




# **Bangladesh Power Development Board**

**INTEGRATED MANAGEMENT SYSTEM  
(BASED ON ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018  
STANDARDS)**

**HAZARD IDENTIFICATION AND RISK ASSESSMENT**

	<b>INTEGRATED MANAGEMENT SYSTEM</b>	Document No.: BPDB-IMS-PR-071
	<b>HAZARD IDENTIFICATION AND RISK ASSESSMENT</b>	Revision No.: 00 Effective Date: 01-11-2021
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1. **Purpose:** This procedure defines the mechanism for the identification of occupational health risks of BPDB's activities, products and services.
2. **Scope:** This procedure covers all activities, services and products of BPDB head office, Off Grid Sales & system installation activities, On Grid Sales & system installation activities, IT activities and all distribution point & service activities under BPDB.

**3. Definition:**

**Hazard:** Source, situation, or act with a potential for harm in terms of human injury or ill health or a combination of these.

**Risk:** Combination of the likelihood of an occurrence of a hazardous event or exposure(s) and the severity of injury or ill health that can be caused by the event or exposure(s).

**Severity:** refers to the degree to which the company's surroundings (including air, water, land natural resources, flora, fauna, and human) are affected by an impact.

**Likelihood:** serves as an indicator or probability. It attempts to rate impacts on the probability of their occurrence.

**Frequency:** addresses how often an impact could occur.

4. **Responsibility:** Head of HR & Admin, ISO Implementation Team members and MR.


**5. Procedure:**

**5.1 Hazard Identification:**

- 5.1.1 Head of HR will assemble the management staff from different functions to identify environmental aspects and to conduct the risk assessment. The team will be called ISO Team. Management Representative (MR) will be the leader of the team.
- 5.1.2 The ISO Team shall initially review the activities, operations and procedures based on available data in the organization, within the scope of the OHS.
- 5.1.3 On the basis of initial review, ISO Team shall conduct a Significant Hazard Identification and Risk Assessment and update these in the HIRA Register. ISO Team shall determine the process hazards and the risks possesses with them and review its controls.
- 5.1.4 The ISO Team shall also identify the specific occupational health and safety issues using general categories. These general categories shall include, but not necessarily be limited to, the following:

- Emergency situation during all activities
- Spillage of all types of oils and chemicals

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- Hot work and cold work,
- Work at Height
- Confined Space Entry work,
- Mechanical Work
- Electrical Work
- Civil Work
- Manual Handling
- Chemical Handling
- Storage of hazardous material
- Critical equipment operation
- Lifting equipment operation etc.

5.1.5 Lists of the identified hazards will be maintained and will be reviewed by the ISO Team at least every year to identify any new hazard that should be added or any old hazard that should be deleted.


5.1.6 The essential first step in HIRA is to identify hazards. Relevant sources of information include:

- local legislation and supporting documents (such as labor law, BNBC etc.) which give practical guidance and include basic minimum requirements;
- expert advice and relevant research;
- process information, including machinery;
- product information, such as safety data sheets, manufacturers' instructions etc.;
- working environment, including temperature, noise, light, restricted ventilation, vibration, confined spaces, housekeeping, etc.;
- personal knowledge and experiences of managers and workers;
- incident and illness data from within the operation site, from other sites within the company, or from outside.

5.1.7 While identifying hazards the following hazard categories need to be considered but not limited to:

- **Biological.** Biological hazards include bacteria, viruses, insects, plants, birds, animals, and humans, etc.
- **Chemical.** Chemical hazards are hazardous substances that can cause harm. These hazards can result in both health and physical impacts, such as skin irritation, respiratory system irritation, blindness, corrosion and explosions
- **Physical.** Physical hazards are environmental factors that can harm an employee without necessarily touching them, including heights, noise, radiation and pressure. For example, Slippery floors, objects in walkways, unsafe or misused machinery, excessive noise, poor lighting, fire, radiation, magnetic fields, pressure extremes (high pressure or vacuum), *slipping/tripping hazards, inappropriate machine guarding, equipment malfunctions or breakdowns, Electrical shocks.*

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- **Ergonomic.** Ergonomic hazards are a result of physical factors that can result in musculoskeletal injuries. For example, a poor workstation setup in an office, poor posture and manual handling.
- **Psychosocial.** Psychosocial hazards include those that can have an adverse effect on an employee's mental health or wellbeing. For example, sexual harassment, victimization, stress and workplace violence.

## 5.2 Risk Assessment:

5.2.1 The following two criteria will be used for evaluating OHS risk as severity and likelihood on a five-point scale as follows:

### 5.2.2 Severity Scale:

- 5 = Severe/Catastrophic – very harmful or potentially fatal; great effort to correct and recover
- 4 = Serious – harmful but not potentially fatal, difficult to correct but recoverable
- 3 = Moderate – somewhat harmful, correctable
- 2 = Mild – little potential for harm, easily correctable
- 1 = Harmless – no potential for harm, correctable.

### 5.2.3 Likelihood Scale:

- 5 = Certain – high probability (81% or more) that hazard will result in a detectable impact
- 4 = Likely – strong probability (61% to 80%) that a hazard will result in a detectable impact
- 3 = Possible - reasonable probability (41% to 60%) that a hazard will result in a detectable impact
- 2 = Unlikely – probability (11% to 40%) that a hazard will result in a detectable impact
- 1 = Rare – very unlikely (10% or less) that a hazard will result in a detectable impact.

