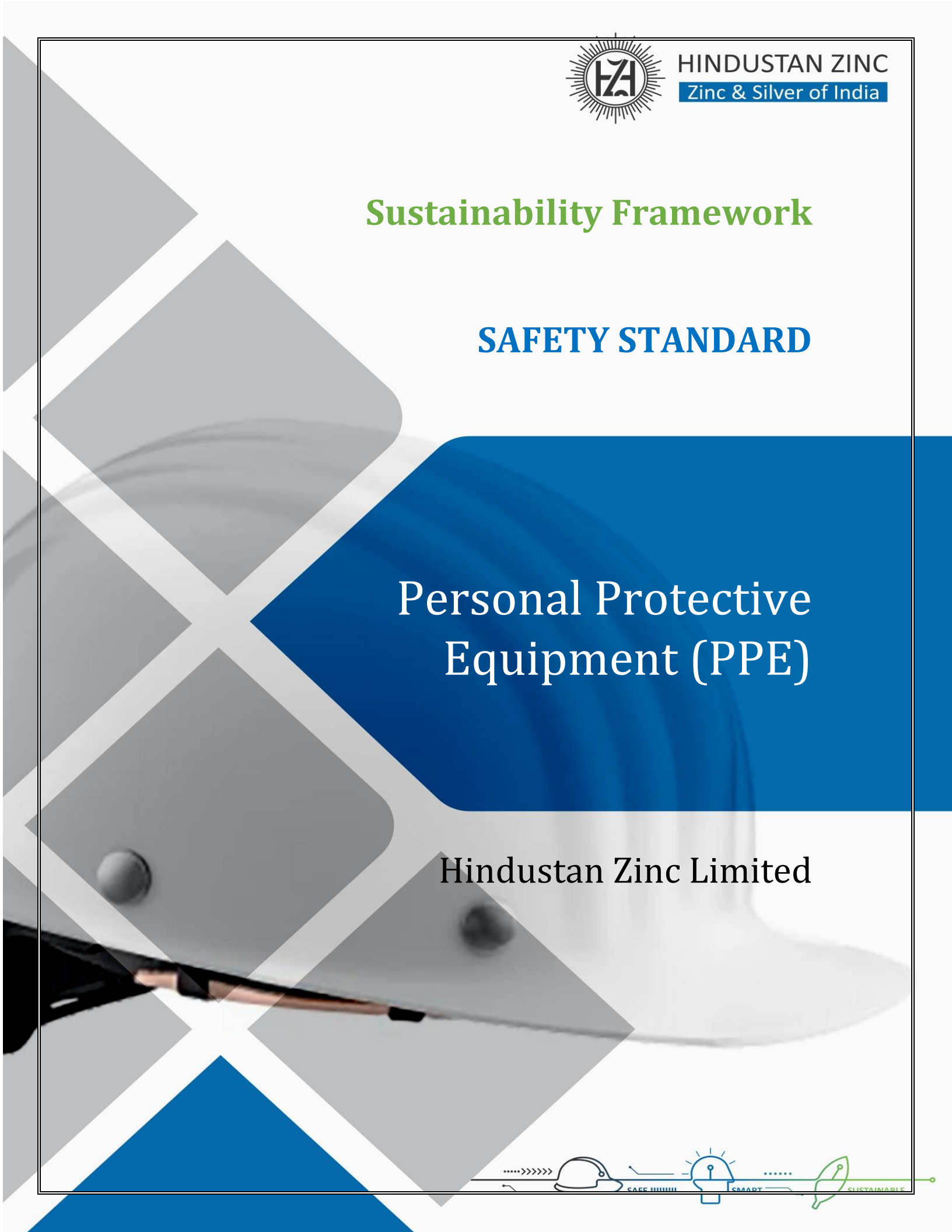
HINDUSTAN ZINC
Zinc & Silver of India

Sustainability Framework

SAFETY STANDARD

Personal Protective Equipment (PPE)

Hindustan Zinc Limited



Corporate Standard Rules & Procedure Sub-Committee	Date	31-07-2025
	Standard Document No.	HZL / SRPSC / 06
PPE STANDARD	Revision No.	02
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Document Control Details

	Issued by	Approved by
Name	Mr. Jitendra Minare Chairman – Personal Protective Equipment (PPE)	Mr C Chandru Chairman - SRP Sub Committee
Sign.		
Next Revision Date – 30.07.2027		

REVISION LOG

REVISION NO:	REASON FOR CHANGE(S):	DATE:
01	Recent learning from multiple	22/10/2016
	To clear ambiguity in few areas	
	Change of company LOGO	
	New requirements	
	Standard Document No..	
02	1. New PPE Guidelines: - Mandatory use of high-visibility clothing for all outdoor and mining operations. - Inclusion of cut-resistant gloves for workers handling sharp materials. - Enhanced respiratory protection standards to meet ISO 16975-3.	31/07/2025

02	2. Digital PPE Monitoring: - Implementation of RFID-enabled PPE tracking for real-time compliance checks. - Use of AI-based systems to monitor PPE adherence via site cameras.	31/07/2025
	3. Training and Awareness: - Monthly refresher training sessions on proper PPE use. - E-learning modules for new hires with assessments.	
	4. Emergency PPE Kit Enhancements: - Additional PPE kits with chemical-resistant clothing added to emergency zones. - Fire-resistant hoods included in all fire emergency response kits.	

User Notes: - The Corporate Safety Council (CSC) is the custodian of this document and is responsible for the Administration and Authorization of this Standard. CSC is responsible for confirming the accuracy and integrity of content and proposed changes to the Standard.

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1.0 Purpose

To establish the minimum requirements for Personal Protective Equipment (PPE) to ensure employee safety in compliance with the latest regulations and company standards.

2.0 Scope

The standard is applicable across all units of HZL. (Includes employees, visitors and contractors across all sites including offices)

Each of the above sites will continue to meet or exceed all government and company standards and regulations established for the area, region or location of operation.

3.0 References

- ISO 16975-3: Respiratory Protective Devices
- EN ISO 20471: High-Visibility Clothing
- Hindustan Zinc Limited Safety Policy

4.0 Management Responsibilities

1. Management:
- Ensure availability of appropriate PPE for all workers.
- Regular audits and inspections for PPE compliance.

2. Employees and Contractors:
- Adhere to PPE requirements for their roles.
- Report damaged or non-compliant PPE immediately.

3. Safety Officers:
- Conduct periodic training and awareness sessions.
- Maintain records of PPE issuance and compliance checks.

5.0. Compliance and Penalties

1. Non-Compliance:
- First instance: Verbal warning.
- Second instance: Written warning and retraining.
- Repeated non-compliance: Disciplinary action, up to suspension.

