PUNATSANGCHHU-I HYDROELECTRIC PROJECT AUTHORITY

Standard Operating Procedure (SoP) on use and requirement of Personal Protective Equipment (PPE) for on-site operations

Definition

Personal Protective Equipment (PPE) are equipment worn to reduce exposure to hazards that cause serious workplace injuries and illnesses. Chemical, radiological, physical, electrical, mechanical, or other workplace may cause the injuries and illnesses. Gloves, safety glasses, shoes, earplugs or muffs, hard hats, respirators, or coveralls, vests and full body suits are some of the examples of PPE

1. Purpose

The purpose of this Standard is to describe the requirements of Personal Protective Equipment (PPE) for the on-site operations. PPEs are intended to be worn or held by a person at work which protects them against one or more risks to their health and safety.

2. Scope

This Standard is mandatory and applies to all operations and managed sites including its contractors.

- Labour and Employment Act of Bhutan 2007 - Section 141
- Regulation on Occupational Health, Safety & Welfare 2022 - Chapter 4
- All PPE must meet Bhutan Standards Bureau (BSB) requirements.
- OSHA Personal Protective Equipment (PPE) Standards
- OSHA Safety and Health Topic "Personal Protective Equipment"
- OSHA Technical Manual, Section VIII: Personal Protective Equipment
- NIOSH Safety and Health Topic: "Protective Clothing and Ensembles"
- OSHA 29 CFR 1926.1050 Stairways and Ladders
- OSHA Non-Mandatory Compliance Guidelines for Hazard
- Assessment and Personal Protective Equipment Selection 1910 Sub-part I App B
- NIOSH Personal Protective Equipment Checklist

3. Tools and Equipment used for personal protection

Safety requires proper planning of work, proper usage of safety tools, exercise of good judgment and intelligent supervision. Experience proves that majority of the accidents are preventable. Working unsafely such as throwing materials or tools, at another worker should be prohibited. The following are the minimum requirements of safety devices and special tools:

- Safety Helmets
- Gloves
- Safety Belts
- Well supported Ladders
- Hand Tools kit

- First aid box containing Dettol, bandage, burnol, cotton, painkiller pills.

4. Different Levels of Protection

The following are guidelines which an employer can use to begin the selection of the appropriate PPEs. The site information may suggest the use of combinations of PPE selected from the different protection levels (i.e., A, B, C, or D) as being more suitable to the hazards of the work. PPE is divided into four categories based on the degree of protection afforded:

Level A – Level 'A' PPEs are selected when the greatest level of skin, respiratory, and eye protection is required.

- Positive pressure, full face-piece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA, approved by the National Institute for Occupational Safety and Health (NIOSH).
- Totally-encapsulating chemical-protective suit.
- Coveralls.
- Long underwear
- Gloves, outer, chemical-resistant.
- Gloves, inner, chemical-resistant.
- Boots, chemical-resistant, steel toe and shank.
- Hard hat (under suit)
- Disposable protective suit, gloves and boots (depending on suit construction, may be worn over totally-encapsulating suit)

Level B – Level B PPE are used when highest level of respiratory protection is necessary but a lesser level of skin protection is needed.

- Positive pressure, full-face piece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).
- Hooded chemical-resistant clothing (overalls and long-sleeved jacket; coveralls; one or two- piece chemical-splash suit; disposable chemical-resistant overalls).
- Coveralls.
- Gloves, outer, chemical-resistant.
- Gloves, inner, chemical-resistant.
- Boots, outer, chemical-resistant steel toe and shank.
- Boot-covers, outer, chemical-resistant (disposable).
- Hard hat.
- Face shield

Level C - The concentration(s) and type(s) of airborne substance(s) is known and the criteria for using air purifying respirators are met

- Full-face or half-mask, air purifying respirators (NIOSH approved).
- Hooded chemical-resistant clothing (overalls; two-piece chemical-splash suit; disposable chemical-resistant overalls).
- Coveralls.
- Gloves, outer, chemical-resistant.

- Gloves, inner, chemical-resistant.
- Boots (outer), chemical-resistant steel toe and shank.
- Boot-covers, outer, chemical-resistant (disposable).
- Hard hat.
- Escape mask.
- Face shield.

Level D - A work uniform affording minimal protection: used for nuisance contamination only

- Coveralls.
- Gloves.
- Boots/shoes, chemical-resistant steel toe and shank.
- Boots, outer, chemical-resistant (disposable).
- Safety glasses or chemical splash goggles.
- Hard hat.
- Escape mask.
- Face shield.

5. Types of PPE

Personal Protective Equipment are available for different purposes and to protect various functions of the human body. It is essential to pick the appropriate PPE for the hazard type. The following PPE have been suggested keeping PHPA-I's operations in mind.

