HAZARD IDENTIFICATION, RISK ASSESSMENT & RISK CONTROL

Introduction to HIRARC

- Principles used in workplace to manage safety and health.
- Section 15 (2)(a) of OSHA 1994: which reads “the provision and maintenance of plants and systems of work that are, so far as is practicable, safe and without risks to health”
Definition

- **Hazard**
  A source or a situation with a potential for harm to humans, property and damage of environment or a combination of these.

- **Danger**
  Relative exposure to hazard.

- **Risk**
  A combination of likelihood of occurrence and severity of injury or damage.

Overview Of HIRARC

- Definition of Hazards
- Classification of Hazards
- Potential sources of Hazards
- Basic components of Risk Management
The Process of Risk Management

Classify Activities  
(Work, Product, Services)

Identify Hazard

Assess The Risk

Risk Control

Review Risk Control

Classification & Potential Sources of Hazards

<table>
<thead>
<tr>
<th>Classification</th>
<th>Example of Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical</td>
<td>Sharp points &amp; edges, overload.</td>
</tr>
<tr>
<td>Electrical</td>
<td>Insulation damaged or cover broken</td>
</tr>
<tr>
<td>Biological</td>
<td>Exposed, airborne/blood borne microorganism.</td>
</tr>
<tr>
<td>Chemical</td>
<td>Expose to carcinogens chemical</td>
</tr>
<tr>
<td>Ergonomics</td>
<td>Expose to unnatural postures</td>
</tr>
<tr>
<td>Psychological</td>
<td>Stress or violent at workplace.</td>
</tr>
</tbody>
</table>
Hazard Identification

- To keep workplace **safe** and **healthy**. Employers should make sure there are no hazards to which employees could be exposed.
- Employers should look for hazards in advance as part of their risk management plan to prevent potential hazards.

Actions & Recommendations

- All related statements should be made
- With no cost restraints
- Should be reviewed every 4 months
- Need management support
Risk Assessment

- Is the process of evaluating the risk to safety & health from hazards at work

Types
- Qualitative
- Semi-quantitative
- Quantitative

How To Assess Risk

1) Look for the Hazards
2) Decide who might be harmed & how
3) Evaluate the risk and check what is done to prevent it from happening
   - 4) Record finding
   - 5) Review assessment and revise it if necessary
Types of Risk Assessment

• Qualitative - (Use Risk Matrix)
  - table scales for likelihood and severity
  • Fatality
  • Major injuries
  • Minor injuries
  • First aid or near misses

Types of Risk Assessment

• Based on statistic
  Likelihood
  • Very likely
  • Likely
  • Unlikely
  • Highly Unlikely
Qualitative Risk Table

<table>
<thead>
<tr>
<th>Severity</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V/Likely</td>
</tr>
<tr>
<td>Fatality</td>
<td>High</td>
</tr>
<tr>
<td>Major Injuries</td>
<td>High</td>
</tr>
<tr>
<td>Minor Injuries</td>
<td>High</td>
</tr>
<tr>
<td>First Aid/ N/misses</td>
<td>Medium</td>
</tr>
</tbody>
</table>

Semi-Quantitative Risk Assessment

- **Severity Categories**
  1. First Aid
  2. Less than 4 days M/C
  3. More than 4 days M/C
  4. Fatality & Permanent Disability
Semi-Quantitative Risk Assessment

- **Likelihood Occurrence**

  1. Yearly
  2. Monthly
  3. Weekly
  4. Daily

### Semi-Quantitative Risk Table

<table>
<thead>
<tr>
<th>SEVERITY</th>
<th>LIKELIHOOD</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Yearly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily</td>
</tr>
<tr>
<td>First Aid</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>&lt; 4 Days MC</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>&gt; 4 Days MC</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Fatality &amp;</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Permanent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disability</td>
<td></td>
<td></td>
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</tbody>
</table>
Quantitative Risk Assessment

• In cases where hazards are numerous and complex
  eg; Chemical process plant
Should have Job Safety Analysis (JSA)
- describe job in less than 10 steps
- List things that can go wrong
  - eg; Changing a Car Wheel

Actions & Recommendations

• EL- Eliminate
• SL- Substitute
• IS- Isolation
• EC- Engineering Control
• AC - Administration Control
• PPE- Personal Protection Equipment
Actions & Recommendations

Eg;
EL - stop work, cover hazard…
SL - use other route, other material..
IS - put up temporary barrier,…
EC - construct permanent wall,…
AC - put up notice, job rotation,…
PPE - gloves, respirator,……