2. Audits:
- Monthly site inspections to ensure adherence.
- Random checks by safety officers.

6.0. Definitions

1. **Adequately Trained**: All personnel handling, storing, and maintaining PPE must be thoroughly trained according to the latest manufacturer guidelines and updated internal criteria. Training must reflect current operating conditions, technological advances, and best practices to ensure safe and effective PPE management.

2. **Approved PPE List**: A comprehensive, up-to-date list of personal protective equipment specified for use at the operational site. The list should include provisions for ordering, tracking, and maintaining these items, ensuring compliance with the latest safety standards.

3. Decontamination of PPE: The process of safely removing contaminants from all surfaces of Personal Protective Equipment without compromising the safety of the individual performing the decontamination. This process must use current industry-approved methods and materials to avoid re-contamination or damage to the equipment.

4. **Hazardous Task**: A task that inherently exposes personnel to risks that could lead to immediate or long-term health issues if performed without proper protection. Hazards should be regularly reassessed, and appropriate PPE must be used to mitigate these risks in accordance with evolving safety guidelines.

5. Line Management: Managers and supervisors responsible for overseeing the primary functions within an organization, business, location, or site. This includes roles such as Plant Head, Maintenance Head, Divisional Heads, Sectional Heads, and front-line officers at various operational sites or offices. These individuals are directly involved in implementing and maintaining safety, quality, and operational standards.

6. **Personal Protective Equipment (PPE)**: A range of devices worn to safeguard individuals from safety, health, and environmental hazards. Examples include respirators, gloves, hearing protectors, work clothing, fire-resistant clothing, chemical protective gear, welding attire, fall protection, and safety glasses. PPE must be selected and used according to the specific hazards present at the site.

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7. **PPE Matrix**: A document or chart that outlines the specific PPE required for employees when entering different sections or departments within a workplace. The matrix helps ensure that individuals are properly protected based on the identified risks in each area.

7.0 General Requirements

This standard establishes guidelines for the selection, use, and maintenance of PPE to minimize personal exposure to Safety, Health, and Environmental (SHE) hazards. Each site requiring employee protection shall ensure the effective implementation of this standard.

Line management at every location is responsible for defining the scope and application of the PPE standard within their respective sections and operations. The PPE program shall incorporate the following key elements:

- **SHE Hazard Evaluation and Control**: Assess and mitigate risks associated with safety, health, and environmental hazards.
- **PPE Selection**: Ensure proper selection of PPE based on the specific hazards identified in each area of operation.
- **Training**: Provide comprehensive training to all employees on the proper use, limitations, and care of PPE.
- **PPE Use**: Enforce the consistent and correct use of PPE during operations.
- **PPE Maintenance, Storage, and Cleaning**: Establish procedures for maintaining, storing, and cleaning PPE to ensure its functionality and durability.
- **Program Administration, Documentation, and Evaluation**: Maintain records of PPE activities, regularly evaluate the program's effectiveness, and update practices as necessary.
- **Enforcement and Inspection**: Conduct routine inspections to ensure compliance and address violations promptly.

7.1 Safety, Health & Environment Hazard Evaluation and Control

Each unit shall ensure that workplace environments are periodically reviewed to identify and evaluate potential safety, health, and environmental (SHE) hazards. Guidance can be sought from **GN07** for conducting these evaluations effectively.

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Efforts to address SHE hazards must prioritize the implementation of technically and economically feasible **engineering** and **administrative controls** to minimize exposure. Until these controls are fully operational, or in situations where exposure to hazards cannot be entirely avoided or effectively mitigated, the use of **appropriate PPE** is mandatory.

Additionally, PPE may be employed as precautionary protection for specific tasks. During hazard evaluations, PPE requirements for each section or plant must be determined based on workplace hazards and the control measures already in place for the specific area or location.

Each site is required to:

- Maintain an **Approved PPE List** based on the findings of these evaluations.
- Ensure that employees use only the equipment listed as approved within the site.
- Develop and implement a **PPE Matrix** that specifies the minimum mandatory PPE requirements for each section or plant. This matrix serves as a guide to ensure consistent protection standards across all operations.

By maintaining these practices, sites ensure that workplace safety aligns with current regulations and industry best practices, providing robust protection for all employees.

7.2 Personal Protective Equipment Selection

The following PPE is **mandatory** for all personnel entering the facility through the factory gate to offices:

- **Safety Helmet**
- **Safety Shoes**

In certain cases, a higher level of PPE may be required based on the specific procedure or tasks being carried out. All PPE must comply with the **PPE Standard**. If the desired PPE type is not listed in the Corporate PPE Standard, the selection process shall consider the following criteria:

- **Physical and Chemical Hazards**: Evaluate potential exposure to mechanical, thermal, or chemical risks.

- **Task Requirements**: Assess the nature of the task and the level of protection required.
- **Potential and Consequences of PPE Failure**: Consider the severity and likelihood of failure.
- **Durability and Duration of Use**: Ensure PPE is suitable for the task duration and environmental conditions.
- **Regulatory Requirements**: Adhere to local, national, or international regulations.
- **PPE Certification**: Use PPE certified by relevant standard-setting organizations (e.g., IS, ANSI, CE, ISO, etc.).
- **Physical Compatibility**: Ensure the user is physically capable of utilizing the PPE.
- **Fit, Comfort, and User Acceptance**: Prioritize proper fit and comfort to encourage compliance and effective use.

The **Line Managers**, in consultation with **site safety personnel**, shall determine the need for and selection of PPE. **Medical consultation** should be sought when necessary to ensure suitability for individual users. Refer to **Appendix A** for a comprehensive guide to PPE selection and use.

All plants and sections must display **clearly visible signage and instructions** outlining the minimum mandatory PPE requirements for entry into specific areas. This ensures consistent awareness and compliance.

7.3 Training

All PPE users and their immediate supervisors must receive comprehensive training in the proper use, maintenance, and limitations of PPE **before its use**. Training shall be conducted by individuals with a thorough understanding of the subject matter to ensure effectiveness and accuracy.

The training program for PPE users and supervisory personnel shall include the following key elements:

- **Workplace Hazards**: An overview of the types of hazards present in the workplace and how PPE mitigates these risks.

- **PPE Selection Rationale**: The reasoning behind the selection of specific PPE for particular tasks or environments.
- **Capabilities and Limitations**: A clear understanding of what the selected PPE can and cannot do, including its performance during routine and emergency situations.
- **Donning and Doffing Procedures**: Correct methods for putting on and taking off PPE to maximize protection and minimize contamination risks.
- **Maintenance and Care**: Instructions on inspection, cleaning, storage, and maintenance to ensure PPE remains functional and safe for use.