5.1 Hearing Protection

There are three main types of hearing protection:

- Earmuffs/defenders, which completely cover the ear
- Earplugs, which are inserted into the ear canal
- Semi-inserts (also called canal-caps), which cover the entrance to the ear canal.

Hearing protection must be worn by anyone who is likely to be exposed to noise at or above the Exposure Action Level set by The Control of Noise at Work Regulations 2005.

5.2 Head protection

There are three widely used types of head protection:

- industrial safety helmets (hard hats), which are designed to protect against materials falling from height and swinging objects
- industrial scalp protectors (bump caps), which are designed to protect from knocking against stationary objects
- caps/hair nets, which protect against entanglement

Tasks where head protection may be required include:

- construction
- building repair

- work in excavations and tunnels
- work with bolt driving tools
- driving motorcycles and all-terrain vehicles, etc.

5.3 Eye protection

There are several types of eye protection:

- safety spectacles: these are similar to regular glasses but have a tougher lens. They can include side shields for additional protection.
- eye shields: a frame-less one-piece moulded lens, often worn over normal prescription glasses
- safety goggles: these are made with flexible plastic frames and an elastic headband
- face shields: heavier and bulkier than other type of eye protector, face shields protect the face, but do not fully enclose the eyes so do not protect against dusts, mists or gases.

Tasks where eye protection may be required include:

- handling hazardous substances where there is a risk of splashing
- work with power driven tools where materials are likely to be propelled
- welding operations
- work with lasers
- using any gas or vapour under pressure.

5.4 Foot protection

There are a number of types of safety footwear:

- safety boots or shoes. Normally have steel toe-caps but can have other safety features (e.g. steel mid-soles, slip resistant soles, insulation against heat and cold)
- Wellington boots, which can be supplied with steel toe-caps
- anti-static and conductive footwear. These protect against the build-up of static electricity.

Tasks where foot protection may be required include: construction, demolition, building repair, manual handling where there is a risk of heavy objects falling on the feet, work in extremely hot or cold environments, work with chemicals and forestry. If there is a risk of slipping that cannot be avoided or controlled by other measures, attention must be given to the slip resistance of soles and replacement before the tread pattern is overly worn.

5.5 Hand and arm protection

Hand and arm protection comes in a variety of forms, including:

- gloves and gauntlets (leather, nitrile, latex, plastic coated, chain mail, etc.)

- wrist cuffs and armlets used in glass cutting and handling
- barrier cream may sometimes be used, where gloves cannot practicably be used.

Tasks where hand and arm protection may be required include: the manual handling of abrasive, sharp or pointed objects, work with vibrating equipment such as pneumatic drills and chainsaws, construction and outdoor work, work with chemicals and other hazardous substances (e.g. bodily fluids) and work with hot or cold materials.

5.6 Body protection

Types of body protection include:

- overalls, aprons and coveralls (protection against hazardous substances)
- clothing for cold, heat and bad weather
- high visibility clothing (e.g. jackets, vests)
- harnesses
- back supports
- life jackets.

Tasks where body protection may be required include: work with hazardous substances, work next to the highway or other areas with moving transport or vehicles, outdoor work, forestry and grounds maintenance work.

5.7 Respiratory protection

There are two main types of respiratory protective equipment:

- respirators that filter contaminated air or clean it as it is breathed in
- respirators that supply clean air from an independent source.

Work with harmful dusts, fumes, vapours can require respiratory protective equipment. Tasks where respiratory protection may be required include; work with harmful substances, work in areas where large amounts of nuisance dust is present, work that creates dust (e.g. disc cutters)

5.8 Suitability of PPE

To be able to choose the right type of PPE, the hazards involved in the task or work environment shall be carefully considered by EESL. PPE must also meet the needs of the individual.

The following factors should be considered when assessing the suitability of PPE:

- Is the PPE appropriate for the risk involved and conditions at the place where exposure may occur? e.g. goggles are not suitable

when full-face protection is required
- Does the PPE prevent or adequately control the risks involved without increasing the overall risk? e.g. gloves should not be worn when using a pillar drill, due to the increased risk of entanglement
- Can the PPE be adjusted to fit the wearer correctly? e.g. if a person wears glasses, ear defenders may not provide a proper seal to protect against noise hazards
- Has the state of health of those using it been taken into account?
- What are the needs of the job and the demands it places on the wearer? How long will the PPE need to be worn? What are the requirements for visibility and communication?
- If more than one item of PPE is being worn, are they compatible? For example, does a particular type of respirator make it difficult for eye protection to fit properly?