5.2.4 After the rating numbers has been assigned, cumulative score for each risk shall be determined by multiplying two values of severity and likelihood.

$$\text{Risk} = \text{Severity} \times \text{Likelihood}$$

5.2.5 The significance of aspects and risk will be determined by considering multiplied rating score and regulatory requirements. The significance of the risks will be determined based on following condition:

5.2.6 **Significant Risks:** Recommended actions shall be taken if the rating cross the multiplied number 15 or Legal Compliance indicates the ranking “Y” (yes).

5.2.7 After identifying the existing risks required control will be determined and the residual risk will be calculated as same as above risk calculating procedure with expected reduced severity and likelihood.

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### 5.3 Risk Matrix:

The following risk matrix shows the multiplied severity and likelihood's result to its risk and various level of risks. In order to visually depict the prioritization, based on the Overall Risk Score, graphical representation is done on "heat map" as mentioned below:

Severity (I) →	Low (1)	Minor (2)	Moderate (3)	Major (4)	Critical (5)
Likelihood (L) ↓					
Certain (5)	5	10	15	20	25
Likely (4)	4	8	12	16	20
Possible (3)	3	6	9	12	15
Unlikely (2)	2	4	6	8	10
Rare (1)	1	2	3	4	5

The placement of the risks will be done on the "heat map" indicates the risk zone (High/ Medium/ Low) based on Overall Risk Score.

Severity x Likelihood	Risk zone
Score - less than 4	Low
Score – greater than or equal to 4 but less than 12	Medium
Score – greater than or equal to 15	High


### 5.4 Introduce control measures to reduce risks

Risks with highest rating or not meeting regulatory requirement will be considered for detail program.

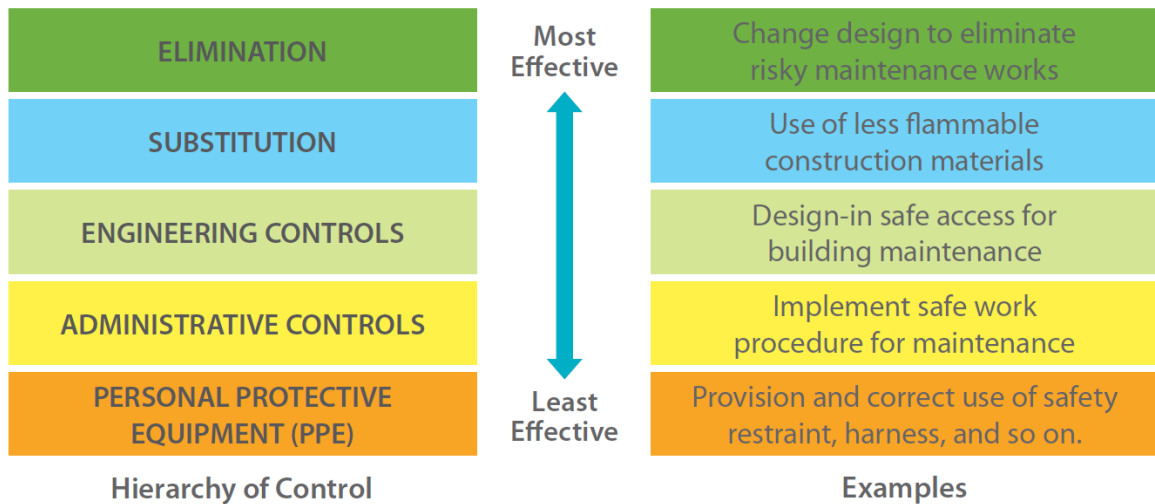
5.3.1 In establishing control measures for the risks the following issues should be taken into account:

- OHS legal and other requirements
- technological options
- Hierarchy of hazard control system development
- financial, operational and business requirements
- Views of the interested parties.

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- 5.3.2 MR shall ensure that methodology for hazard identification and risk assessment shall be defined with respect to its scope, nature and timing to ensure it is proactive rather than reactive. The organization shall provide identification, prioritization and documentation of risks and the application of controls, as appropriate.
- 5.3.3 MR shall ensure that significant risk assessment include routine and non-routine activities, activities and welfare of all personnel having access to the facility including subcontractors, facility personnel and visitors, or other equipment provided whether by the organization itself or others.
- 5.3.4 The High-risk tasks cannot be undergone without the required control measures assessed in the HIRA register or at least without any emergency preparedness and response plan. Medium risks tasks can be done under the control required to be taken and by prior permission of the Top management of BPDB. The low risk tasks can be done keeping the existing control.
- 5.3.5 The following hierarchy of controls will be followed while setting control measures for a particular risk and its task.



- 5.3.6 MR ensures that the analysis shall be document and keep it up to date. It shall also be ensured that the significant risk assessment is taken into account in establishing, implementing and maintaining its management systems.
- 5.3.7 The status of the significant risk assessment shall be reviewed in Management Review Meeting for its closing action.
- 5.3.8 MR shall ensure that review shall be based on the progress, changing circumstances and as a commitment for continual improvement.

### 5.5 Communications:

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After risk assessment, MR must inform all employees about findings and involve them in improvement actions. If necessary, training should be provided.

## 6. Reference

ISO 45001:2018 Standard

## 7. Appendix

- a) Hazard Identification and Risk Assessment Register

## 8. Revision History

SI No.	Revision Number	Section	Change Made	Date of Creation

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