7.3.1 Training Records:

- All training records must be maintained in accordance with the site's **record retention procedure**.
- Records should be verified periodically to ensure compliance with **governmental requirements** and any applicable safety standards.

This structured approach to training ensures that all personnel are adequately prepared to use PPE effectively, enhancing workplace safety and compliance with modern regulations.

7.4 General PPE Requirements

1. **Standards Compliance**: All PPE must meet or exceed regulatory and company-defined standards to ensure adequate protection.
2. **Documentation and Communication**:
    - Areas and tasks requiring PPE under routine or non-routine operating conditions must be **clearly identified** and displayed within the facility.
    - These requirements must also be documented in the respective **Safe Work Procedures (SWP)**, including the specific type of PPE required for each area and task.
3. **Inspection before and during Use**: PPE must be inspected prior to use and, where applicable, during use to identify defects such as:

- Holes, tears, or scratches.
- Signs of material deterioration or cracks.
- Poor closures or any other degradation that might compromise performance.
- Defective PPE must be **immediately removed from service** and replaced.

4. **Contamination Control**:
    - **Potentially contaminated PPE** must not be worn in designated clean areas such as offices, control rooms, lunchrooms, or clean changing rooms.
    - Contaminated PPE must be cleaned, laundered, or appropriately disposed of based on the site's protocols.
5. **Replacement Schedules**: Each site shall establish a **replacement schedule** for PPE to ensure equipment remains effective and compliant.
6. **Incident-Related Inspections**: PPE suspected to have been affected during an incident or accident must be thoroughly inspected before further use.
7. **Type-Specific Requirements**: Additional requirements may apply to specific types of PPE as detailed below (to be included as relevant).

By adhering to these requirements, facilities ensure the effective management and use of PPE to protect personnel from workplace hazards and maintain compliance with modern safety standards.

7.4.1 Head Protection

1. **Mandatory Use**:
    - **Safety helmets** must be worn with the chin strap securely fastened when entering the factory premises.
    - **Glass Fiber Reinforced Plastic (GFRP) helmets** are recommended for head protection. **High-Density Polyethylene (HDPE)** helmets may be permitted in areas where exposure to fire or hot objects is not anticipated.

2. **Prohibited Items**:

    - **Bump caps** are not substitutes for safety helmets and are only suitable for specific tasks, as detailed below.
    - **Metal safety helmets** are not allowed.

3. **Standards Compliance**:

    - Safety helmets must conform to **IS: 2925-1984** or the latest applicable standard.
    - Helmets must be worn with the **brim facing forward**, except during tasks like welding or similar activities.

4. **Inspection and Replacement**:

    - Helmets must be inspected regularly for cracks, damage, or signs of wear.
    - Replacement should follow the intervals specified by the manufacturer or sooner if defects are observed.

5. **Hair Restraint**: Employees with scalp hair extending beyond shoulder length must **tie and restrain hair** within the safety helmet or tuck it into coveralls, shirt, or jacket collars.

6. **Bump Caps**:

    - **Bump caps** are lightweight head protection with basic suspension or padding, used in low-impact environments, such as working under vehicles.
    - Bump caps are suitable for protection against **scrapes or bumps** but are not designed to absorb large impacts (e.g., from falling tools).

7. **Prohibited Modifications**: Helmets must not be modified in any way, such as drilling holes for additional ventilation.

8. **Color Coding**:

    Helmets must be color-coded for easy identification:

        - **Employees**: White
        - **Visitors**: Blue

- **Contractors**: Yellow
- **Vehicle Drivers (Non-Contract)**: Orange
- **Fire Personnel**: Red

9. **Identification Stickers**: All helmets must display **stickers** identifying the wearer's or contractor's **company logo and name**.

This comprehensive approach ensures consistent and effective head protection, aligning with updated safety standards and operational needs.

7.4.2 Hand Protection

1. **Mandatory Use**: Employees must use appropriate hand protection while performing tasks that involve:
   - Handling chemicals (acids, alkalis, solvents, etc.).
   - Working with hot materials or surfaces.
   - Managing rough, sharp, or abrasive objects.
   - Handling toxic or corrosive substances.
   - Working with electrical equipment or installations.
2. **Material Suitability**: The protective material of gloves must be specifically chosen based on the nature of the task and associated hazards, ensuring optimal protection. Examples include:
   - **Chemical-resistant gloves** for chemical handling.
   - **Heat-resistant gloves** for high-temperature operations.
   - **Cut-resistant gloves** for sharp or abrasive materials.
   - **Electrical-insulating gloves** for work involving live circuits or components.
3. **Fit and Comfort**:

- Gloves must be sized correctly to ensure a secure and comfortable fit, allowing the required level of dexterity and grip for safe task execution.
- Poorly fitting gloves may reduce protection and increase the risk of accidents.

4. **Inspection and Maintenance**: All gloves must be inspected prior to use to ensure they are free from defects such as:
    - Holes, tears, or punctures.
    - Signs of material degradation or wear.
    - Contamination from previous use.
    - Defective or damaged gloves must be replaced immediately.
5. **Task-Specific Selection**:
    - Hand protection must be selected based on a **hazard assessment** conducted for specific tasks or processes.
    - Supervisors and safety personnel must ensure employees are equipped with the correct type of gloves for the intended activity.
6. **Employee Training**:

    Employees must be trained on:
    - The proper selection, use, and limitations of hand protection.
    - The correct procedures for donning, doffing, and maintaining gloves.
    - Recognizing when gloves are no longer safe for use.

By ensuring that hand protection is adequate, task-specific, and maintained in good condition, the risk of hand injuries and exposure to hazards can be minimized effectively.

7.4.3 Eye and Face Protection

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To ensure the safety of employees from hazards such as impact, particles, chemical splashes, molten material, or flash, appropriate eye and face protection must be provided to protect the **face, neck, and eyes**.

1. **Safety Glasses/Safety Goggles**
   - **Mandatory Use**:
     - Employees performing tasks requiring eye protection must wear **safety glasses** or **safety goggles** equipped with side shields.
     - Frames, lenses, and side shields must conform to relevant safety standards (e.g., **IS, ANSI, CE, or equivalent**).
   - **Prescription Lenses**: Employees with prescription lenses must either:
     - Use eye protection that incorporates their prescription.
     - Wear protective eyewear over their prescription lenses without compromising proper fit or protection.
   - **Additional Eye Protection**:Based on task-specific hazards, additional types of eye protection (e.g., chemical goggles, welding helmets) may be required.
   - **Contact Lenses**: Although the use of contact lenses is not prohibited, the company does **not recommend their use** due to potential risks in hazardous environments.
   - **Prohibitions**: Safety glasses are **not suitable** for **shaft sinking operations** where specialized protection is required.