5.9 Information, instruction and training on PPE use

Where PPE is provided, employees must be provided with adequate information, instruction and/or training on its use. The extent of information, instruction and/or training will vary with the complexity and performance of the kit. Information and instruction should cover:

- the risk(s) present and why the PPE is needed
- the operation (including demonstration), performance and limitations of the equipment
- use and storage (including how to put it on, how to adjust and remove it)
- any testing requirements before use
- any user maintenance that can be carried out (e.g. hygiene/cleaning procedures)
- factors that can affect the performance of the equipment (e.g. working conditions, personal factors, defects and damage)
- how to recognize defects in PPE, and arrangements for reporting them
- where to obtain replacement PPE

In addition to initial training, refresher training may be required from time to time. Supervisor checks on the use of PPE may help determine when refresher training is required.

5.10 Maintenance of PPE

An effective system of maintenance of PPE is essential to make sure the equipment continues to provide the degree of protection for which it is designed. Therefore, the manufacturer's maintenance schedule (including recommended replacement periods and shelf lives) must always be followed.

Maintenance may include; cleaning, examination, replacement, repair and testing. The wearer may be able carry out simple maintenance (e.g. cleaning), but more intricate repairs must only be carried out by competent personnel.

The costs associated with the maintenance of PPE are the responsibility of the PHPA-I/ contractor.

5.11 Storage for PPE

It is very important to appropriately store PPE to ensure they can be used for a long time

- Where PPE is provided, adequate storage facilities for PPE must be provided for when it is not in use, unless the employee may take PPE away from the workplace (e.g. footwear or clothing).
- Accommodation may be simple (e.g. pegs for safety helmets) and it need not be fixed (e.g. a
- case for safety glasses or a container in a vehicle).
- Storage should be adequate to protect the PPE from contamination, loss, damage, damp or sunlight.

5.12 Responsibility of implementing the procedure on PPE

While the responsibility of implementing the procedure lies on all Project personnel, employees of the vendor, contractor and their supply chain actors, specific responsibilities have been allotted, keeping the significance of the standard in mind.

5.13 Labour Unit

Apart from the responsibility of implementing the entire Safety manual and SOPs, the Safety Unit has the following specific responsibilities for this SOP

- Must ensure that appropriate PPEs are used for different types of work carried on the sites.
- Should be aware of the hazards related to the work and same is conveyed to the contractors.
- Shall conduct surprise site inspections to assure the compliance with the appropriate use of PPEs.
- Has the ultimate responsibility for action tracking and close-out;

5.14 EHS Officer of Contractor

Apart from the responsibility of implementing the entire EHS manual and SOPs, the EHS officer of the vendor/contractor/sub-contractor has the following specific responsibilities for this SOP:

- EHS officer must ensure that appropriate PPEs are used for different types of work carried on the sites.
- EHS officer should be aware of the hazards related to the work and same is conveyed to the
- workers.
- Awareness shall be created among the workers and the contractors via daily tool box meetings.
- Must ensure that PPEs used by workers are in good condition and expiry date is not passed.

- In case of non-compliance, report should be made to their respective managements and to Labour Unit, PHPA-I.
- Conduct regular checks twice a day to ensure compliance with the appropriate use of PPEs

5.15 Employees/Workers

All employees/workers have a duty to:

- Follow instructions from Labour Unit/EHS officer of contractor.
- In case of any problem related to their PPE, workers should immediately inform to the EHS officer of contractor.
- Follow trainings and instructions (unless they think that would be unsafe, in which case
- they should seek further instructions before continuing)

5.16 Duties of employees/workers regarding PPE

The workers shall ensure that PPE provided is properly used.

- PPE must be worn and used in accordance with the instructions provided to them
- workers must take all reasonable steps to ensure that PPE is returned to the accommodation provided for it after it has been used (unless the employee may take PPE away from the workplace e.g. footwear or clothing)
- PPE must be examined before use
- any loss or obvious defect must be immediately reported to their supervisor
- employees must take reasonable care for any PPE provided to them and not carry out any maintenance unless trained and authorized.

5.17 Compliance and performance with respect to this standard

All Heads of Circles/Divisions/Units shall ensure that it complies with the requirements of this Standard. Performance against the requirements of this Standard shall be assessed periodically, documented and, where required, reported to Labour Unit. The evaluation of performance shall include, as a minimum, confirmation that:

- Correct usage of PPE for different types of work carried on the sites.
- EHS manager is aware of the hazards related to the work and same is conveyed to the contractors.
- The EHS manager has the ultimate responsibility for action tracking and close-out; Awareness shall be created among the workers and the contractors via daily tool box meetings.

6. History of amendments

The latest versions of the Documentation Format must be used at all times. This page needs to be updated whenever there is a change in the

version number of the documents.

Sl. No.	Date of amendment	Version	Details of amendment
1	DD.MM.YYYY	01	Initial approval of the documentation format

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