ear canal. The earplug expands in the ear canal for a custom fit. The pre-shaped foam earplugs feature a smooth outer skin for maximum user comfort. The smooth, soil-resistant skin helps prevent foreign material from penetrating the surface while rolling prior to insertion. Flared end allows easy removal. Bright red-orange color offers fast visible compliance check. The ear plugs are washable for continued use and available with or without an attached cord. Noise Reduction Rating (NRR) 33 decibel (dB).

**Ear Muffs** - Over the head earmuffs, with soft padded headband offers protection for ears from all noise; even at low frequencies. Foamed vinyl cushions offer maximum comfort. Meets ANSI S3.19-1974. NRR 29 dB.

According to OSHA regulations, all employees who are exposed to noise in excess of an eight-hour time-weighted average sound level of 85 dBA (decibels, A-weighted) or any time the noise level exceeds 90 dBA shall wear hearing protectors. Hearing protectors worn where noise is above this permissible level must reduce the noise to a time-weighted average of 85 dBA or less.

When an employee is exposed to a 90 dB Time-Weighted Average (TWA) and engineering out noise levels is not feasible, hearing protection must be provided. Hearing protection can be in the form of earplugs or earmuffs. When selecting the proper type, look at the Noise

Reduction Rating (NRR) assigned to the protective device and observe the actual noise level at the job site. This will help you determine which hearing protection device is best for your application. For example, if your employees have an eight-hour time-weighted exposure of 100 dB, they need a hearing protector with an NRR of at least 11 dB. This will get them below the 90 dB rating.

It is the responsibility of supervisors to determine whether their work environments expose employees to noise above the permissible level. DAQ Safety Officer can assist supervisors in this evaluation by performing sound level measurements and evaluations.

**Respiratory Protection** - (OSHA 1910.134 Respiratory protection) - The ability of respiratory protective equipment to provide adequate protection is based on proper selection and fit and on training in the use of the respirator. Therefore, respirators which are intended for protection against harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors must not be obtained or worn by employees without the approval of the DAQ Safety Officer and in accordance with the Respiratory Protection Program.

**Fall Protection** - Working at heights exposes employees to severe risks. OSHA requires harnesses, lanyards, lifelines, and waist belts for many specific situations. Employees climbing tower ladders or ladders with safe climbing devices will don a full-body harness attached to the safe climbing device prior to ascending the ladder. Upon reaching the working height the employee must secure the full-body harness with a safety lanyard prior to disconnecting from the safe climbing device.

Prior to purchasing any fall prevention equipment consult with the DAQ Safety Officer to assure the appropriate fall prevention equipment meets OSHA standards.

**Working Over or Near Water** - In situations where employees will work over water or from small boats and there is a potential for drowning, employees must be provided with U.S. Coast Guard approved life jackets or work vests. These life jackets or work vests must be inspected for defects after each use.

**How to Order Personal Protective Equipment** - The follow chart indicates the standard personal protective equipment or protective clothing for Division of Air Quality employees. Supervisors should make their requests for purchasing PPE to the DAQ Safety Officer at [john.capers@ncdenr.gov](mailto:john.capers@ncdenr.gov) and 919-707-8486.