2. **Face Shields**
   - **Purpose and Use**: Face shields must be used during activities such as:
     - Hand grinding.
     - Welding.
     - Handling chemicals and corrosive liquids.
     - Power chipping.
     - Removing or installing ceiling panels.

- Drilling above shoulder height.

The use of face shields must be dictated by a **formal risk evaluation** specific to the task.

- **Additional Protection**: Face shields are **not a substitute** for eye protection. Safety glasses or goggles must always be worn underneath the face shield.
- **Special Operations**: For **shaft sinking operations**, only **wire mesh face screens** are permitted to ensure protection against debris while allowing visibility and ventilation.

By adhering to these guidelines, employees can mitigate risks to their eyes and face during routine and hazardous tasks.

7.4.4 Respiratory Protection

Respiratory protection is critical in environments where health hazards arise due to the accumulation of dust, fumes, mists, vapors, or toxic gases. The following guidelines must be adhered to ensure the safety of all employees:

7.4.4.1 Mandatory Use of Respiratory Equipment:

1. **Hazard Assessment**: Respiratory protection must be used in areas where:
    - Dust, fumes, or mists are present beyond permissible exposure limits.
    - Toxic vapors or gases pose a risk to health.
    - There is insufficient oxygen, or an oxygen-deficient atmosphere exists.
2. **Approved Respirators**:
    - Only respirators approved by relevant safety standards (e.g., **IS, ANSI, NIOSH, CE**) shall be used.
    - Respirators must be used strictly for their intended purpose and must not be altered or modified in any way.

7.4.4.1 Compliance and Fit

1. **Manufacturer's Guidelines**: All respirator usage, maintenance, and storage must comply with the manufacturer's instructions and applicable standards.
2. **Fit Testing**: Employees must undergo a **respirator fit test** for the specific model of the respirator they will use. Fit tests ensure that the respirator forms an adequate seal to protect the wearer from airborne contaminants.
3. **Clean Shaven Policy**: Employees using respirators must remain **clean-shaven** in areas where the respirator seal meets the face. Facial hair can interfere with the seal and compromise protection.
4. **Training:**

- Employees must be trained in the proper selection, use, limitations, and maintenance of respirators.
- Training must include:
    - Proper procedures for donning and doffing respirators.
    - Inspection techniques to identify defects or signs of wear.
    - Cleaning and storage practices to ensure hygiene and functionality.
    - Emergency procedures in case of equipment failure or exposure.

5. **Inspection and Maintenance:** Respirators must be inspected before each use to ensure they are in good working condition.

- Check for cracks, tears, or any signs of material degradation.
- Ensure that valves, seals, and straps are functional and undamaged.
- Respirators must be cleaned and disinfected regularly as per the manufacturer's guidelines.
- Damaged or defective respirators must be immediately removed from service and replaced.

6. **Specialized Respiratory Equipment:**

- **Self-Contained Breathing Apparatus (SCBA)**: Required for tasks performed in oxygen-deficient or confined spaces.
- **Air-Purifying Respirators (APR)**: It must be equipped with filters or cartridges suitable for the specific contaminants present.
- **Powered Air-Purifying Respirators (PAPR)**: Recommended for extended use or environments with high contaminant levels.

By ensuring proper selection, usage, and maintenance of respiratory equipment, the risk of exposure to airborne health hazards can be significantly reduced.

7.4.5 Hearing Protection

To safeguard employees from noise-induced hearing loss and ensure compliance with current safety standards, appropriate hearing protection devices (HPDs) must be provided and used effectively.

7.4.5.1 Mandatory Use of Hearing Protection:

1. **Noise Threshold**:
    - Employees exposed to noise levels exceeding **85 dB (8-hour time-weighted average)** are required to wear hearing protection.
    - In environments where noise levels exceed **100 dB**, enhanced measures, such as dual protection (earplugs and earmuffs), must be implemented.
2. **Exposure Limitations**: For noise levels above **100 dB**, the exposure time must not exceed **30 minutes** unless additional engineering or administrative controls are in place to mitigate the risk.

3. **Approved Hearing Protection Devices:**

- **Types of HPDs**:
  - **Earplugs**: Designed to fit inside the ear canal, reducing noise exposure effectively.
  - **Earmuffs**: Over-the-ear devices that provide a secure seal to block noise.
  - **Dual Protection**: The combination of earplugs and earmuffs is recommended in high-noise environments.

4. **Compliance Standards**: All HPDs must comply with updated **2025 standards**, including **national standards (IS)** or **global standards (e.g., ANSI, CE, ISO)**.
5. **Prohibited Devices**: The use of plain cotton, cloth, or other non-compliant materials is strictly prohibited.

7.4.5.2 Selection and Fit:

1. **Criteria for Selection**:
   - Devices must be selected based on noise levels, frequency characteristics, and task requirements.
   - Considerations for compatibility with other PPE (helmets, goggles) are mandatory.
2. **Fit and Comfort**:
   - Devices must be individually fitted to the user to ensure a proper seal and comfort.
   - Training on fitting and usage must be provided for all employees.

7.4.5.3 Maintenance and Inspection:

1. **Hygiene and Longevity**:
   - Reusable HPDs must be cleaned, sanitized, and stored properly to maintain effectiveness and hygiene.
   - Single-use devices should be disposed of responsibly after use.

2. **Inspection**:

   - Regular inspection for wear, damage, or degradation is essential.
   - Devices showing signs of damage must be replaced immediately.

3. Noise Monitoring and Controls:

1. Periodic noise monitoring must be conducted to ensure that exposure levels are within permissible limits as per **2025 regulations**.
2. Administrative and engineering controls must complement hearing protection to reduce overall noise levels wherever feasible.

4. Dual Protection:

- In environments exceeding **100 dB**, employees must use both earplugs and earmuffs for additional protection.
- Despite dual protection, exposure time must be minimized to reduce cumulative risk.

7.4.5.4 Training and Documentation:

1. **Training**: Employees and supervisors must be trained on -
   - The risks of noise exposure.
   - Proper use, fitting, and maintenance of HPDs.

Training should be refreshed annually or when new devices are introduced.

2. **Documentation**: Records of training, noise monitoring, and HPD issuance must be maintained for at least **5 years** or as mandated by regulatory bodies.

By adhering to these updated guidelines, workplaces can effectively prevent hearing loss, comply with 2025 standards, and ensure employee well-being in noisy environments.

7.4.6 Clothing

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To ensure safety and compliance with modern standards, all individuals working on HZL sites must adhere to the following clothing requirements.

7.4.6.1 General Clothing Requirements:

1. **Tight-Fitting Attire**:

- Loose clothing is strictly prohibited on-site to minimize entanglement and snagging risks.
- All employees must wear full-sleeve shirts to provide additional protection from workplace hazards.

2. **Fluorescent Jackets:**

Fluorescent jackets or reflective strips must be worn by the following personnel for enhanced visibility:

- **Contract Employees**: All contractors and their workforce.
- **Drivers, Helpers, and Signalmen**: Includes commercial vehicle (CV) operators, material-handling equipment operators, and signaling staff.
- **Material Handling and Dispatch Areas**: Employees working in vehicle rectification, aggregate dispatch, or similar zones.
- **Security Personnel**: All security staff must wear fluorescent jackets while on duty.

3. **Fire-Retarding Clothing/Flash Protection:**

   - **Fire-Resistant Attire**:
     - Required in areas where processes such as electrical maintenance, welding, cutting, or other tasks pose fire or burn hazards.
     - Full-sleeve fire-retardant clothing is mandatory; short sleeves are not permitted.
   - **Full Flash Protection**:
     - Full flash protection is mandatory for operations or maintenance tasks likely to result in electrical arcs exceeding **2,300 volts**.

- Flash protection must conform to **NFPA 70E (2025)** standards.

➢ **Chemical Protective Clothing:**

- **Purpose**: Designed to shield the entire body, except the face, hands, and feet, from harmful chemical exposure.
- **Usage**: Must be worn while handling liquids that can splash or cause skin damage.

➢ **Impact Protective Clothing:**

- **Purpose**: Protects the body from flying objects, sharp articles, grinding burrs, and impacts from processes like sandblasting, machining, or similar operations.
- **Usage**: Mandatory for tasks involving significant physical impacts or risks of injury.

7.4.7 Electrical Protection

To safeguard against electrical hazards, all employees must utilize electrical protective equipment designed for the specific risks associated with their tasks.

7.4.7.1 General Requirements:

1. **Electrical Protective Equipment**:
   - Must be used where potential electrical hazards exist to protect various parts of the body.
   - Includes but is not limited to **insulated gloves**, **arc-rated face shields**, and **insulating mats**.
2. **Electric Safety Shoes**:
   - Employees working in areas where electrical exposure is possible must wear **electrically insulated safety shoes**.
   - Shoes must conform to the latest standards such as **IS 15298**, **EN ISO 20345**, or equivalent, ensuring resistance to electrical shocks.
3. **Task-Specific Electrical PPE:**

➢ **Arc Flash Protection**:

- In high-voltage areas or tasks likely to produce electrical arcs, **full arc-rated PPE** (including helmets with visors, gloves, and protective clothing) must be worn.
- All arc flash PPE must meet the latest standards, such as **NFPA 70E (2025)** or equivalent.

➢ **Insulated Tools**: Only insulated tools certified to appropriate voltage ratings should be used for electrical maintenance tasks.

4. Inspection and Maintenance:

➢ **Regular Inspections**:
- Electrical protective equipment must be inspected before each use for any damage, wear, or defects.
- Equipment with cracks, tears, or other signs of damage must be removed from service immediately.

➢ **Scheduled Testing**:

- Electrical PPE must undergo **periodic testing** as per manufacturer recommendations and applicable standards to ensure effectiveness.
- Documentation of all inspections and tests must be maintained as per company and regulatory requirements.

5. Additional Safety Measures:

➢ **Personal Conduct**:

- Employees must avoid carrying conductive materials (e.g., jewelry, tools) in areas with live electrical circuits.
- Dry conditions must be maintained wherever possible to reduce the risk of electrical shocks.

➢ **Signage and Barriers**:

- Clearly marked **high-voltage signs** and **safety barriers** must be installed around electrical hazard zones.

By following these updated guidelines, HZL ensures compliance with current standards while maintaining a safe working environment for all employees exposed to electrical hazards.

7.4.8 Heat and Cold Stress Protection

Proper protective equipment and measures shall be implemented to protect employees working in environments with high or low temperature extremes.

1. **Heat Stress Protection**

- **Protective Clothing**: Lightweight, loose-fitting, and light-colored clothing made of breathable fabrics (e.g., cotton or moisture-wicking materials) should be provided. For tasks involving high radiant heat, **heat-resistant suits** or **fire-retardant clothing** must be used.
- **Hydration and Cooling**:
  - Employees must have access to **cool drinking water** and take scheduled breaks in shaded or air-conditioned areas.
  - **Cooling vests**, **fans**, or other cooling devices should be made available for employees in high-temperature environments.
- **Training and Monitoring**:
  - Employees must be trained to recognize signs of heat stress (e.g., dehydration, heat exhaustion, or heat stroke).
  - Supervisors should monitor employees for symptoms and adjust workloads during peak heat conditions.
- **Work Schedule Adjustments**: Tasks should be scheduled during cooler parts of the day wherever feasible. Implement a **work-rest cycle** based on heat index levels and task intensity.
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2. **Cold Stress Protection**

- **Protective Clothing**:
  - Multi-layered clothing, including insulated gloves, boots, and hats, must be provided.
  - **Thermal undergarments** and **windproof outerwear** should be worn in extremely cold conditions.

- **Warm Break Areas**:
  - Access to **heated shelters** or indoor break areas must be provided to prevent frostbite and hypothermia.
  - Employees should be encouraged to take regular warm-up breaks.

- **Training and Monitoring**:
  - Employees must be trained to recognize signs of cold stress (e.g., frostbite, hypothermia).
  - Supervisors should regularly check employees for symptoms and ensure the use of appropriate clothing.

- **Emergency Measures**:
  - Emergency response procedures should be in place for heat-related illnesses and cold-related injuries.
  - Adequate first aid supplies and equipment must be accessible.

- **Equipment Standards:**
  - All protective clothing and equipment must conform to applicable IS/ANSI/EN/ISO standards.
  - Regular inspections and maintenance of protective equipment are required to ensure their effectiveness.

By adhering to these guidelines, employees can safely perform tasks in environments with extreme temperatures while minimizing risks associated with heat and cold stress.

7.4.9 Foot Protection

1. **General Requirements**:

    - Safety footwear with closed composite fiber toes shall be worn in areas where there is a risk of foot injury due to falling, rolling, or sharp objects, or exposure to chemicals, heat, or electrical hazards.
    - Safety shoes are mandatory for all individuals entering factory or operational areas.

2. **Design and Material**:

    - Footwear shall be constructed using durable materials suited to the specific hazards (e.g., chemical-resistant, heat-resistant, anti-slip soles).
    - Safety shoes must provide **comfort**, **wearability**, and **adequate protection** for extended use.
    - **Full-bridged metatarsal protection** is recommended for high-risk activities such as:

        - Concrete breaking
        - Construction rigging
        - Heavy machinery operation

3. **Standards and Conformance**:

    - Safety footwear must comply with applicable national and international standards such as IS: 15298, EN ISO 20345, or ASTM F2413.
    - Foot protection must be anti-static or electrically insulating as per the nature of the workplace hazard.

4. **Maintenance and Inspection**:

    - Regular inspection of safety footwear is required to ensure it is free from wear and damage such as cracks, holes, or loss of grip.
    - Damaged or defective footwear must be replaced immediately.
    - Safety shoes must be cleaned and maintained in accordance with the manufacturer's recommendations.

5. **Prohibited Practices**: Any **modification** or **tampering** with safety shoes, such as drilling holes, removing components, or altering the original design, is strictly prohibited.

By adhering to these guidelines, workplaces can ensure the effective use of foot protection, reducing the risk of foot-related injuries and maintaining compliance with safety standards.

7.4.10 Fall Arrest Systems

1. **General Requirements**:
    - **Positive fall protection** must be used for all elevated work areas exceeding **1.8 meters** in height.
    - When fall arrest systems are required, employees must use **full body harnesses** with **shock-absorbing lanyards** made from **synthetic rope**.
2. **Lanyard and Harness Specifications**:
    - The **lanyard length** must not exceed **1.8 meters**.
    - While working at heights, one of the **lanyard hooks** must be securely tied to a **solid structure** or **lifeline** to prevent accidental falls.
    - **Snap hooks** on lanyards must be **double-locking** or **double-acting** to prevent unintentional opening.
    - **Full body harnesses** must comply with **Indian standards** (IS 3521) or equivalent standards, and they must be equipped with **two shock-absorbing lanyards** for added safety.
3. **Pre-use Inspection**:
    - A **pre-use inspection procedure** must be established to verify the integrity and functionality of the fall protection equipment before use. This includes inspecting harnesses, lanyards, snap hooks, and lifelines for defects or wear.

4. **Safety Nets** (IS: 11057-1984):

    - **Safety nets** must be used when working in areas **more than 8 meters** above the ground, water, or any other surfaces where other fall protection methods (such as ladders, scaffolds, or safety belts) are impractical.
    - Operations should not commence until the safety net is properly installed and has passed a **proof test**.
    - Safety nets must extend **2 meters beyond** the work surface where employees are exposed to fall hazards. The net should be installed as close under the work surface as possible but must not be more than **6 meters** below the working surface.
    - The mesh size of the safety nets must not exceed **15 cm x 15 cm**. The nets must be certified by the manufacturer for their **proof test** to ensure they meet safety standards.
    - **Forged steel safety hooks** or **shackles** must be used to securely fasten the safety nets to their supports.

By ensuring proper installation, maintenance, and inspection of fall arrest systems, along with adherence to the prescribed standards, workplaces can significantly reduce the risks associated with working at heights.

7.4.11 Other PPE

1. **Specialized PPE Needs**: Additional PPE requirements may arise based on **specific hazards** not covered in the general PPE guidelines. Each location or facility should assess and address the need for specialized PPE for hazards such as:

    - **Biological agents**: PPE for protection against harmful microorganisms and biological hazards.
    - **Work in over-water environments**: PPE designed to prevent drowning, protect against hypothermia, or assist with rescue.
    - **Radiation**: Specialized PPE, such as lead aprons or shields, to protect workers from ionizing radiation exposure.

2. **Seat Belts** (Standard: IS 15139-2002):

    - **Seat belts** are an essential safety feature for vehicles and heavy equipment, though they are not generally classified as PPE. However, they still serve to reduce injury risks in case of vehicle collisions or sudden stops.
    - **3-point contact seat belts** are the standard, designed to secure the occupant in the seat using a system of straps with a buckle, adjusting devices, and attachments. This setup limits the mobility of the body during a collision or abrupt deceleration.
    - The seat belt assembly may also include energy absorption or belt retraction devices to further mitigate injury.
    - These seat belts must comply with **IS 15139 (2002)**: Automotive Vehicles including **HEMM** (Heavy Earth Moving Machinery) for **Safety Belt Anchorages**.

Note: Each location should evaluate the specific risks of its operations and identify any additional PPE needs that might arise from unique workplace conditions or hazards.

7.5 PPE Maintenance, Storage, and Cleaning

1. **Maintenance and Repair**:

    - All maintenance activities, including the installation of PPE replacement parts, should be carried out in accordance with the **manufacturer's recommendations**. If an alternative maintenance and repair procedure is required, it must be **approved** by **Corporate Safety**.
    - Only individuals who are adequately trained should perform the installation of replacement parts for PPE to ensure the equipment's functionality and safety.

2. **Storage**:

    - **PPE** should be stored in a **clean environment** to prevent cross-contamination with contaminated clothing, chemical agents, or other harmful substances.
    - The storage location should be carefully selected to avoid exposure to **damaging conditions** such as **rain**, **sunlight**, **humidity**, or extreme temperatures, as these conditions can cause defects in the equipment.

- PPE should be stored away from areas where it could be exposed to chemical agents or other hazardous substances.

3. **Exclusive Use**:

   - Employees should be issued PPE for their **exclusive use** whenever possible. This minimizes the risk of contamination and ensures that each individual is using equipment tailored to their needs.
   - **Sharing of PPE** should be discouraged. However, if sharing is necessary, the equipment must be **sanitized** thoroughly between uses to prevent cross-contamination.

4. **Cleaning**:

   - PPE should be cleaned regularly according to the **manufacturer's instructions**. Cleaning procedures should be conducted in a manner that does not compromise the integrity or effectiveness of the equipment.

   - Special care should be taken to clean PPE that may have been exposed to hazardous chemicals, biological agents, or other contaminants to ensure the safety of users in future operations.

By adhering to these guidelines, the integrity of PPE will be maintained, ensuring its effectiveness and protection against workplace hazards.

7.6 PPE Disposal

1. **Contaminated PPE**:

   - **Potentially contaminated PPE** and work clothing must not be taken home. They should be **decontaminated** according to a documented procedure to ensure safe handling.
   - A **decontamination and laundry procedure** must be in place to address the handling of **contaminated** and **potentially contaminated** personal clothing to prevent exposure to harmful substances.

2. **Disposal Criteria**:

- All PPE that is **damaged**, exhibits **wear and tear** due to poor handling or overuse, becomes **contaminated** through inadequate use, or meets the manufacturer's **criteria for rejection** (due to the end of its service life or damage from hazards/incidents) shall be disposed of.
- If PPE has been involved in an **incident or accident** and is damaged, it should be immediately removed from service and disposed of.
- Replacement frequency of PPE should be **fixed by individual units** based on their usage and convenience.
- In case of loss of PPE by any individual, the **safety department** may issue a replacement on a **chargeable basis**.

3. **Safety Helmets Disposal**:

- **Safety helmets** have a limited **lifetime** due to **material degradation** caused by factors such as **sunlight**, **heat**, or **self-degradation**. It is important to consult with suppliers or manufacturers to determine the **lifetime** of safety helmets.
- Under normal service conditions, safety helmets can typically provide adequate protection for **2 to 3 years**.
- **Plastic components** of harnesses may deteriorate more quickly in service, so these should be replaced at intervals not longer than **2 years**.
- Any helmet that has been subjected to a **severe impact**, regardless of its service life or visible physical damage, must be **withdrawn from service and discarded**. This is due to the reduction in the design strength and effectiveness of the helmet after an impact.
- **Safety helmets cannot be repaired**. If any damage is detected, the helmet must be immediately replaced to ensure continued safety.

By following these PPE disposal guidelines, the safety and protection of employees are maintained, ensuring that any compromised or outdated equipment is removed and replaced promptly.

7.7 Program Administration, Documentation, and Evaluation

- **Written PPE Procedure**:

- Each facility utilizing PPE must develop a **written PPE procedure** or adopt this standard as a **site-specific procedure**, making modifications as needed based on the facility's operations and risks.

- The location of the **current procedure document** must be communicated to all PPE users and kept **readily accessible** for reference.

➢ **Document Contents**:
The PPE procedure document must include the following information:

- **Safety, Health & Environmental Hazards Evaluation**: An assessment of the potential risks and hazards that require PPE.

- **Types of PPE Selected for Use**: A list of the PPE types selected for specific tasks or environments.
- **PPE Types & Storage Locations**: Information on where the different types of PPE are stored and how they should be accessed.
- **Use Situations & Limitations**: Clearly defined circumstances where PPE must be used, along with its limitations in specific tasks.
- **PPE Maintenance Procedures**: Detailed instructions on how to maintain PPE, including procedures for **decontamination** and **laundering**.
- **Disposal of PPE**: Guidance on when and how to dispose of PPE that is no longer effective or has been damaged.
- **Training Records**: Documentation of PPE training provided to employees, including dates and topics covered.
- **Inspection Records**: Records of inspections conducted on PPE to ensure that it is in good condition and functional.

➢ **Periodic Review**:
- The **PPE procedure** must be reviewed periodically to assess its continued effectiveness as part of the broader **occupational safety, health, and environmental program** at the facility.
- **Line management** at each location is responsible for ensuring that **contractors** are informed of and follow the **applicable PPE use practices**.

By ensuring proper program administration, documentation, and evaluation, the facility can maintain a safe working environment and ensure compliance with PPE standards and regulations.

7.8 Enforcement and Inspection

1. **PPE issue records**: PPE issue records must be maintained to track the distribution and use of personal protective equipment, ensuring the **effective implementation** of the PPE standard and compliance with local requirements.

2. **Enforcement of PPE Usage**: The use of PPE must be **uniformly enforced** across all employees and contractors. The organization must actively **motivate** personnel to adhere to PPE requirements to maintain **consistent performance** and safety standards.

3. **Safety Observations, Audits, and Inspections**: Safety observations, reviews, audits, and inspections should be conducted periodically to ensure that PPE is used properly and as intended. These activities are essential to assess compliance and identify any gaps in the PPE program.

4. **Review of PPE Requirements**: The PPE requirements must be **reviewed** whenever there is a **new or significant change** in equipment, processes, operations, or materials. This ensures that PPE is aligned with the evolving hazards in the workplace.

5. **Consequences for Non-Compliance**:

    - Employees who fail to wear the **required PPE** will be subject to the **site disciplinary system**. **Repeat offenders** can face dismissal as part of the enforcement process.

    - **Visitors and contractors** who do not comply with PPE requirements will be **escorted off the site immediately** to ensure the safety and well-being of all personnel.

By implementing a strong enforcement and inspection system, the facility ensures that PPE use is consistent, effective, and aligned with safety standards, while also addressing non-compliance in a clear and structured manner.

8.0 Special Requirements: Visitors & Contractors

- **Visitors**:

- Visitors are required to wear the **same quality PPE** as employees when entering the plant.
- Minimum PPE requirements for visitors include **Safety Helmet** and **Safety Shoes**.
- All visitors must undergo a **plant safety induction** at the security gate before entering the plant. This induction provides important information on basic minimum PPE requirements.

➢ **Contractors**:

- Contractors must wear the **same level of PPE** as employees when performing work within the site. This includes, but is not limited to:
  - **Eye/Face Protection**
  - **Safety Footwear**
  - **Proper Gloves**
  - **Full Body Safety Harnesses**
  - **Hearing Protection**
  - **Safety Helmets**
- **Contractor's Responsibility**: Contractors are required to provide all necessary PPE to their employees **free of charge** as part of their lump sum or unit rate cost.

2. **Penalties for Non-Compliance**:

- The company reserves the right to impose **penalties** on contractors for non-compliance with PPE requirements.
- If a contractor is unable to provide the required PPE, the company will provide it.

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3. **General PPE Requirements**:

    - Any person entering the project area is required to wear **Safety Helmet** and **Safety Shoes**.
    - If a person plans to perform specific tasks, they must wear additional PPE suited to the hazards of the task they are performing.

This ensures that visitors and contractors comply with the same safety standards as employees, and that all personnel are adequately protected from potential hazards while on site.

9.0 Key Performance Indicators (KPIs)

1. **Safety, Health & Environment Hazard Evaluation Survey**: Conduct surveys to evaluate the effectiveness of safety, health, and environmental measures implemented on site.

2. **% Unsafe Act with Respect to PPE Trends (Safety Observation)**: Track and analyze the percentage of unsafe acts related to PPE usage and identify trends to improve safety practices.

10.0 Management Systems

10.1 Support Resources

Unit and business safety resources are available to assist with the implementation of this standard and ensure its effectiveness.

10.2 Management Records

Safety, Health & Environment evaluation and audit records must be retained for a period of **two years** to ensure the continued tracking of compliance and performance.

10.3 Audit Requirements

Each site shall **audit compliance** with this standard as part of its regular safety audit program. This will help to ensure adherence to the safety practices and identify areas of improvement.

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10.4 Standard Renewal Process

This standard shall be reviewed and revised as necessary and, at a minimum, not later than two years from the date of the last revision.

10.5 Deviation Process

- Any deviations from this standard must be **authorized** by the **Unit Head** in consultation with the **Corporate Safety Head** through the proper **Management of Change (MOC)** process.
- Deviations must be documented, indicating the cause and the safety plan put in place to address them.
- Authorization for deviations must be **renewed periodically**, with a minimum review interval of **every three years**.

10.6 Training and Communications Requirements

Each business and site should provide **training** on safety protocols, procedures, and PPE use, ensuring that all relevant personnel are well-informed and prepared for compliance.

These management systems ensure ongoing safety improvements, timely updates to standards, and effective compliance through audits, training, and clear documentation processes.

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Appendix- A

IS Codes for PPE (Body Protection)

The following IS (Indian Standard) codes apply to body protection PPE and should be used to ensure compliance with industry standards for the procurement of safety equipment. These standards outline the specifications and practices for PPE used to protect workers' bodies in various hazardous environments:

1. **IS 3521: 1999**

   Title: Industrial Safety Belts and Harnesses - Specification
   Description: This standard specifies the requirements for industrial safety belts and harnesses used in the workplace to protect individuals working at heights or in dangerous conditions.

2. **IS 4501: 1981**

   Title: Specification for Aprons, Rubberized, Acid and Alkali Resistant
   Description: This standard defines the requirements for rubberized aprons designed to protect the wearer from exposure to acid and alkali substances in industrial environments.

3. **IS 6153: 1971**

   Title: Specification for Protective Leather Clothing
   Description: This standard sets the specifications for protective leather clothing designed to provide protection from physical hazards such as cuts, abrasions, and heat.

4. **IS 7352: 1974**

   Title: Specification for X-ray Lead Rubber Protective Aprons
   Description: This standard covers the specification for protective aprons made of lead rubber to shield workers from harmful radiation exposure in environments involving X-rays.

5. **IS 8519: 1977**

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Title: Guide for Selection of Industrial Safety Equipment for Body Protection
Description: This guide helps in the selection of appropriate industrial safety equipment for body protection, considering various hazards in the workplace.

6. **IS 8990: 1978**

Title: Code of Practice for Maintenance and Care of Industrial Safety Clothing
Description: This standard provides guidelines for the maintenance and care of industrial safety clothing to ensure the effectiveness and longevity of protective gear.

These IS codes ensure that the PPE used by workers meets the minimum standards of safety and quality. All sites and contractors should procure only BIS-certified or equivalent PPE to ensure compliance with the applicable safety standards.

Appendix- B

PPE Selection		
Part of Body	**Hazard**	**Used PPE**
Hands	Penetration-sharp objects Penetration-animal bites Penetration-rough objects Chemical(s): Extreme cold Extreme heat Blood Electrical shock Vibration-power tools	Leather/cut resistant gloves Leather/cut resistant gloves General purpose work gloves Chemical resistant gloves; Insulated gloves Heat/flame resistant gloves Latex or nitrile gloves Insulated rubber gloves; Electric Volts handled: Cotton, leather, or anti- vibration gloves
Eyes and Face	Exposure to sparks Impact-flying objects, chips, sand, or dirt Nuisance dust	Leather welding hood Safety glasses w/side shields Glasses/goggles w/face shield Impact goggles
	UV light-welding, cutting, torch brazing, or soldering	Welding goggles Welding helmet/shield w/ safety glasses & side shields

	Chemical-splashing liquid Chemical-irritating mists Hot sparks-grinding	Chemical goggles/face shield Chemical splash goggles Safety glasses w/side shields Glasses/goggles w/face shield Safety goggles w/face shield
	Sun Exposure/Glare/High Intensity lights	Shaded safety glasses
Ears	Exposure to noise levels. (>85 dBA 8-hour TWA)	Earmuffs or plugs
Respiratory System	Nuisance dust/mist Welding fumes Asbestos Paint spray Organic vapors Acid gases Oxygen deficient/ toxic or IDLH atmosphere	Disposable / mist mask Welding respirator Respirator w/HEPA filter Respirator w/pesticide cartridges Respirator w/ paint spray cartridges In case of general painting (roller/brush) : Splash proof chemical goggles, P1 type Respirator, Nitrile hand gloves and disposal overall (optional if separate clothing not provided) Respirator w/ organic cartridges Respirator w/ acid gas cartridges SCBA for rescue or Type C Airline Respirator for continuous work.
Foot	Impact-heavy objects Compression-rolling or pinching vehicles Slippery or wet surface Penetration-sharp objects Penetration-chemical Splashing-chemical Exposure to extreme cold Other:	Steel toe safety shoes Leather boots or safety shoes w/ metatarsal guards Slip resistant soles Puncture resistant soles Chemical resistant boots/covers Rubber boots/ closed top shoes Insulated boots or shoes

Head	Struck by falling object Electrical-contact with exposed wired/ conductors	Only Industrial purpose safety Helmets as per HZL Standards.
	Impact-flying objects	Long sleeves/ apron/ coat

PPE selection Guide) Note: This table is a guide for the selection of PPE. The safety review, SWP and Safety, health & environment Hazard analysis will provide more information which should be used in the decision-making process.

PPE Selection		
Part of Body	**Hazard**	**Used PPE**
Hands	Penetration-sharp objects Penetration-animal bites Penetration-rough objects Chemical(s): Extreme cold Extreme heat Blood Electrical shock Vibration-power tools	Leather/cut resistant gloves Leather/cut resistant gloves General purpose work gloves Chemical resistant gloves; Insulated gloves Heat/flame resistant gloves Latex or nitrile gloves Insulated rubber gloves; Electric Volts handled: Cotton, leather, or anti- vibration gloves
Eyes and Face	Exposure to sparks Impact-flying objects, chips, sand, or	Leather welding hood Safety glasses w/side shields Glasses/goggles
		Welding goggles
	UV light-welding, cutting, torch brazing, or soldering	Welding helmet/shield w/ safety glasses & side shields

s	Impact-flying objects Penetration Sharp objects Electrical static discharge Hot metal or sparks	Traffic vest Cut resistant sleeves/coverall, whistles Static control coats/coveralls Leather coverall/ aluminized Kevlar/ Nomex clothing
Body	Chemical(s) Exposure to extreme cold Exposure to extreme heat Unprotected elevated working surface for blasting works Hot objects/surface Hot work sparks	Lab coat or chemical resistant apron/suits Insulated jacket, hood Body cooling devices/vest Body harness and lanyard Antistatic reflective jackets/ strip stitched jackets Fire resistant clothing and gloves